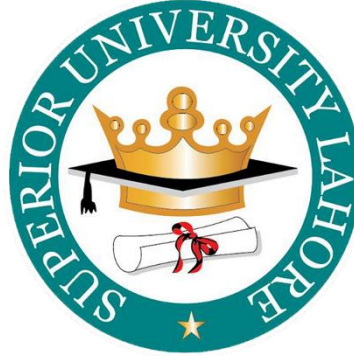


SUPERIOR UNIVERSITY LAHORE



Faculty of Computer Science & IT

Final Year Project PROJECT REPORT

Superior Knowledge Archives

Project ID: SE-003

Project Team

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Mr. Usman Akbar
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Project Report

Superior Knowledge Archives

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
Rana Waji ul Hassan	1.0	27/11/2017	Report for FYP-1 prepared	
Rana Waji ul Hassan	2.0	11/12/2018	System Architectures Updated	
Rana Waji ul Hassan	2.1	20/04/2018	Major changes are advised	
Rana Waji ul Hassan	2.3	01/06/2018	Project Management Plan added	
Rana Waji ul Hassan Shiraz Naseer Ahmad	2.3	04/06/2018	Admin Panel Teacher Panel	
Rana Waji ul Hassan Shiraz Naseer Ahmad	2.3	06/07/2018	Search Filters	
Rana Waji ul Hassan Shiraz Naseer Ahmad	2.3	06/07/2018	User Interface changes	
Rana Waji ul Hassan Shiraz Naseer Ahmad	2.3	21/07/2018	Form Validations Applied	
Rana Waji ul Hassan Shiraz Naseer Ahmad	2.3	28/07/2018	Testing results added	
Rana Waji ul Hassan	2.3	03/08/2018	Project Closure	

APPROVAL

PROJECT SUPERVISOR

Comments: _____

Name: Mr. Usman Akbar

Date: _____

Signature: _____

PROJECT MANAGER

Comments: _____

Date: _____

Signature: _____

HEAD OF THE DEPARTMENT

Comments: _____

Date: _____

Signature: _____

Dedication

This work is dedicated to my parents and students of the superior university. Our appreciation goes to our supervisor Mr. Usman Akbar for their guidance in the preparation of the final document and to our colleagues in the Department of Computer Science and Technology of Superior University for their support.

Acknowledgments

I am really very thankful to my supervisor Mr. Usman Akbar for his invaluable guidance, continuous encouragement and constant support in making this project possible. I really appreciate his guidance from the initial to the final level that enabled me to develop an understanding of this project thoroughly. Without his advice and assistance it would be a lot tougher to completion. I also sincerely thanks for the time spent proofreading and correcting my mistakes.

My sincere thanks go to all lecturers and members of the staff of the Department of Computer Science and Technology, SUL, who helped me in many ways and made my education journey at SUL pleasant and unforgettable. Many thanks go to SE member group for their excellent co-operation, inspirations and supports during this study. This four-year experience with all you guys will be remembered as an important memory for me to face the new chapter of life as a software engineer.

I acknowledge my sincere indebtedness and gratitude to my parents for their love, dream and sacrifice throughout my life. I am really thankful for their sacrifice, patience, and understanding that was inevitable to make this work possible. Their sacrifice had inspired me from the day I learned how to read and write until what I have become now. I cannot find the appropriate words that could properly describe my appreciation for their devotion, support and faith in my ability to achieve my dreams.

Lastly I would like to thanks any person which contributes to my final year project directly or indirectly. I would like to acknowledge their comments and suggestions, which was crucial for the successful completion of this study.

Executive Summary

Superior Knowledge Archive (SKA) is a knowledge sharing portal for superior university students and teachers. It is an open community for superior students to share and explore knowledge. This website based knowledge sharing portal is helpful for students to get new horizons of knowledge and facilitate the teacher to share study material with students, with a vision of serving humanity.

Our system not only saves students and teachers time but also allow them to share and explore existing knowledge. Students can register into our system so they can download and view lectures, assignments, books, final year project reports, and documentation available at the website. Students can also communicate with each other via one to one chat feature to help each other.

SKA provides a feature which allows the students to continue the existing project to improve the projects in order to create products of projects that can be used to solve real-life problems rather than developing projects of same nature and functionality from scratch in order to develop the useable mature products.

Teachers can upload and manage lectures, books, assignments, FYP reports and any other relevant study material for students. The teacher can also create virtual classes for the students and upload study material for their relevant class and response to student's queries. Admin is the superuser of our system who can manage the account of both teachers and students and can manage all the data of our system.

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Chapter 1

Introduction

Chapter 1: Introduction

Superior Knowledge Archive (SKA) is a website based knowledge sharing portal for superior students to share and explore knowledge. This website based knowledge sharing portal is helpful for students to get new horizons of knowledge and facilitate the teacher to share study material with students, with a vision of serving humanity.

Our system not only saves students and teachers time and effort but also allow them to share and explore existing knowledge. SKA provides a unique feature which allows the students to continue the existing projects.

Students can register into our system so they can download and view lectures, assignments, books, FYP reports, documentation and any other helping material available at the website. Students can use virtual classes to get study material form a specific teacher. Students can also communicate with each other via one to one chat feature to help each other.

In our system admin is the superuser of SKA, who can manage the accounts of both teachers and students and can also manage all the data of our system. Teachers can upload and manage lectures, books, assignments, FYP reports and any other relevant study material for students. The teacher can also create virtual classes for their students to share the study material with it specific class students.

1.1. Background

The main purpose of SKA is to facilitate the students and teachers through a platform to share the study material efficiently and effectively by providing an interactive solution and to solve their problem. Our system SKA designed and developed by using state of the art tools and technology.

The key concern of report is to provide with all necessary information for the effective project management and project development. It includes identifying stakeholders, milestone, defining project scope, project planning and structuring, developing understanding, and identifying key challenges that may be faced during the project management and development.

1.2. Motivations and Challenges

Our motivation for the development of SKA to provide SUL students website based knowledge sharing portal. Our system allows students to share knowledge with each other.

Our core challenges are to develop our system using state of the art tools and technologies and learning new skills, tools and methodologies that will be needed to develop our project that is reliable, fast, responsive, available, interactive and easy to use.

1.3. Goals and Objectives

1. To practically utilized tools and skills for the formulation and development of a software project.
2. To provide a dedicated platform to students and teachers to share knowledge.
3. To develop software by following software engineering best practices by utilizing the latest tools available in the market.
4. To help students and teacher of CS&IT to improve academic processes by providing the best solution to their problems.
5. To continue the previous year's project to develop mature products that solve some real-life problems and facilitate the university.
6. To serve humanity.

1.4. Literature Review/Existing Solutions

Existing systems and competitors of our system SKA are Google Drive, Drop-Box, Google Classrooms and social media platforms e.g. Facebook groups, WhatsApp groups. No doubt these platforms are best at their domain but they still have some restriction and don't provide a dedicated solution to students and teachers. Following are the competitive analysis for existing systems.

Competitors	We have, they don't	They have, we don't
Google Drive	Open Community with one to one chat	Massive server storage capacity and large no of users
DropBox	Open Community with one to one chat	Massive server storage capacity and large no of users

Google Class Rooms	Pre Existing study material	Well organized and customized interface
Social Media platforms Facebook, WhatsApp etc	Accessibility limitation due to restrictions on groups	Massive user and unlimited space

SWOT Analysis

Strengths <ul style="list-style-type: none"> • One stop solution to the problem • Save time and divide the workload • Help in developing caring and sharing attitude in the student • Allow continuing existing projects 	Weakness <ul style="list-style-type: none"> • Less famous due to unawareness among students • May have fewer users at the start • Have less helping material available at initial launching
Opportunities <ul style="list-style-type: none"> • Students need a platform we are providing • Provide a one-stop solution to the problem 	Threads <ul style="list-style-type: none"> • Existing competitors with the same solution • Low storages on the server side

1.5. Gap Analysis

In this modern era of technology paperwork is near to eliminate in upcoming decades, nowadays lectures are delivered through electronic media using multiple mediums like PPT Slides, E-books and videos lectures.

According to our findings, during our stay of four years at university we find some certain gaps that will need to be solved. For example students have to wait for the SVL's and CR's to get the study material form the teacher and then upload it somewhere platform e.g. Facebook groups, Google Drive, WhatsApp groups so that students can access it. If a student is not a part of these platforms/groups he/she cannot access the data. Also these procedures are little complicated for students and teachers to manage many links and pages for different sections and semester.

We found that students and teachers should have a dedicated platform. Where a teacher can easily upload their lectures, books, assignments and other study materials for students and students can access this material with ease, without depending on someone else. So we decided to make our project SKA an opportunity to resolve teachers and students communication gap and solve their problem.

1.6. Proposed Solution

Superior Knowledge Archive (SKA) is a dedicated knowledge sharing portal for superior university students and teachers. It is an open community for superior students to share and explore knowledge.

Students can register into our system so they can download and view lectures, assignments, books, final year project reports, documentation and upload their FYP source code. Students can use virtual classes feature to get study material from a specific class teacher. Students can also communicate with each other via one to one chat feature to help each other.

Admin is the superuser of our system who can manage the accounts of both teachers and students and can perform all the administrative roles of our system. Teachers can upload and manage lectures, books, assignments, FYP reports, create virtual classes and manage the students FYP's and queries to help them.

This website based knowledge sharing portal is helpful for students to get new horizons of knowledge and facilitate the teacher to share study material with students, with a vision of serving humanity.

1.7. Project Plan

Project plan for SKA is defined on the base of assumptions, constraints, milestones identification, assigning roles and responsibilities for each deliverable and expected days for implementation, project duration, project charter, statement of work and RMMM plan attached as PMP at appendix.

Note:

Changes can be made as per requirements change for planning, development and unpredictable risks.

General Project Information:

Project Name	Superior Knowledge Archives
Project Sponsor	FYP Committee
Department Sponsor	Department of CS&IT SUL
Impact of Project	FYP Project

Project Team:

	Name	Department	Cell#	Email
Project Manager	Rana Waji ul Hassan	CS&IT	03035999005	ranawajiulhassan@gmail.com
Supervisor	Usman Akbar`	CS&IT	03456532077	usman.akbar@superior.edu.pk
Team Member	Shiraz Naseer Ahmad	CS&IT	03354299860	shiraznaaeerahmad@gmail.com
	Rana Waji ul Hassan	CS&IT	03035999005	ranawajiulhassan@gmail.com

Mission:

Our Mission is to provide students a platform to share and explore knowledge easily and to reduce the workload of staff members of sharing study material with students.

Vision:

Our vision is to serve humanity.

Objectives:

1. To practically utilized tools and skills for the formulation and development of a software project.
2. To provide a dedicated platform to students and teachers to share knowledge.
3. To develop software by following software engineering best practices by utilizing the latest tools available in the market.
4. To help students and teacher of CS&IT to improve academic processes by providing the best solution to their problems.
5. To continue the previous year's project to develop mature products that solve some real-life problems and facilitate the university.
6. To serve humanity.

1.7.1. Work Breakdown Structure

Project Name:	Superior Knowledge Archives
Project Manager:	Rana Waji ul Hassan
Date:	09/12/2017

1. Requirement gathering

- 1.1. Requirement gathering
- 1.2. Literature reviews and existing solution
- 1.3. Requirements elicitation and gap analysis

2. Reports/Documentation

- 2.1. Software Requirements Specification
- 2.2. Software Design Description
- 2.3. Feature Achievement Mechanism
- 2.4. Project Management Plan
- 2.5. Test Cases Development
- 2.6. User Manuals

3. System SKA

3.1. Development Environment

- 3.1.1. Visual Studio 2015
- 3.1.2. MS SQL Server 2014
- 3.1.3. MS Word 2013

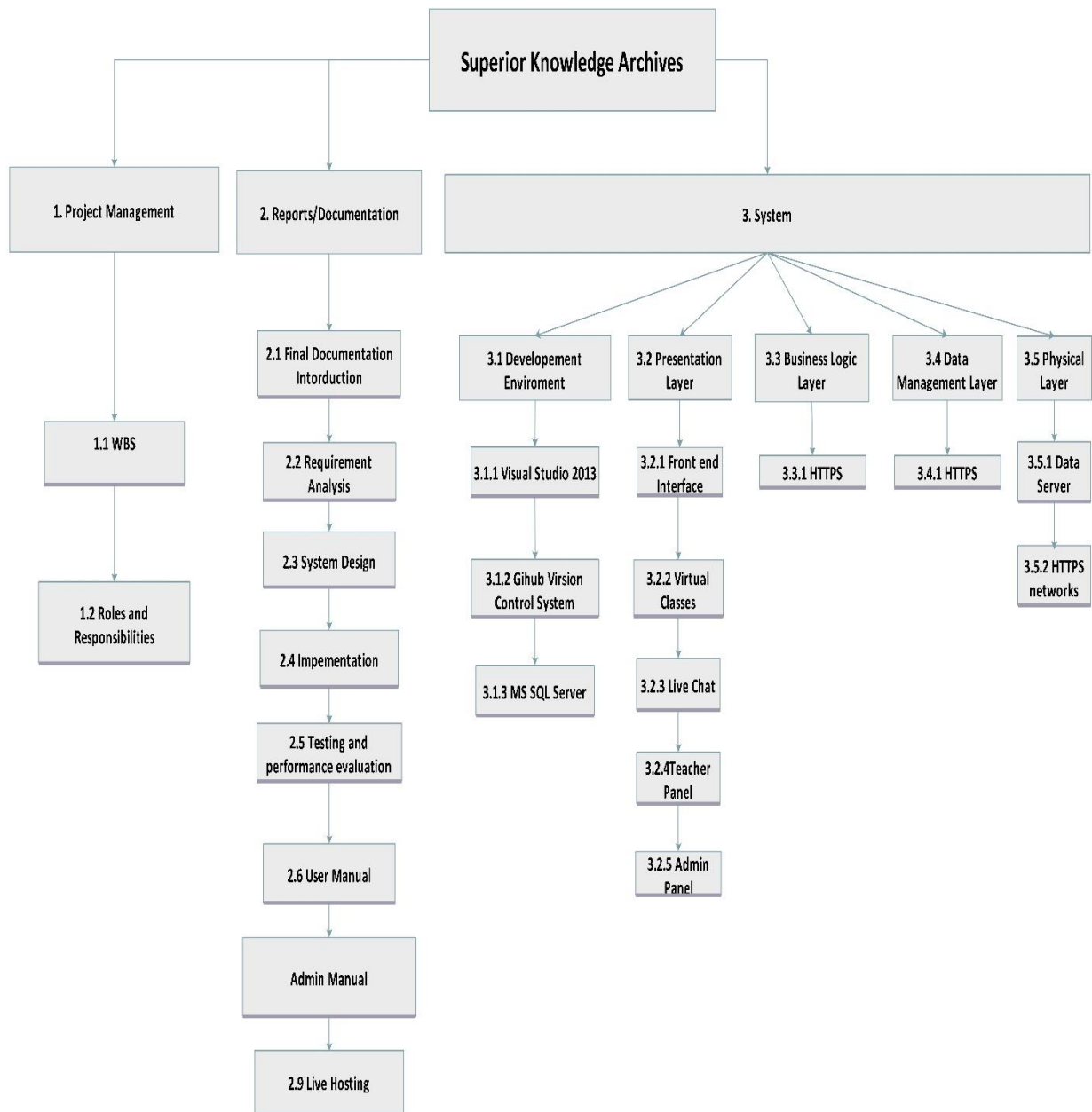
3.2. E-Drawing Environment

- 3.2.1. Edraw Max
- 3.2.2. Draw.io
- 3.2.3. Canva Tool

5. Features and Functions Implementation and major deliverables

- 5.1.** Student Registration Form
- 5.2.** Login Form
- 5.3.** Account Recovery Function
- 5.4.** Search with Filters
- 5.5.** View Files
- 5.6.** Download Function
- 5.7.** Upload Function
- 5.8.** Live Chat Module
- 5.9.** Virtual Classes
- 5.10.** Project Submission Module
- 5.11. Admin Panel**
 - 5.11.1. Accounts Management (Create, Delete, View, Edit accounts and Print details)
 - 5.11.2. File Management (Create, Delete, Edit)
 - 5.11.3. User Queries Management (user and student, view delete)
 - 5.11.4. Virtual Classes Management (Create, View Delete)
 - 5.11.5. Other Portal Management
- 5.12. Teacher Panel**
 - 5.12.1. File Management (Upload, Delete, Edit files)
 - 5.12.2. Student Queries Management (View, Delete)
 - 5.12.3. Virtual Classes Management
- 6. Presentation Layer**
 - 6.1.** Front-end Interface: Web-based GUI
- 7. Business Logic Layer**
 - 7.1.** HTTPS protocols: online over the internet protocols
- 8. Data Management Layer**
 - 8.1.** HTTPS protocol: SSL online over the internet protocols
- 9. Physical Layer**
 - 9.1.** Data Server: Web server hosting

WBS Flow Chart:



1.7.2. Roles & Responsibility Matrix

WBS #	WBS Deliverable	Activity #	Activity to Complete the Deliverable	Duration (# of Days)	Responsible Team Member(s) & Role(s)
1.1	SRS	001	Documentation	9	Rana Waji ul Hassan Shiraz Naseer Ahmad (Analyst)
1.2	SDD	002	Documentation	9	Rana Waji ul Hassan Shiraz Naseer Ahmad (System Architecture)
1.3	FAM	003	Documentation and Progress Report	128	Rana Waji ul Hassan Shiraz Naseer Ahmad (Manager)
1.4	Test Case Development	004	Documentation and Testing	30	Rana Waji ul Hassan Shiraz Naseer Ahmad (Tester/QA)
1.5	Live Hosting	005	Live web hosting on a server with the domain name	07	Rana Waji ul Hassan Shiraz Naseer Ahmad (Client)
1.6	End User Documentation	006	Documentation (User Manual)	09	Rana Waji ul Hassan Shiraz Naseer Ahmad (Content Writers)
2.2	IMPLEMENTATION DELIVERABLES	DEVELOPMENT	Coding and Testing	112	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.1	Student Registration Form	003.1	Coding and debugging	7	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.2	Login Form	003.2	Coding and debugging	7	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.4	Account Recovery Function	003.4	Coding and debugging	7	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.5	Search with filters	003.5	Coding and debugging	10	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)

2.2.3	View Files	003.3	Coding and debugging	10	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.6	Download Function	003.6	Coding and debugging	7	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.7	Upload Function	003.7	Coding and debugging	7	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.8	Live Chat Module	003.8	Coding and debugging	15	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.9	Virtual Class Module	003.9	Coding and debugging	10	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.10	Project Submission Module	003.10	Coding and debugging	10	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.11	Admin Panel	003.11	Coding and debugging	15	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)
2.2.12	Teacher Panel	003.12	Coding and debugging	7	Rana Waji ul Hassan & Shiraz Naseer Ahmad(Developers)

1.7.3. Gantt chart

	Task Mode	Task Name	Duration	Start	Finish
1	★	Project Life Cycle	181 days	Mon 04-12-17	Sun 12-08-18
2	★	Requirement Gathering	5 days	Mon 11-12-17	Fri 15-12-17
3	☞	Meeting	1 day?	Mon 11-12-17	Mon 11-12-17
4	☞	Literature Review	1 day?	Mon 11-12-17	Mon 11-12-17
5	★	Analysis	7 days	Mon 22-01-18	Tue 30-01-18
7	☞	Documentation	50 days	Mon 08-01-18	Fri 16-03-18
14	★	Implementation	151 days	Mon 01-01-18	Mon 30-07-18
15	☞	Student Registration Form	7 days	Mon 05-02-18	Tue 13-02-18
16	☞	Login Form	7 days	Mon 19-02-18	Tue 27-02-18
17	☞	Account Recovery Function	7 days	Wed 28-02-18	Thu 08-03-18
18	☞	Search with drop down filter	10 days	Fri 09-03-18	Thu 22-03-18
19	☞	View Files	10 days	Fri 23-03-18	Thu 05-04-18
20	☞	Download Function	7 days	Fri 06-04-18	Mon 16-04-18
21	☞	Upload Function	7 days	Tue 17-04-18	Wed 25-04-18
22	☞	Live Chat Module	15 days	Thu 26-04-18	Wed 16-05-18
23	☞	Virtual Class Module	10 days	Thu 17-05-18	Wed 30-05-18
24	☞	Project Submission	10 days	Mon 11-06-18	Fri 22-06-18
25	☞	Admin Panel	15 days	Mon 25-06-18	Fri 13-07-18
26	☞	Teacher Panel	7 days	Mon 16-07-18	Tue 24-07-18
27	★	Testing and Debugging	7 days	Mon 30-07-18	Tue 07-08-18
28	☞	Error Correction	1 day?	Mon 30-07-18	Mon 30-07-18
29	★	Deployment	5 days	Tue 07-08-18	Sun 12-08-18
30	☞	Live Hosting	1 day?	Tue 07-08-18	Tue 07-08-18
31	☞	Clouser	0 days	Sun 12-08-18	Sun 12-08-18

Timeline



1.8. Report Outline

The above chapter of the report define the phases of requirement gathering, documentation, development environment, E-drawing environment, implementation and expected deliverables as well as presentation layer, business logic layer, data management layer, physical layer and clearly define the role and responsibilities of each person on each phases for the successful development of project.

Part 1: Chapter 1-- Introductions

Provide an introduction and discuss brief descriptions of background, motivation and challenges. Goals and objectives, literature review and existing solution, gap analysis proposed solution, project plan, WBS, roles and responsibilities matrix and provide a project Gantt chart.

Part 2: Chapter 2—Software Requirement and Specifications

Provide an introduction and discuss the brief description of Software Requirement Specifications, product perspectives and functions also discuss Operating Environment, Design and Implementation Constraints, User Documentation, Assumptions and Dependencies, User, Hardware, Software, Communications and Other Nonfunctional, Performance, Safety, Security, Software Quality Attributes and Business Rules of the project.

Part 3: Chapter 3—Use Case Analysis

Provide a visual representation of system use cases their description tables and detailed analysis.

Part 4: Chapter 4—System Design

Provide UML based visual representation of Architecture Diagram, Domain Model, Entity Relationship Diagram with the data dictionary, Class Diagram, Sequence / Collaboration, Diagram, Operation contracts, Activity Diagram, State Transition Diagram, Component Diagram and system Deployment Diagram for a better understanding of system architecture.

Part 5: Chapter 5--Implementation

Provide knowledge of Important Flow Control/Pseudo codes, Components, Libraries, Web Services and stubs, Deployment Environment, Tools and Techniques, Best Practices / Coding Standards, Version Control for the implementation of the project.

Part 6: Chapter 6--Testing and Evaluation

Provide accountable data for Use Case Testing, Equivalence partitioning, Boundary value analysis, Data flow testing, Unit testing, Integration testing, Performance testing, Stress Testing to ensure that system have successfully executed and tested.

Part 7: Chapter 7--Summary, Conclusion and Future Enhancements

Provide overall Project Summary, Achievements and Improvements, Critical Review, Lessons Learnt, Future Enhancements/Recommendations for future work on the project

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1 Introduction

2.1.1. Purpose

The purpose of this document is to build a website based knowledge sharing portal (i.e. SKA) for students and teachers of superior university to facilitate the both (students and teachers) with a state of the art solution for the effective management of knowledge sharing process among students and teachers to save time, effort and share workloads.

2.1.2. Document Conventions

This document use following conventions	Description
Main Section Titles	Font: Calibri Face: Bold Size: 14 Line Spacing 1.5
Sub Section Titles	Font: Calibri Face: Bold Size: 12
Other Text Explanations	Font: Calibri Face: Normal Size: 12
DB	Database
ISP	Internet Service Provider
UML	Unified Model Language
HTTP	Hyper Text Transfer Protocol
FTP	File Transfer Protocol
SSL	Secure Socket Link
API	Application Programming Interface
TLS	Transport Layer Security
TCP/IP	Transmission Control Protocol / Internet Protocol
SSL	Secured Socket Layer
ASP	Active Server Page
MS-SQL	Microsoft Structured Query Language
SRS	Software Requirement and Specifications
DOB	Date of Birth
KB, GB	Kilobyte, GigaByte
SKA	Superior Knowledge Archives

2.1.3. Intended Audience and Reading Suggestions

Intended Audience:

This project is an alive and working prototype for the SKA system and it is restricted within the university premises. This system has been implemented under the guidance of a supervisor and team understanding. This project is useful for the students and teachers.

Following are the categorized intended audience that can read the document to develop a clear understanding of the project.

1. System Analysts
2. System Architects
3. Developers
4. Project Managers
5. Users (Students and Teachers)
6. Testers
7. Documentation writers

Reading Suggestions:

Following are reading suggestions for the intended audience to read their respective portion to easily understand the document in each type.

Audience type	Reading Suggestions
System analysts	Chapter 2: SRS Chapter 3: Use case Analysis
System Architects	Chapter 4: System Design
Developers	Chapter 2: SRS Chapter 4: System Design Chapter 5: Implementation
Project managers	Complete Document
Users (Students and CS&IT department Staff)	Chapter 2: User Documentation
Testers	Chapter 5: Implementation
Documentation writers	Complete Document
Admin Guidelines	Chapter 6: Testing
User Manuals	Appendix

2.1.4. Product Scope

In this modern era of technology paperwork is near to terminate. Now a day's study material is delivered through different electronic media (i.e. projectors, smart boards) using different mediums (i.e.PPT, E-books) so we decided to take problem statement as an opportunity to develop a dedicated platform for the university to solve this problem.

This project facilitates superior university students and staff to share knowledge by proving website based dedicated solution. This project will be complete by fall semester i.e. August 2018.

Students must register itself into the system so they can: download and view lectures, assignments, and final year project reports, read e-books online, chat with each other and continue existing projects and communicate with each other via one to one chat feature. Students can send queries to the teacher to seek help form them. They can also upload previous projects source code via Submission Module (under open source license) and use virtual classes to get data form specific class teacher.

Stakeholders

Following are the people or systems identified as the stakeholders of our project

Title	Authority and Roles
Project Sponsor	Authorize the project
Department Sponsor	Approve the project
Project Manager	Manage the overall project
Supervisor	Supervise the project and team
Admin (as Super User)	Have all rights to access and modify system features
Teacher as End-users	Have rights to modify specific system features
Student as End-users	Can access system but cannot modify the system

2.1.5. References

1. **Feature Achievement Mechanism:** attached as Appendix E: FAM
2. **Project Management Plan:** attached as Appendix F: PMP with the report
3. **Project:** Superior Knowledge Archives

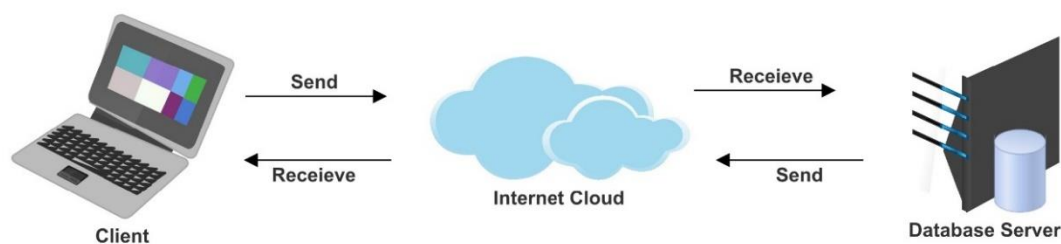
2.2. Overall Description

2.2.1. Product Perspective

Our system SKA is a website based knowledge sharing portal that stores the following information.

- Study and helping material uploaded by teachers for students.
- Store the details and code of projects uploaded by students.
- All accounts and information of uploaded files, account management and manipulations details and rights for admin.

SKA is a follow-on member of web-based knowledge sharing portals and replacement to some existing system like social media site and groups.



2.2.2. Product Functions

1. Student registration From

User registration form provides functionality that allows students to register into the system to access the recourse available at the website by submitting the registration form with following fields

- Student name
- Student username
- Student email
- Student password
- Student DOB
- Gender

- Registration date
- Contact no
- City
- Image

2. Login form

Login/logout form provides functionality that is designed for the user to login into the system who have registered to our system to access the portal with their specific rights so they can perform their appropriate task i.e. as Student, as Admin, as a teacher by using its valid credentials.

3. Account Recovery Function

Account recovery function provides functionality that can be used in case if a user forgets their password, so they can recover it by using forget password link by using their email account.

4. Search with filters Module

Search with filters provides functionality that allows students to search the available study material available at the site using the search bar. A student can also apply search filters using drop-down options and radio buttons to search for the most relevant material.

5. View Files

View files fun provide functionality that allows students to view available documents i.e. study material uploaded by teacher and projects uploaded by students at the SKA interface.

6. Download Function

Download function provides functionality that allows students to download assignments templates, E-Books, class lectures & presentations, research papers, helping Documents, final year projects reports, previous projects or code (Under Open Source license).

7. Upload Function

Upload function provides functionality that allows teachers to upload assignments, E-Books, class lectures & presentations, research papers, helping documents for students and students to upload their final year projects code (Under Open Source license).

8. Live Chat Module

Chat module provides functionality that allows Students to chat with each other to seek help and guidance from each other via the chat box.

9. Virtual Classes Module

Virtual Classes module provides functionality that allows teachers to create the virtual classes for students to share their class material with the students. It also allows students to get study material form specific class teacher.

10. Project Submission Module (under open source license)

This module allows students to upload their projects codes and documentation. Students have to fill the details form and upload the source code of their project to upload it on the website.

11. Teacher Panel

This function provides administrative functionalities to the teacher that allow them to perform file management activities. It allows the teacher to delete, modify, upload new files and publish it to the website. The teacher can also delete and modify projects of students and also manage the student queries to help them. They can also create virtual classes for their students to share the study material with them.

12. Admin Panel

This function provides administrative functionalities to the Super User of the system (i.e. Admin). It provides the admin with whole control of the system. Admin can perform account management activities like (Create, Delete, View, Edit accounts and Print details) and file management activities like (Create Delete Update Modify) data of the system. Admin can manage (view, delete edit) the virtual classes created by teachers. Admin can also manage the queries of system users to help and resolve any problem and manage the virtual classes created by teachers.

2.2.3. User Classes and Characteristics

User Classes	Characteristics	Frequency of use	Privilege Level	Experience
Admin (Superuser)	Manage and control System main functionalities through Admin Panel for Superuser	High	High	Expert
Teacher	Manage Teachers roles and responsibilities through Admin Panel for Teacher	High	Medium	Average
Student	Utilize system features and functions	High	Low	Below Average

2.2.4. Operating Environment

Hardware platform:

PC/Laptop/Cellphone/Tablet PC's.

Operating system and versions:

Windows 7/8/8.1/10.

Applications:

Web Browsers: Google Chrome.

Other software components:

Adobe flash player and valid digital network certificates.

2.2.5. Design and Implementation Constraints

Following are the design and implementation constraints for website SKA

Regulatory policies:

Global Ethical Cyber rules

Hardware limitations:

The response time of less than 1 minute, Minimum RAM 2GB

Interfaces to other applications:

Web API's communications

Specific technologies:

Microsoft ASP.NET technology

Tools and databases to be used:

Edraw Max7.3 for UML Modelling with 2.3.

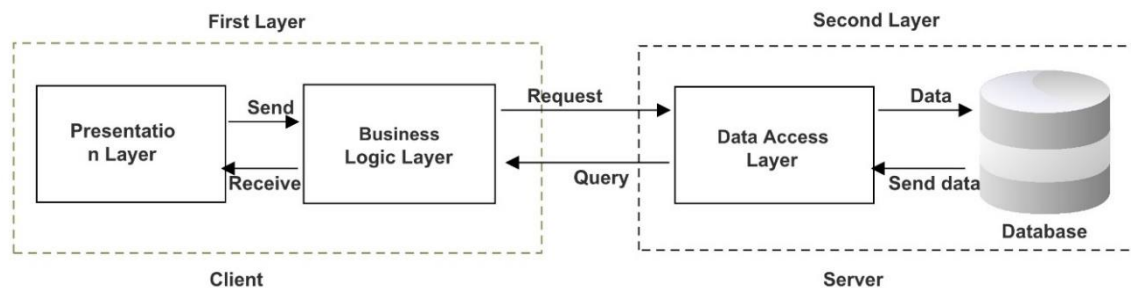
BlazeMaster (Online automation testing tool).

Language requirements:

C# and .Net updates above 3.5.

Communications protocols:

HTTPS protocols, ISP, Web Services

**Security considerations:**

Secure data transfer over HTTPS protocols.

Programming standards:

Maintainable well commented Code.

2.2.6. User Documentation

1. User manual attached appendix.
2. Admin User Documentation attached as an appendix.
3. Testing Report attached as an appendix.
4. Final Report.

2.2.7. Assumptions and Dependencies

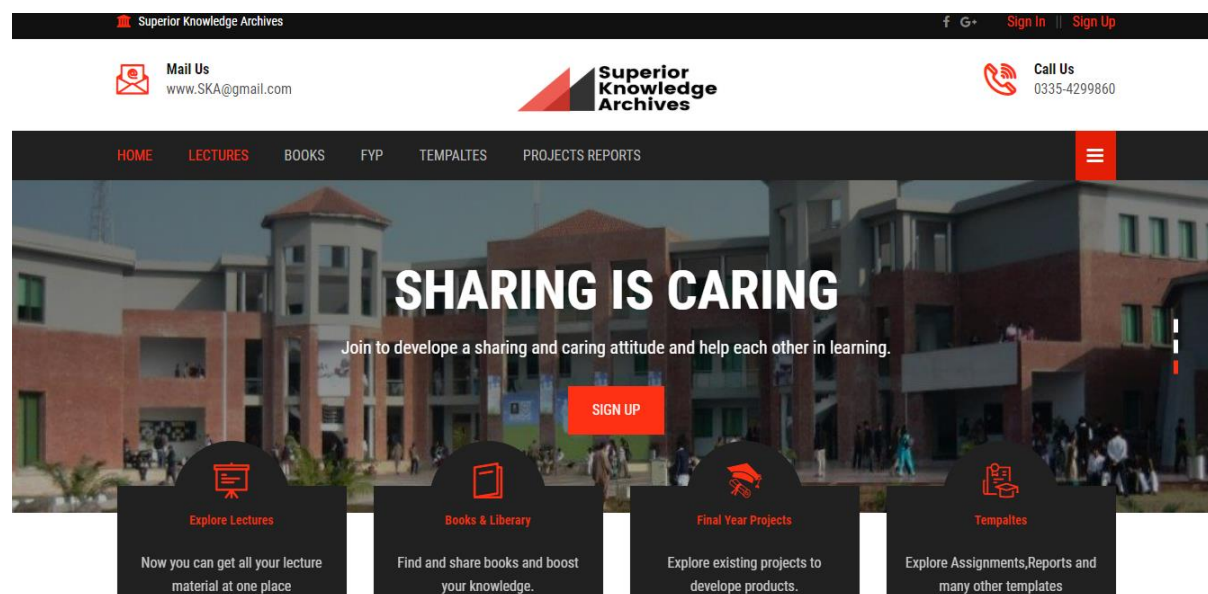
SKA is a web-based knowledge sharing portal due to web-based nature of project following are the assumption and dependencies that could affect the system requirements and limits functionality:

1. SKA is be deployed on a web server so due to unavailability of web server system may not be deployed live or not available during downtime or server maintenance activities.
2. Obsolete devices with outdated systems and digital certificate may not be able to access the system.
3. Common internet issues may also cause system components unreachable.
4. Hardware and software not meeting the above requirements may not support the system functionality.
5. Application and other software components may not work properly on different devices.
6. An unexpected change in the major component of the project may also affect system functionality.

2.3. External Interface Requirements

2.3.1. User Interfaces

Web Interface:



HOME
LECTURES
BOOKS
FYP
TEMPALTES
PROJECTS REPORTS
☰

material at one place

your knowledge.

develop products.

many other templates

Search Book

Name
 Section
 Description

SearchingALL || 10 Records found

File Name	Section	Description	Download
shiraz	bbb	hhhh	Download
1aw.jpg	302	Lecture 5(weeek4)	Download
7a.css	420	aaa	Download
2a.css	450	Lecture 5(weeek4)	Download

HOME
LECTURES
BOOKS
FYP
TEMPALTES
PROJECTS REPORTS
☰

Superior Knowledge Archives

SKA a knowledges sharing platform for superior students. Our team goal is to reunite the elegance of unique.

RECENT POSTS

28 June

New Projects has been uploaded

28 June

New Lectures and books are now available

QUICK LINKS

Lectures

Books

FYP

Tempaltes

Projects Reports

Map

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Admin Panel Interface:

The Admin Panel Interface features a sidebar with the following categories and items:

- ACCOUNTS**
 - Manage Accounts
- UPLOADED FILE**
 - Manage Uploaded Book
 - Manage Uploaded Lecture
 - Manage Uploaded Template
 - Manage Uploaded FYP
 - Manage Uploaded Report
- STUDENT UPLOADED PROJECTS**
 - Manage Student Projects
- VC TEACHERS**
 - Manage VC Teachers
- SKA TEACHERS**

The main dashboard displays the following statistics:

- Total Accounts: 3
- Admin Accounts: 1
- Teacher Account: 1
- Student Account: 1
- Books: 1
- FYP: 0
- Lectures: 0
- Templates: 0
- Reports: 0
- Student FYP: 1
- VC Teacher: 1
- VC Files: 0
- VC Classes: 1

Teacher Panel Interface:

The Teacher Panel Interface features a sidebar with the following categories and items:

- FILES**
 - Manage Files
- UPLOADED FILE**
 - Manage Uploaded Book
 - Manage Uploaded Lecture
 - Manage Uploaded Template
 - Manage Uploaded FYP
 - Manage Uploaded Report
- FYP STUDENT PROJECTS**
 - Manage Student Projects
- STUDENT QUERIES**
 - Manage Student Queries
- VIRTUAL CLASSES**

The main dashboard displays the following statistics:

- Books: 1
- FYP: 0
- Lectures: 0
- Templates: 0
- Reports: 0
- Student FYP: 1
- Student Query: 0

Student Queries

Buttons: Copy, CSV, Excel, PDF, Print

Search: _____

Teacher Name	Student Name	Email	Message	Addon
No data available in table				

Showing 0 to 0 of 0 entries

Previous Next

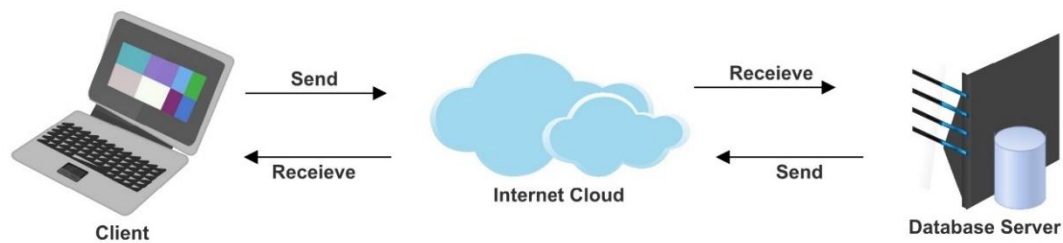
2.3.2. Hardware Interfaces

Hardware Requirements for User:

Laptop PC with the minimum i3 processor and 2 GB RAM.

Tablet PC with the minimum quad-core processor and 1 GB RAM.

Smart Phone with a quad-core processor and 1 GB RAM.



Hardware Requirements for hosting the website:

2.3.3. Software Interfaces

Software interface of SKA is based on client-server software architectural pattern and following software interfaces.

Software components:

Microsoft Visual Studio 2015 for web development in C#.

Microsoft SQL Server 2014 for databases.

Adobe flash player and valid network certificates.

Web Browsers: Google Chrome.

Databases:

Microsoft SQL server 2014 Database.

Operating systems and versions:

Windows 7/8/8.1/10.

Libraries:

System.Data

System.Web

System.Collections

System.Data.SqlClient

System.Drawing

System.IO

System.Text

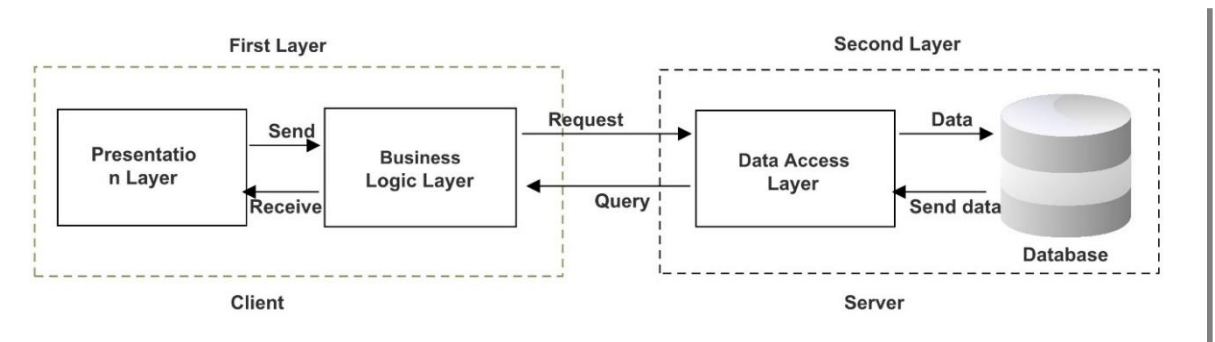
System.Threading

System.Web.Services

Integrated commercial Components:

Web API's for the google map and location feature

Data is shared on the client-server software architectural pattern. SKA data will communicate via three-tier architecture as a figure showing below.



2.3.4. Communications Interfaces

Web browser:

Google Chrome.

Network server communications protocols:

HTTPS, FTP and TCP/IP for client-server communication over the internet.

Electronic forms:

Web form in ASP.Net.

Communication standards:

HTTPS, TCP/IP and FTP communication standards should be implemented.

Communication security:

HTTPS communication security is based on Secured Socket Layer or Transport Layer Security.

Encryption issues:

HTTPS communication security based on Secured Socket Layer (SSL) or Transport Layer Security (TLS) may not achieve over public internet networks.

Data transfer rates:

Recommended data transfer rate

Client Side: 150 visitors * 500KB * 5 pages * 30 days
=11250000KB approx. 10 GB

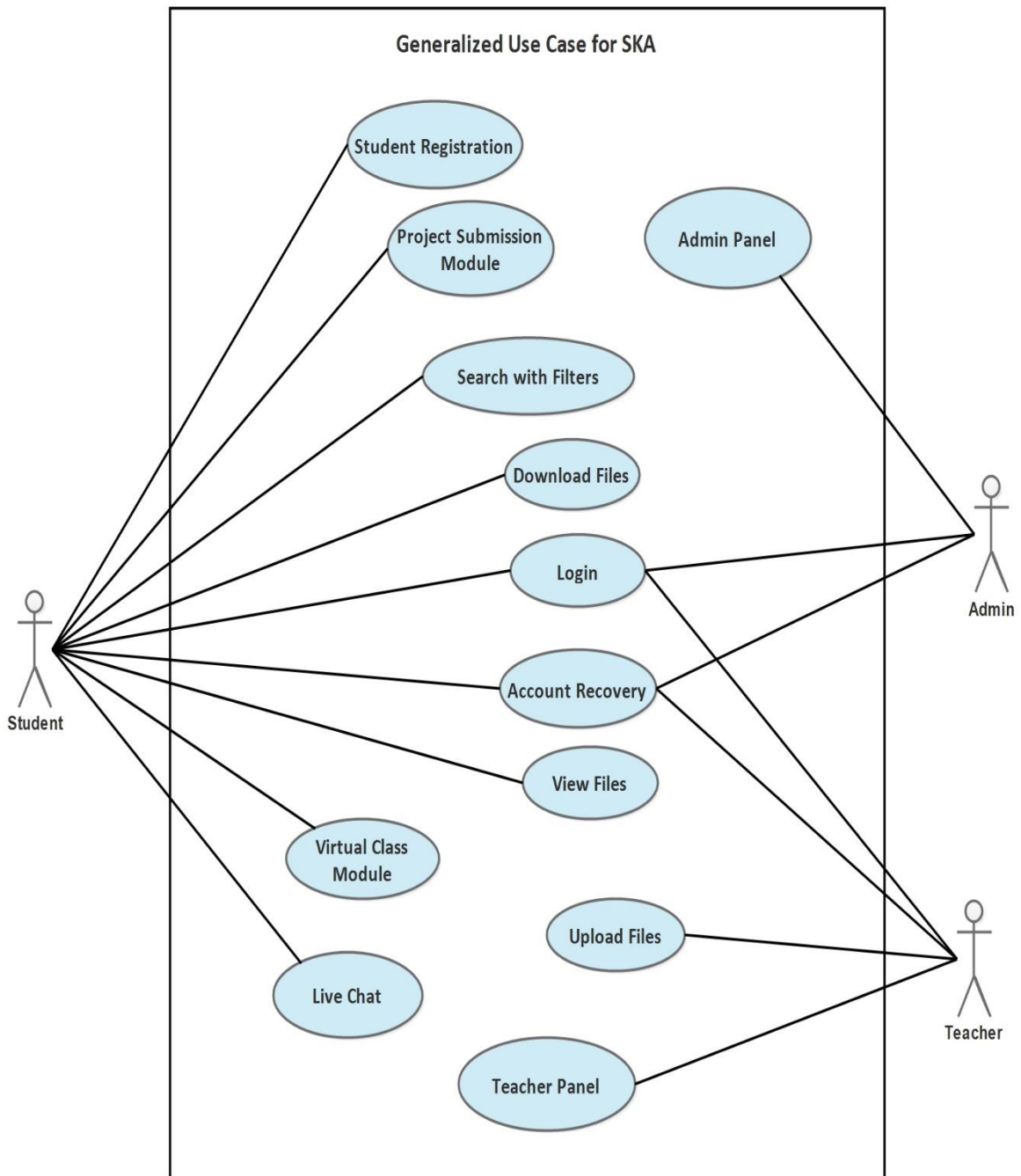
Server Side: 150 visitors * 500KB * 5 pages * 30 days
=11250000KB approx. 10 GB

Note: Assumptions based calculations accuracy may vary from original figures at the server side.

Synchronization mechanisms:

- Data should be synchronized from client to its appropriate domain and hosting server.

2.4. System Features



2.4.1. Student Registration Form

2.4.1.1. Description and Priority

Description:

User registration form provides functionality that allows students to register into the system to download the recourse available at the website by submitting the registration form with following fields

- Student name
- Student email
- Student password
- Student DOB
- Gender
- Registration date
- Contact no
- City
- Image

Priority: High.

2.4.1.2. Stimulus/Response Sequences

The student must enter website link (www.knowledgearchives.com) in web browser which navigates student to welcome screen of SKA. At welcome screen student fill the registration form to register into the system to download the study material and upload projects code.

2.4.1.3. Functional Requirements

REQ-SF1-1: Student must enter proper website address to visit portal.

REQ-SF1-2: Student must fill the registration form to get register into the portal to download the study material and to upload project code.

REQ-SF1-3: Student must be navigated to welcome screen of SKA after getting register into the portal.

2.4.2. Login Form

2.4.2.1. Description and Priority

Description:

Login form provides functionality that is designed for the user to login into the system who are already registered in our system to access the portal with their specific rights so they can perform their appropriate task i.e. as Student, as Admin, as a teacher by using its valid credentials.

Priority: High.

2.4.2.2. Stimulus/Response Sequences

After registration user can click the login link to login into the system by entering valid credentials. This should allow the user to navigate to home screen or admin panel based on its account nature and access rights. If in case the user forgets its credential it can recover its account by using forget password function available on the login screen.

2.4.2.3. Functional Requirements

REQ-SF2-1: User must be already registered in the portal with specific rights (i.e. student teacher, admin).

REQ-SF2-2: User must be navigated to admin panel of superuser, if it enters admin account credentials.

REQ-SF2-3: User must be navigated to admin panel for teachers, if it enters teacher account credentials.

REQ-SF2-4: User must be navigated to welcome screen of SKA, if it enters student account credentials.

REQ-SF2-5: User must enter valid credentials to access portal with its specific rights.

REQ-SF2-6: If the user forgets its credentials, the user can recover its account through forget password function.

2.4.3. Account Recovery Function

2.4.3.1. Description and Priority

Description:

Account recovery function provides functionality that can be used in case if a user forgets their password, so they can recover it by using a forgotten password link.

Priority: Medium.

2.4.3.2. Stimulus/Response Sequences

If in case the user forgets its credentials, it can recover its account by using forget password function available on the login screen. The user has to provide its valid email id to receive a token to change its password.

2.4.3.3. Functional Requirements

REQ-SF3-1: User must have a valid email account for account recovery.

REQ-SF3-2: User must press the forget password button to recover the account.

REQ-SF3-3: User must fill the account recovery form to recover the account.

REQ-SF3-4: User must verify its identity through entering token code send to its email for confirmation to recover the account.

REQ-SF4-5: User should able change or recover its password after verification of account.

2.4.4. Search with filters Module

2.4.4.1. Description and Priority

Description:

Search with drop-down filters provides functionality that allows students to search the available study material available at the site using the search bar. A student can also apply search filters using drop-down and radio buttons options to search the most relevant material.

Priority: Medium.

2.4.4.2. Stimulus/Response Sequences

At SKA interface the user can navigate to search bar to search the study material. It allows the user to enter search keywords and apply the search filter (i.e. by name, by category) to search the most relevant data he/she looking for efficiently. This displays the available data according to search filter and keywords on the interface in a tabular format.

2.4.4.3. Functional Requirements

REQ-SF4-1: User must enter a search keyword.

REQ-SF4-2: User must apply search filter (i.e. by name, by category).

REQ-SF4-3: User must press the search icon button to execute the search query.

REQ-SF4-4: System must display relevant material according to search keywords and filter in a tabular format.

REQ-SF4-5: System must display a message if no data found according to search keyword and filter.

2.4.5. View Files

2.4.5.1. Description and Priority

View files fun provide functionality that allows students to view available documents i.e. study material uploaded by teacher and projects uploaded by students at the SKA interface.

Description:

Priority: Medium.

2.4.5.2. Stimulus/Response Sequences

The system must display some recent files at the interface at the appropriate section i.e. lectures, assignments, book uploaded by teachers and project uploaded by students at SKA interface.

2.4.5.3. Functional Requirements

REQ-SF5-1: Teacher must upload some files to display at the interface in its relevant section.

REQ-SF5-2: Student must their project to display them on the website for other students.

2.4.6. Download Function

2.4.6.1. Description and Priority

Download function provides functionality that allows students to download assignments templates, E-Books, class lectures & presentations, research papers, helping Documents, final year projects reports, previous projects or code (Under Open Source license).

Description:

Priority: Medium.

2.4.6.2. Stimulus/Response Sequences

SKA interface provides students with available study material uploaded by teacher and projects uploaded by students. If a student wants to download any study material or project student can click on the download button and the selected file will be downloaded to the student computer.

2.4.6.3. Functional Requirements

REQ-SF6-1: Student must have the privilege to download files (i.e. must be registered into the system or logged in if already registered).

REQ-SF6-2: Student must choose the file he/she wishes to download and press the download button to download the file(s).

2.4.7. Upload Function

2.4.7.1. Description and Priority

Description:

Upload function provides functionality that allows teachers to upload assignments, E-Books, class lectures & presentations, research papers, helping documents for students and allow students to upload their final year projects code (Under Open Source license).

Priority: High.

2.4.7.2. Stimulus/Response Sequences

A student can upload their FYP code after filling the code submission form available at the SKA interface on code submission section of the website.

The teacher can upload the study material for students using its admin panel and publish it for the students at the SKA interface on the relevant section of the website.

2.4.7.3. Functional Requirements

REQ-SF7-1: User must be logged in into the system with its rights.

REQ-SF7-2: Student must upload the valid FYP code in specific format (i.e. .rar, .text, .pdf) if it fill the code submission form and have valid credentials of student.

REQ-SF7-3: Teacher must upload the study material for the student, if choose valid files to upload in a specific format (i.e. .text, .pdf, .txt, .ppt) if it fills the file upload form and have valid credentials of the student.

REQ-SF7-4: System must display the uploaded file at the interface of SKA at the specific section (i.e. FYP in FYP, Lectures in Lectures, and Books in Books section).

2.4.8. Live Chat Module

2.4.8.1. Description and Priority

Description:

Chat module provides functionality that allows Students to chat with each other to seek help and guidance from each other via the chat box.

Priority: Medium.

2.4.8.2. Stimulus/Response Sequences

Students must click on chat box to chat with other, after that student select enter his name to start a chat thread. Another person also has to do the same to initiate the chat to communicate with each other.

2.4.8.3. Functional Requirements

REQ-SF8-1: User must click chat box and enter his name.

REQ-SF8-2: User must click person name to initiate a chat.

REQ-SF8-3: Another student must be active in order to send and receive messages.

REQ-SF8-4: System must allow students to chat with each other via the chat box.

REQ-SF8-5: System must allow students to send and receive files in via the chat box.

2.4.9. Virtual Classes

2.4.9.1. Description and Priority

Description:

Virtual Classes module provides functionality that allows the teacher to create the virtual classes for students and upload their class material with the students. It also allows students to get study material from specific teacher by using the class name and password provided by the teacher.

Priority: Medium.

2.4.9.2. Stimulus/Response Sequences

The teacher can create the virtual class for students and upload the study material for students. Teacher provide students an class name and password to access the specific class to get their study material. Students can access the virtual class by using the credentials provided by the teacher.

2.4.9.3. Functional Requirements

REQ-SF9-1: System must allow the teacher to create the virtual classes.

REQ-SF9-2: Teacher must enter the class name and set a password.

REQ-SF9-3: Teacher must register virtual class to create it.

REQ-SF9-4: Teacher can upload files in a specific registered class.

REQ-SF9-5: Teacher views and deletes the virtual class.

REQ-SF9-6: Students can access the virtual classes by using valid name and password provided by the teacher.

2.4.10. Project Submission Module (under open source license)

2.4.10.1. Description and Priority

Description:

This module allows students to upload their projects codes and documentation. Students have to fill the details form and upload the source code of their project to upload it on the website.

Priority: High.

2.4.10.2. Stimulus/Response Sequences

The student must have to fill the code submission form and provide details of its project to upload the valid project source code in specific format mention on the upload form. After filling the form and choosing the file for upload student must click the upload project button to upload the project in the system database and it will be displayed in the FYP code section.

2.4.10.3. Functional Requirements

REQ-SF10-1: Student must fill the code submission form to provide the details of the project.

REQ-SF10-2: Student must choose the project file in a specific format to upload it to the website at the FYP Code section.

REQ-SF10-3: Student must press upload project button available at the interface to upload the project code.

REQ-SF10-4: System must display the project uploaded by the students in FYP/Project Section of the website.

2.4.11. Teacher Panel

2.4.11.1. Description and Priority

Description:

This function provides administrative functionalities to the teacher that allows them to perform file management activities. It allows the teacher to delete, modify, upload new files and publish it to the website. They can delete and modify projects of students. The teacher can create virtual classes for students to share study material its class students and also manage student's queries to help them.

Priority: High.

2.4.11.2. Stimulus/Response Sequences

The teacher can upload study material (i.e. lectures, books, assignment, research papers etc.) for the students and fill the form to add details of the file(s). This form will get the details about the uploaded file and its category to which the file belongs in order to upload it to its specific section of the website.

The teacher can also delete the files uploaded by the students that are incomplete or unusable. They can also create a virtual class and upload the study material for its class students and also manage the student's queries to help them.

2.4.11.3. Functional Requirements

REQ-SF11-1: Teacher must have valid credentials to access the admin panel for teachers.

REQ-SF11-2: Teacher can view, download (Excel, PDF), print and copy the details of all study material i.e. (Books, FYP, Lectures, Templates, Reports, student FYP & Student Queries).

REQ-SF11-3: Teacher can search the file and data using the search bar.

REQ-SF11-4: Teacher can upload files i.e. (books, FYP, lectures, reports, templates) and add a description of the file in file upload form.

REQ-SF11-5: Teacher can manage (View, Delete, Update) uploaded files i.e. (books, FYP, lectures, reports, templates) using teacher panel.

REQ-SF11-6: Teacher can manage student's projects (view, Delete) through teacher's panel.

REQ-SF11-7: Teacher can manage (View, Delete) the student's queries to help them.

REQ-SF11-8: Teacher can manage (Create, View, Delete) virtual classes.

REQ-SF11-9: Teacher can manage (Upload, Delete, View) virtual classes files.

REQ-SF11-10: System must provide a quick link button to access the links easily.

REQ-SF11-11: System must allow teacher appropriate functionality with easy methods.

2.4.12. Admin Panel

2.4.12.1. Description and Priority

Description:

This function provides administrative functionalities to the Super User of the system (i.e. Admin). It provides the admin with whole control of the system. Admin can perform account management activities like (Create, Delete, View, Edit accounts and Print details) and file management activities like (Create Delete Update Modify) data of the system. Admin can manage the user queries and manage the virtual classes created by teachers.

Priority: High.

2.4.12.2. Stimulus/Response Sequences

Super User (Admin) can perform the all administrative activities for our system. Admin can create an account for the teacher. Admin can register the student. Admin can manipulate (i.e. delete, create, update, edit, view details) of existing accounts or new accounts and can manage the files available at the website.

2.4.12.3. Functional Requirements

REQ-SF12-1: Admin must have valid credentials to access the admin panel.

REQ-SF12-2: Admin can view, download (Excel, PDF), print and copy the details of all admin, teachers and students accounts and study material i.e. (Books, FYP, Lectures, Templates, Reports, student FYP, user queries, virtual classes and virtual classes files).

REQ-SF12-3: Admin can search the files and data using the search bar.

REQ-SF12-4: Admin can manage (View, Create, Delete, Edit) accounts of admin, teachers and students through the admin panel.

REQ-SF12-5: Admin can manage (View, Delete, Update) uploaded files i.e. (books, FYP, lectures, reports, templates) using admin panel.

REQ-SF12-6: Admin can manage (View, Delete, Update) uploaded FYP of both students and teachers.

REQ-SF12-7: Admin can manage (View, Add, Delete, Edit) SKA teachers through the admin panel.

REQ-SF12-8: Admin can manage (View department, Add new department) departments for student's projects upload if it doesn't exist in the system.

REQ-SF12-9: Admin can manage (View, Delete) contact us queries of the users of the system to resolve the problem and to help them.

REQ-SF12-10: Admin can manage (Create, View, Delete) virtual classes.

REQ-SF12-11: Admin can manage (Upload, Delete, View) virtual classes files.

REQ-SF12-12: System must display the file uploaded by a teacher at the specific category that teacher has chosen while uploading the file.

REQ-SF12-13: System must provide a quick link button to access the links easily.

REQ-SF12-14: System must allow teacher appropriate functionality with easy methods.

2.5. Other Nonfunctional Requirements

2.5.1. Performance Requirements

Following are the performance requirements for our system SKA:

Response Time:

0.8 second is about the limit for having the user feel that the system is reacting instantaneously, meaning that no special feedback is necessary except to display the result.

Error Rate: Acceptable error rate allowed during the measurement of the response times.

Workload: Sever load distribution over distributed environment during heavy user's traffic.

Measurement Period: The period over which to measure the response time. This is particularly important where workload varies over the day.

Scalability:

It is possible to scale up the resource if the workload is higher form the web service provider.

Platform: Should it not be possible to test on the real production hardware any allowance for testing on test hardware needs to be stated.

2.5.2. Safety Requirements

For IEEE and IOS safety Requirement for web-based project refer to following links:

<http://standards.computer.org/sesc/>

2.5.3. Security Requirements

Following are the security requirements for SKA:

- Sessions will be used to manage user sessions to implement security for an account.
- HTTPS communication security based on Secured Socket Layer (SSL) or Transport Layer Security (TLS) may or may not achieved over public internet networks.

2.5.4. Software Quality Attributes

Following are the quality characteristics of the product that are implemented to achieve system quality goals.

- **Adaptability:** Adaptive to different operating environment
- **Availability:** 24*7 availability
- **Correctness:** Content will be short, legible and correct.
- **Flexibility:** Can be used on multiple hardware's like Laptop PC Tablet PC and Smart Phones
- **Maintainability:** System will be easy to maintain for other.
- **Reliability:** System must be reliable for the user.
- **Reusability:** Can be reused for different but for the same purpose.
- **Robustness:** Fast recovery from downfall.
- **Testability:** System should be easy to test.
- **Usability:** Easy to use and understand for the user of the system.

2.5.5. Business Rules

Following are the business rules for SKA:

- The website should load quickly
- Security from hackers is important.
- Use of .edu and unless there really is no alternative don't use a DASH / Hyphen in between words in a domain name.
- Websites do break due to conflict with one of the plugins. With regards to internal and external links becoming broken which may affect business rules.

2.6. Other Requirements

Database requirements:

The hosting server must support the MS SQL 2014 database architecture.

Legal requirements:

Legal requirements that should fulfill by the cyber act of Pakistan National Law and Pakistan Telecommunication Authority.

Chapter 3

Use Case Analysis

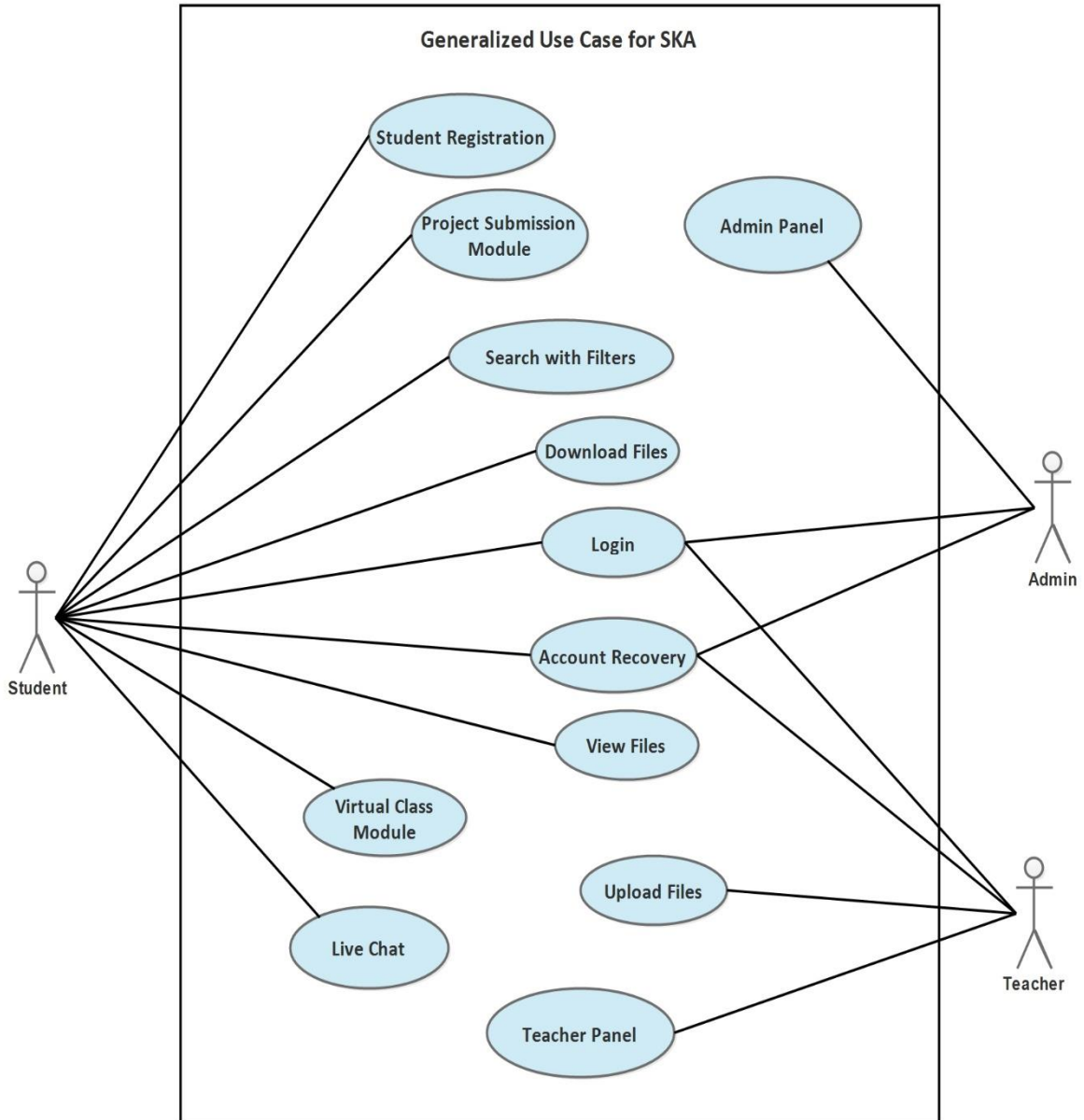
Chapter 3: Use Case Analysis

The System SKA is developed by using the iterative and incremental SDLC development process. Each project deliverable is taken as an increment to the whole system i.e. SKA. Following are system analysis of our project SKA with estimated durations for each deliverable.

Task Name	Duration	Start	Finish
Project Life Cycle	181 days	Mon 04-12-17	Sun 12-08-18
Requirement Gathering	5 days	Mon 11-12-17	Fri 15-12-17
Meeting	1 day?	Mon 11-12-17	Mon 11-12-17
Literature Review	1 day?	Mon 11-12-17	Mon 11-12-17
Analysis	7 days	Mon 22-01-18	Tue 30-01-18
Gap analysis	1 day?	Mon 22-01-18	Mon 22-01-18
Documentation	50 days	Mon 08-01-18	Fri 16-03-18
SRS	30 days	Mon 05-02-18	Fri 16-03-18
SDD	20 days	Mon 08-01-18	Fri 02-02-18
FAM	7 days	Mon 15-01-18	Tue 23-01-18
PMP	7 days	Mon 22-01-18	Tue 30-01-18
Test Case	7 days	Mon 29-01-18	Tue 06-02-18
User Manuals	9 days	Mon 05-02-18	Thu 15-02-18
Implementation	151 days	Mon 01-01-18	Mon 30-07-18
Student Registration Form	7 days	Mon 05-02-18	Tue 13-02-18
Login Form	7 days	Mon 19-02-18	Tue 27-02-18
Account Recovery Function	7 days	Wed 28-02-18	Thu 08-03-18
Search with filter	10 days	Fri 09-03-18	Thu 22-03-18
View Files	10 days	Fri 23-03-18	Thu 05-04-18
Download Function	7 days	Fri 06-04-18	Mon 16-04-18
Upload Function	7 days	Tue 17-04-18	Wed 25-04-18
Live Chat Module	15 days	Thu 26-04-18	Wed 16-05-18
Virtual Class Module	10 days	Thu 17-05-18	Wed 30-05-18
Project Submission	10 days	Mon 11-06-18	Fri 22-06-18
Admin Panel	15 days	Mon 25-06-18	Fri 13-07-18
Teacher Panel	7 days	Mon 16-07-18	Tue 24-07-18
Testing and Debugging	7 days	Mon 30-07-18	Tue 07-08-18
Error Correction	1 day?	Mon 30-07-18	Mon 30-07-18
Deployment	5 days	Tue 07-08-18	Sun 12-08-18
Live Hosting	1 day?	Tue 07-08-18	Tue 07-08-18
Closure	0 days	Sun 12-08-18	Sun 12-08-18

3.1. Use Case Model

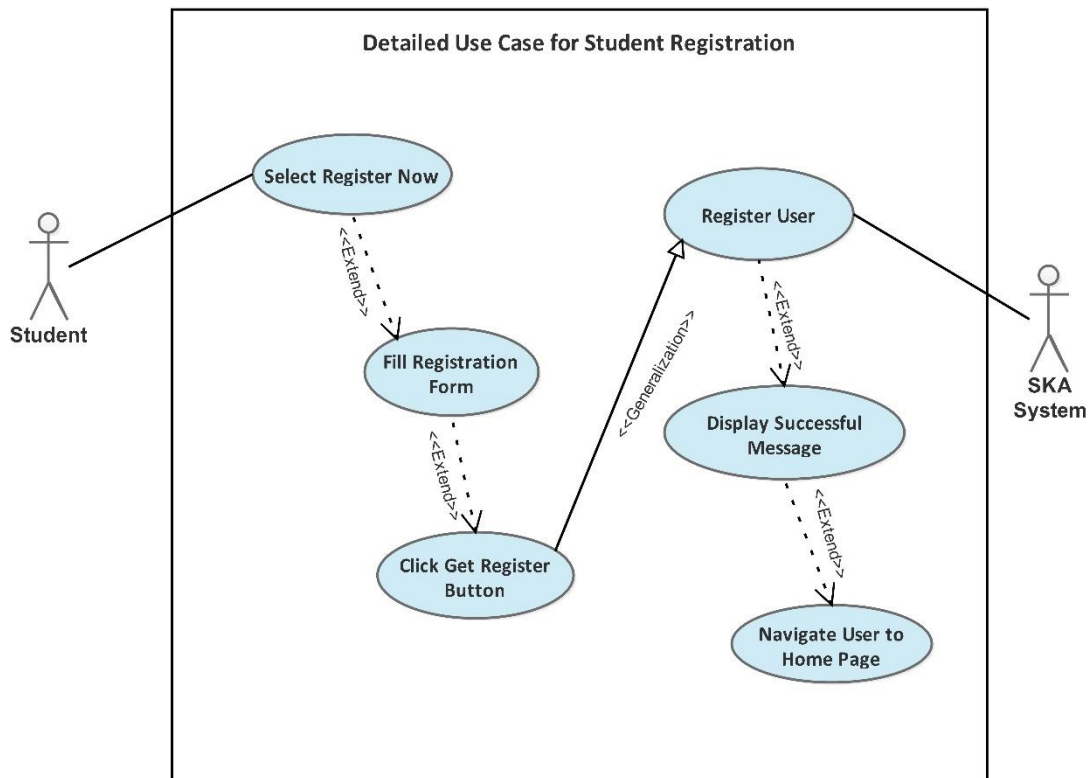
Generalized Use Case Model for SKA:



3.2. Use Case Descriptions

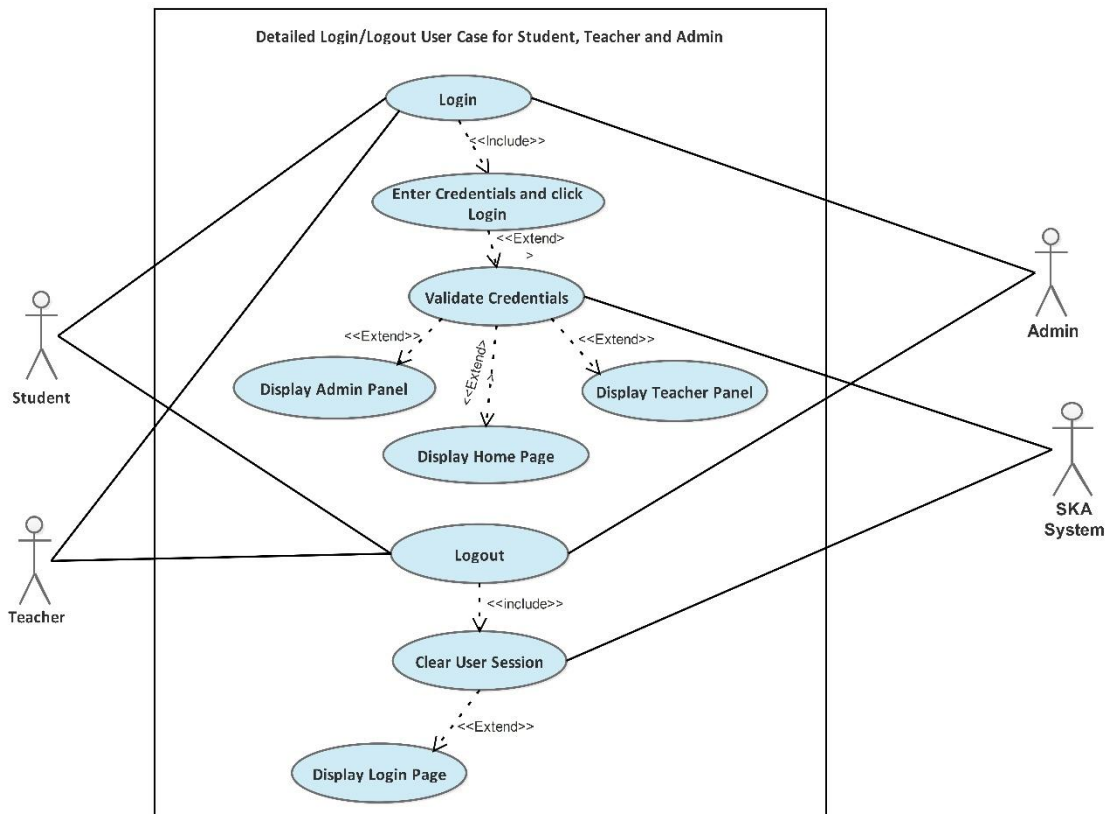
In this section of chapter 3 we have described the detailed use cases for each system functionality that may include the sub-use cases to complete system functionality. This helps the developer and reader to clearly understand the system feature in detail that how the functionality will work. We also have added use case description table that enables the reader to clearly understand the feature and the sequence to develop that feature right.

Fully dressed Use Case Model for Student Registration:



Use Case description Table for Student Registration	
Use Case ID	UC-001
Use Case Name	Student Registration
Priority	High
Primary Actor	Admin
Secondary Actor	Student
Trigger	Students have to register into the system
Description	In order to access the portal user's i.e. Student has to register itself into the system by submitting the registration form available on SKA interface by clicking login link.
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. Enter the web address to access the portal. 2. On welcome screen click "Login". 3. Fill the registration form. 4. Click "Register" 5. Receive Success Message by the system.
Pre-Condition	<p>The student must enter the web address in the browser to access the portal.</p> <p>The student must have a valid email id.</p>
Post Condition	The student will be registered into the system.
Success Scenario	If student enter valid information as mentioned on web form then the system will successfully register the student
Abort Scenario	If a student fills an incomplete form system will not register user.

Fully dressed Use Case Model for Login and Logout:

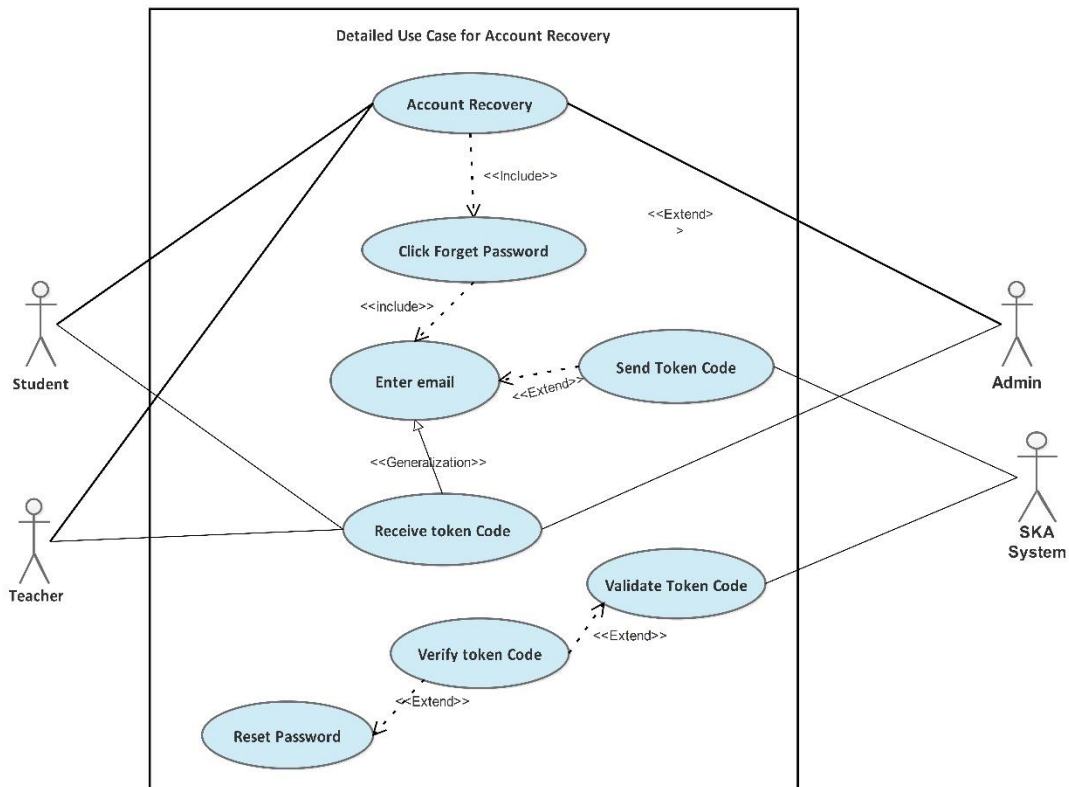


Use Case description table for Login Form	
Use Case ID	UC-002
Use Case Name	Login
Priority	High
Primary Actor	Admin, Teacher, Student
Secondary Actor	Admin, Teacher, Student
Trigger	User want to login into the system to perform its appropriate activities i.e. as Admin, Teacher, Student
Description	User's either (Student, Teacher or Admin) must be registered into the system to log in. The user must enter username and password then the system will verify the credentials and provide system access if valid another error message will be displayed.

	If the user forgets its username or password it can recover its account by using account recovery option by providing essential information required at account recovery option.
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. Click “Login” link on the portal. 2. Enter username and password. 3. If credentials are valid system will navigate the user to the appropriate interface. 4. If credentials are not the valid system will display an error message. 5. If the user clicks “Account Recovery”to navigate the user to account recovery page.
Pre-Condition	<p>The user must be registered into the system.</p> <p>If the user clicks “Account Recovery” link navigates the user to account recovery page.</p>
Post Condition	<p>The user can access the portal and perform basic activities on the portal.</p> <p>The user can recover its account.</p>
Success Scenario	<p>If username and password are valid users can access the system.</p> <p>If the user provides valid information mentioned on account recovery page user can successfully recover its account.</p>
Abort Scenario	<p>If username and password are incorrect users will be referred to an account recovery option and if the account doesn’t exist in the system database it will be referred to get register first.</p> <p>If the user provides invalid information mentioned on the account recovery page system will not allow recovering the account.</p>

Use Case description table for Logout	
Use Case ID	UC-003
Use Case Name	Logout
Priority	High
Primary Actor	Admin, Teacher, Student
Secondary Actor	Admin, Teacher, Student
Trigger	User want to log out from system
Description	The user can log out from the system
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. Click "Logout" button on the portal. 2. Navigate user to Home Page
Pre-Condition	The user must be logged in into the system.
Post Condition	<p>The user can access the portal and perform basic activities on the portal.</p> <p>The user will be log out from its account.</p>
Success Scenario	If press the logout button user will be log out.
Abort Scenario	None or Session expired.

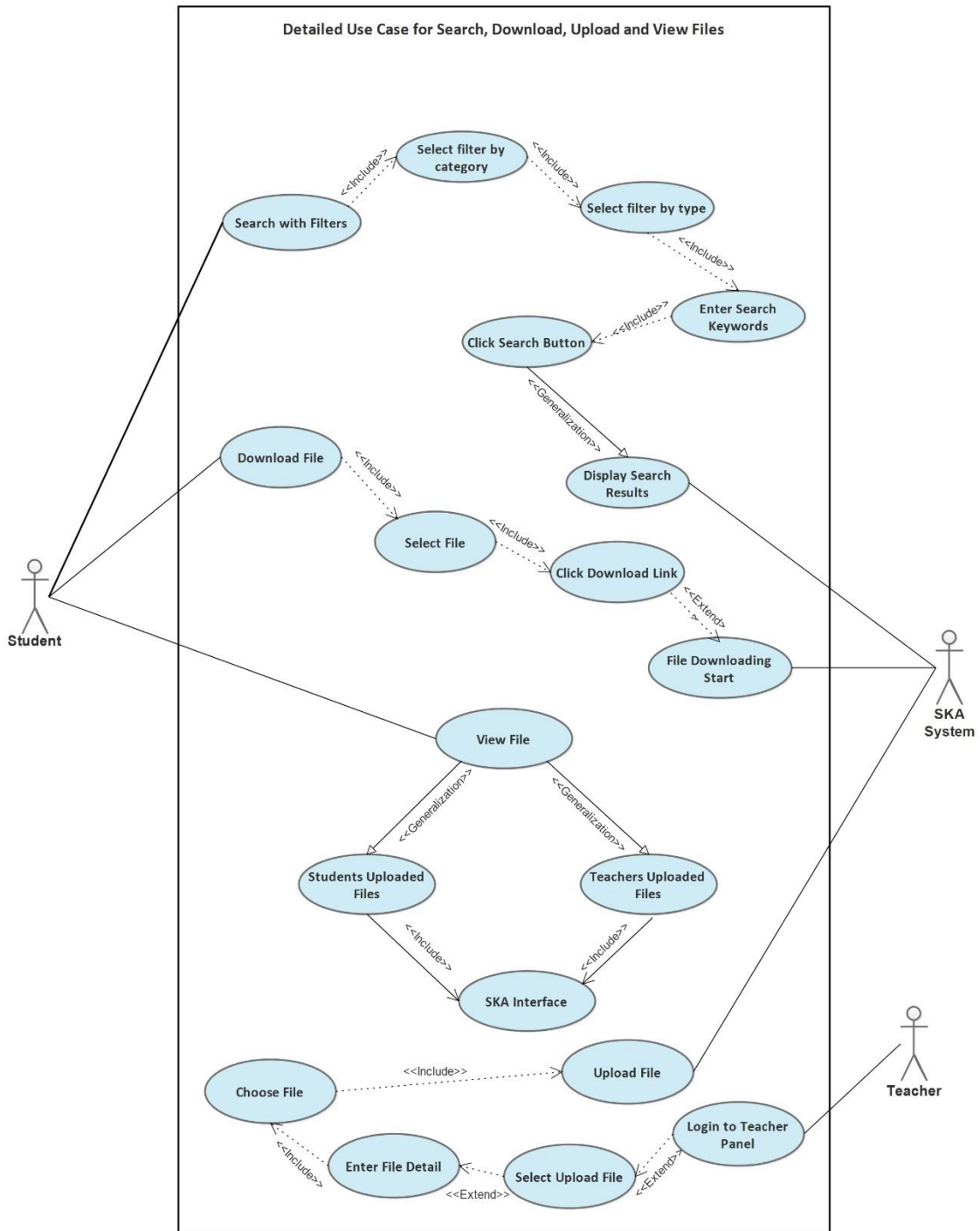
Fully dressed Use Case Model for Account Recovery:



Use Case description table for Account Recovery	
Use Case ID	UC-004
Use Case Name	Account Recovery
Priority	Medium
Primary Actor	Admin, Student, Teacher
Secondary Actor	Admin, Student, Teacher
Trigger	User want to recover or change its account password
Description	This use case allows the user to recover its forgotten password and username.

Basic Flow	Basic Follow consist of following steps: <ol style="list-style-type: none"> 1. The user must click the “Forget Password” button. 2. The system must ask the user for email for confirmation. 3. The system must send a verification code to verify the user. 4. If the user enters valid code system must allow the user to change the password.
Pre-Condition	User must have valid email. The user must be already registered in the system.
Post Condition	The user can change its password. The user will be navigated to Home Screen.
Success Scenario	If the user enters a valid email and enters valid code than the user can recover the account.
Abort Scenario	Invalid code to verify the user.

Fully dressed Use Case Model for Search, Download, Upload and View file:



Use Case description table for Search with filters	
Use Case ID	UC-005
Use Case Name	Search with filter
Priority	Medium
Primary Actor	Student
Secondary Actor	System
Trigger	Student want to search data using filters
Description	A student can search into the system database for find relevant helping material/data. A student can enter keywords, use drop down filters to search.
Basic Flow	Basic Follow consist of following steps: <ol style="list-style-type: none"> 1. User clicks into the input field of the search bar 2. User enter keyword and press enter to find something into the system database. 3. The user can also apply filters to its search results. 4. If data doesn't exist according to apply filters and keywords than no data found message will be displayed.
Pre-Condition	The student must click into the search bar input field. The student enters keywords into the search bar to find something and click the search icon.
Post Condition	The system will provide data if found. If data not found a message will be displayed.
Success Scenario	If the user enters some text into the search bar and clicks search button than data will be provided if exist.
Abort Scenario	If the searched data doesn't exist message will be displayed.

Use Case description table for Download Files	
Use Case ID	UC-006
Use Case Name	Download Files
Priority	Medium
Primary Actor	Student
Secondary Actor	System
Trigger	Student want to download the file from the system
Description	Users can download helping material available on the portal by clicking the download button.
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. The user should click the “Download File” button. 2. The system will provide the file to download.
Pre-Condition	The user must be logged in.
Post Condition	The user can download files.
Success Scenario	If the user clicks the “Download File” button system will provide the file to download.
Abort Scenario	None files not available for download will not be displayed.

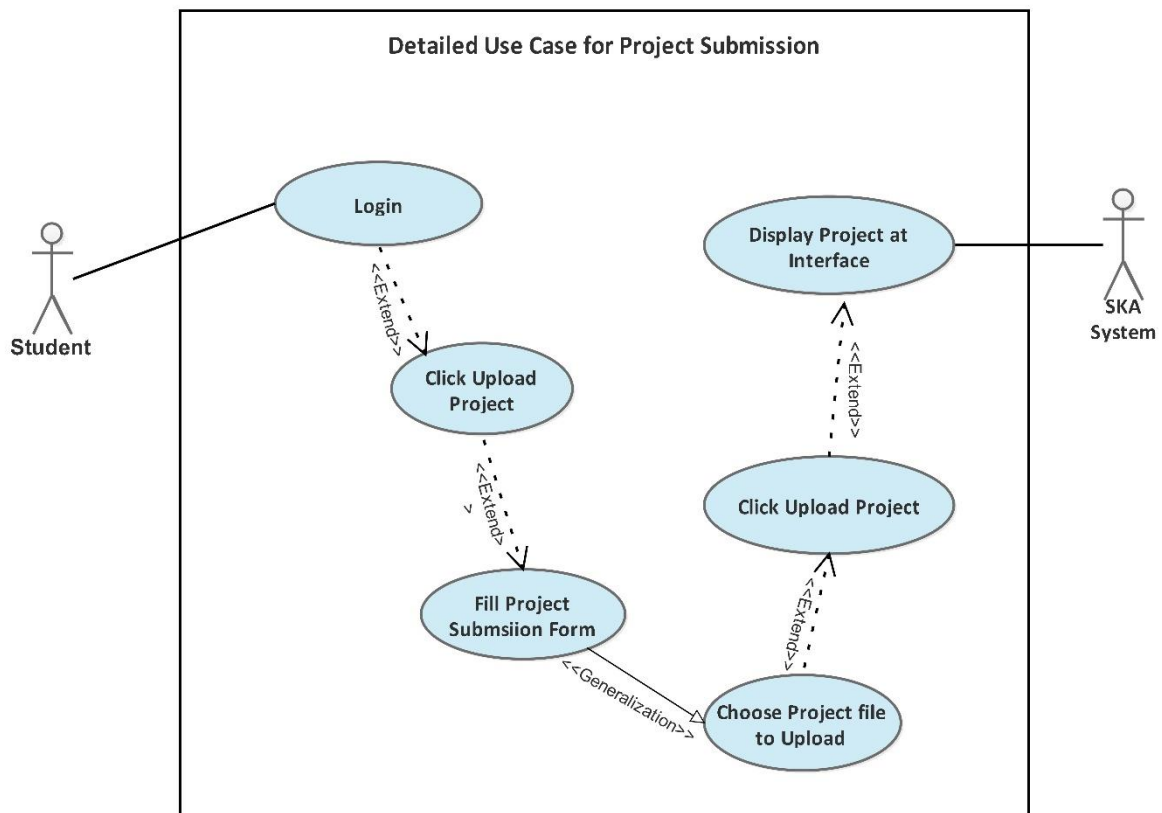
Use Case description table for View Files	
Use Case ID	UC-007
Use Case Name	View Files
Priority	High
Primary Actor	System
Secondary Actor	Student
Trigger	A student can view the uploaded content on the website interface
Description	A student can view some recently uploaded study material by teacher and projects by students on the system home page.

Basic Flow	Basic Follow consist of following steps: <ol style="list-style-type: none"> 1. The student must enter the website address in the browser. 2. The system will display uploaded files at the interface In different sections.
Pre-Condition	The student must enter the website address in browsers.
Post Condition	A student can view different study material displayed at the interface.
Success Scenario	If visit the portal than the user can view the files.
Abort Scenario	The user has not visited the site.

Use Case description table for Upload Files	
Use Case ID	UC-008
Use Case Name	Upload Files
Priority	Medium
Primary Actor	Admin, Teacher
Secondary Actor	Admin, Teacher
Trigger	Admin, Teacher want to upload files into the system for students
Description	<p>Users can upload helping material into the system database by using the upload feature.</p> <p>The user can upload multiple files with multiple formats as displayed on upload files page.</p> <p>To upload data user must click upload files and provide basic file description. After adding file description user should click publish the file to display uploaded files into the portal.</p>

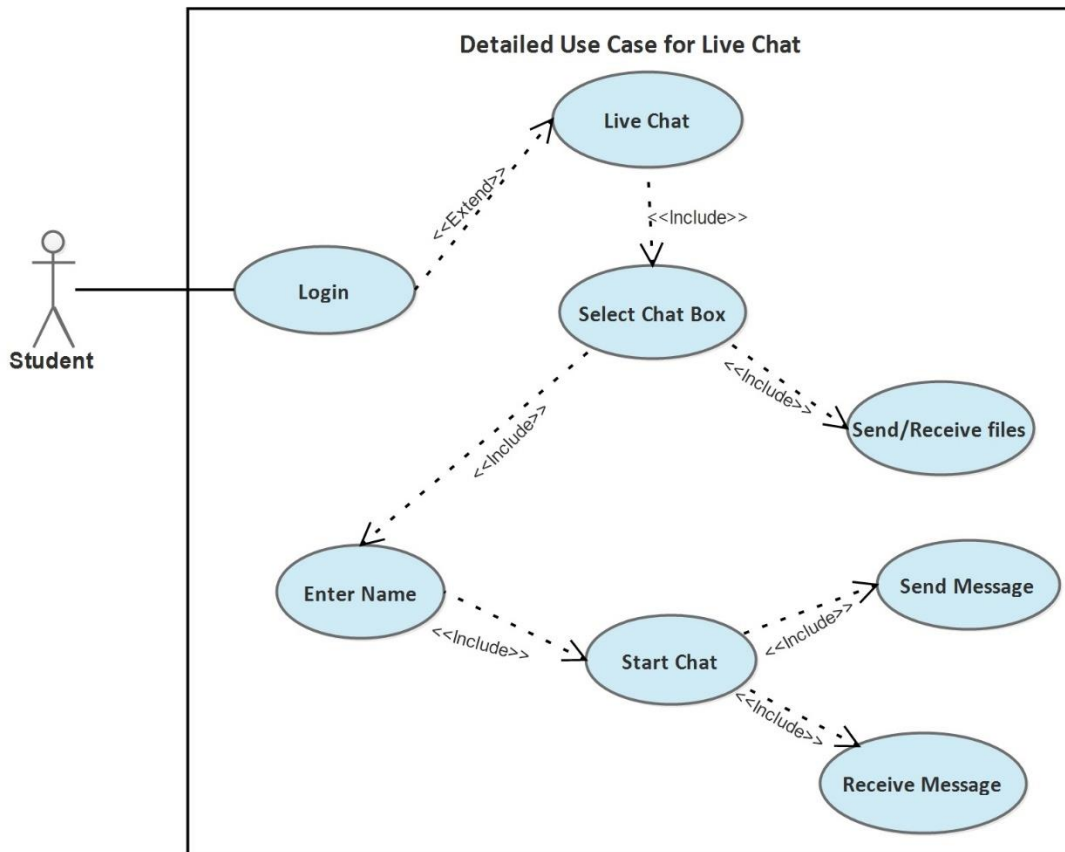
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. The user should click the “Upload File” button. 2. The user will be navigated to upload files page 3. User select file from its system to upload and provide descriptions of files. 4. The user must click upload file to display them on the portal. 5. On successful files uploads message will be displayed. 6. On unsuccessful files uploads error message will be displayed.
Pre-Condition	The user must be logged in.
Post Condition	<p>The user can upload files, add files description and publish them on the portal.</p> <p>Uploaded files will be displayed on to the portal.</p>
Success Scenario	<p>If user select file according to the given formats shown as text.</p> <p>If the user selects some files from the system and have added files description and click publish the file, files will be uploaded.</p>
Abort Scenario	Otherwise files will not be uploaded and an error message will be displayed.

Fully dressed Use Case Model for Project Submission:



Use Case description table for Project Submission	
Use Case ID	UC-009
Use Case Name	Project Submission
Priority	High
Primary Actor	Student
Secondary Actor	Student
Trigger	Student want to submit its projects into the portal
Description	<p>A student can submit their FYP source code into the system database by using project submission module.</p> <p>The student has to fill submission form and provide project deceptions to submit its project source code.</p>
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. The student should click “upload project” Button. 2. The student will be navigated to the project submission page. 3. The student should fill the request form and upload the source code by clicking the “Upload Project” button. 4. On successful upload of project success message should be displayed.
Pre-Condition	<p>The student should be logged in.</p> <p>The student should fill the project submission form.</p>
Post Condition	A student can upload their projects.
Success Scenario	If the user fills the form and select files to upload, projects will be successfully uploaded.
Abort Scenario	If the user doesn't fill the form and select file to upload system doesn't upload the project.

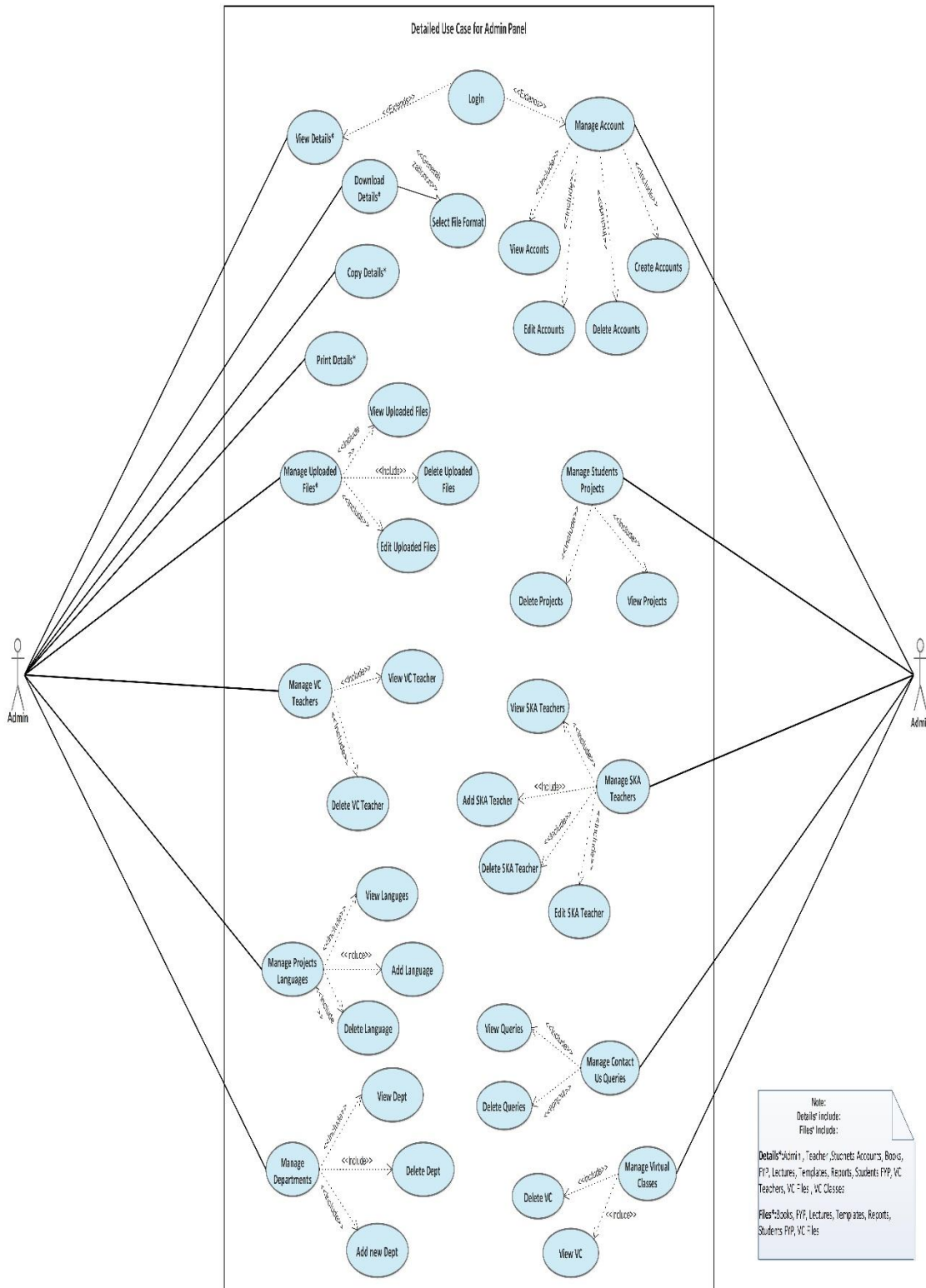
Fully dressed Use Case Model for Live Chat:



Use Case description table for Live Chat	
Use Case ID	UC-010
Use Case Name	Live Chat
Priority	Medium
Primary Actor	Student
Secondary Actor	System, other System User i.e.(student)
Trigger	Student want to chat with another student
Description	A student can chat with other student using the “Live Chat” module.

Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. The student must click the chat box displayed on the portal. 2. The first student must enter a name. 3. The second student must enter a name. 4. On entering the name chat will be initiated. 5. A student can send messages and files via chat box.
Pre-Condition	<p>The student must be logged in.</p> <p>Students should enter their name to chat with each other.</p>
Post Condition	<p>A student can chat with another student.</p>
Success Scenario	<p>If the second person is not live at that time chat response may not be received.</p>
Abort Scenario	<p>None or student has not selected chat box or enter a name.</p>

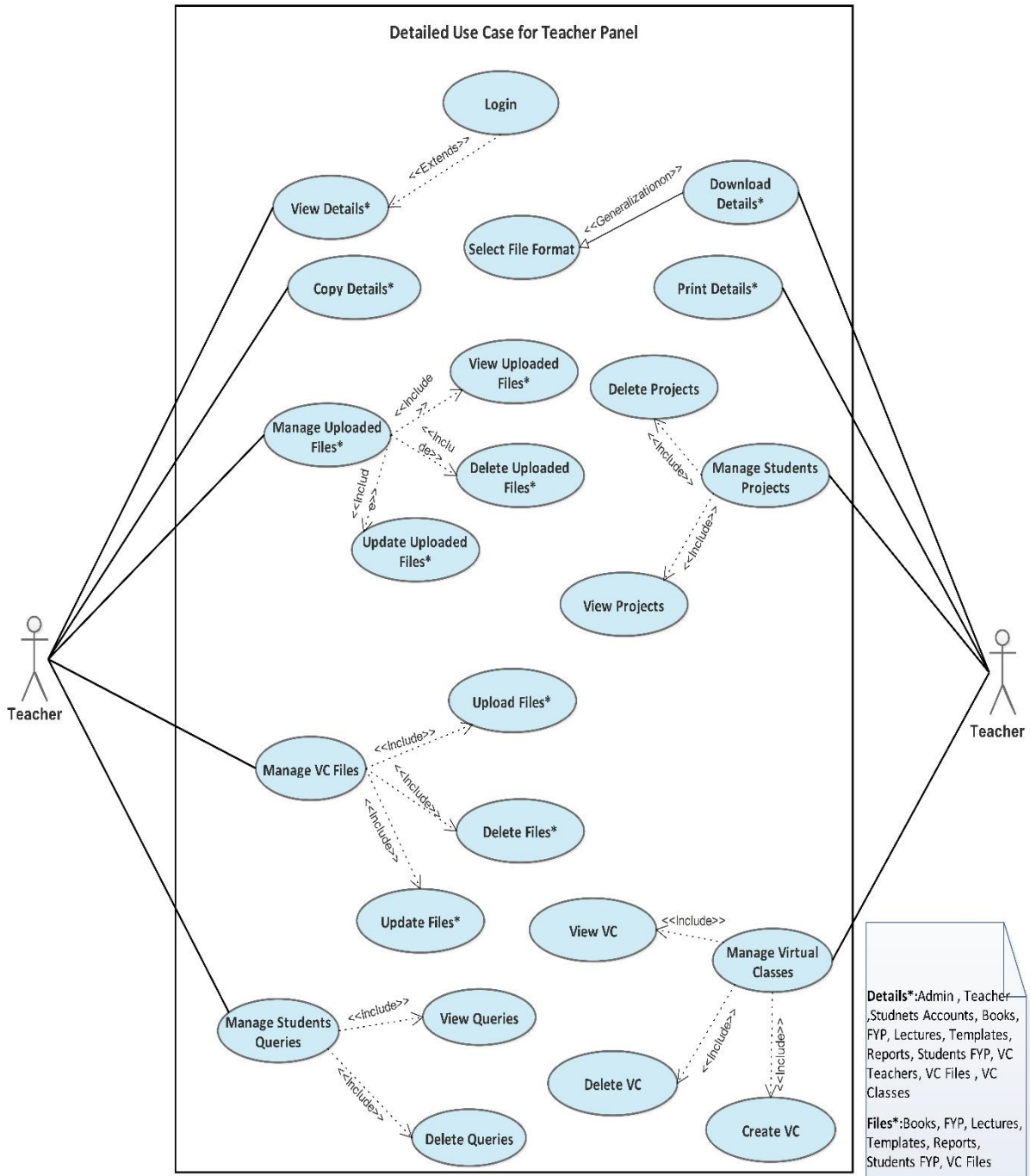
Fully dressed Use Case Model for Admin Panel:



Use Case description table for Admin Panel	
Use Case ID	UC-011
Use Case Name	Admin Panel
Priority	Medium
Primary Actor	Admin
Secondary Actor	System
Trigger	Admin want to perform administrative activates through the admin panel
Description	Admin can perform account management file management, query management and other administrative activities using admin panel.
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. Admin should log in to access the admin panel. 2. Admin should click “view, download (Excel, PDF), print and copy” the details of all admin, teachers and students accounts and study material i.e. (Books, FYP, Lectures, Templates, Reports, student FYP, user queries, virtual classes and virtual class’s files). 3. Admin should search the files and data using the search bar. 4. Admin should click “Manage Accounts” of admin, teachers and students to manage (View, Create, Delete, Edit) the accounts. 5. Admin should click “Manage Uploaded Files” i.e. (books, FYP, lectures, reports, templates) to manage (View, Delete, Update) uploaded files. 6. Admin should click “Manage Uploaded FYP” to manage (View, Delete, Update) of both students and teachers. 7. Admin should click “Manage SKA Teachers” to manage (View, Add, Delete, Edit) portal teachers.

	<p>8. Admin should click “Manage departments” to manage (View department, Add new department) for student’s projects upload if a department doesn’t exist in the system.</p> <p>9. Admin should click “Manage to Contact Us” queries of the users of the system to manage (View, Delete) queries.</p> <p>10. Admin should click “Manage Virtual Classes” to manage (Create, View, Delete) created by teachers.</p> <p>11. Admin should click “Manage Virtual Classes Files” to manage (Upload, Delete, View) virtual classes files.</p> <p>12. The system must provide a quick link button to access the links easily.</p> <p>13. The system must allow teacher appropriate functionality with easy methods.</p>
Pre-Condition	<p>Admin should be logged in.</p> <p>Admin should be authorized.</p>
Post Condition	Admin can do account management and file management.
Success Scenario	If the system remains successful to perform admin requests successfully, a success message will be displayed.
Abort Scenario	If the system remains unsuccessful to perform admin request error message will be displayed.

Fully dressed Use Case Model for Teacher Panel:



Use Case description table for Teacher Panel	
Use Case ID	UC-012
Use Case Name	Teacher Panel
Priority	High
Primary Actor	Teacher
Secondary Actor	System
Trigger	The teacher wants to perform teacher administrative activities using teacher panel
Description	The teacher can perform file, student query, and virtual classes management activities using a teacher panel.
Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. The teacher must have valid credentials to access the teacher panel for teachers. 2. The teacher should click “view, download (Excel, PDF), print and copy” the details of all study material i.e. (Books, FYP, Lectures, Templates, Reports, student FYP & Student Queries). 3. The teacher should search the file and data using the search bar. 4. The teacher should click “Upload Files i.e. (books, FYP, lectures, reports, templates) and add a description of the file in file upload form. 5. The teacher should click “Manage Uploaded Files” i.e. (books, FYP, lectures, reports, templates) to manage (View, Delete, Update) uploaded files. 6. The teacher should click “Manage Students Projects” to manage (view, Delete) students projects. 7. The teacher should click “Manage Queries” to manage (View, Delete) the student’s queries to help them. 8. The teacher should click “Manage Virtual Classes” to manage (Create, View, Delete) virtual classes.

	<p>9. The teacher should click “Change Password” and follow instructions to change its account password.</p> <p>10. The teacher should click “Manage Virtual Classes Files to manage (Upload, Delete, View) virtual classes files.</p> <p>The system must provide a quick link button to access the links teacher panel functionality easily.</p> <p>The system must allow teacher appropriate functionality with easy methods.</p>
Pre-Condition	<p>The teacher should be logged in.</p> <p>The teacher should be authorized.</p>
Post Condition	Teacher can do account management, file management, virtual class management and query management.
Success Scenario	If the system remains successful to perform admin request success message will be displayed.
Abort Scenario	If the system remains unsuccessful to perform admin request error message will be displayed.

Use Case description table for Virtual Classes	
Use Case ID	UC-013
Use Case Name	Virtual Classes Module
Priority	Medium
Primary Actor	Teacher
Secondary Actor	Admin, Student
Trigger	The teacher can create virtual classes for students
Description	A teacher can create virtual classes for students to upload study material for specific class students.

Basic Flow	<p>Basic Follow consist of following steps:</p> <ol style="list-style-type: none"> 1. The teacher must click “create virtual class” Link. 2. The teacher must enter the class name and set a password. 3. The teacher must register the virtual class to upload files in a specific class. 4. The teacher can upload files in a virtual class. 5. Students can access the specific virtual class using class name and password provided by the teacher.
Pre-Condition	The student must be logged in into teacher panel and choose to create a virtual class link.
Post Condition	The teacher can create the virtual class and upload files in it. Students can access the virtual class can class files by using specific class name and password provided by the teacher.
Success Scenario	<p>If the teacher fills the virtual class form and registers it using appropriate methods than a teacher can create the virtual class.</p> <p>After creating virtual class teacher can upload a file in it.</p> <p>If a student enters the valid virtual class credentials then he/she access the virtual class.</p>
Abort Scenario	<p>If the teacher doesn’t register the class or not follow the specific steps to create a class then the virtual class cannot be created.</p> <p>If a student doesn’t enter the valid virtual class credentials then he/she cannot access the virtual class.</p>

Chapter 4

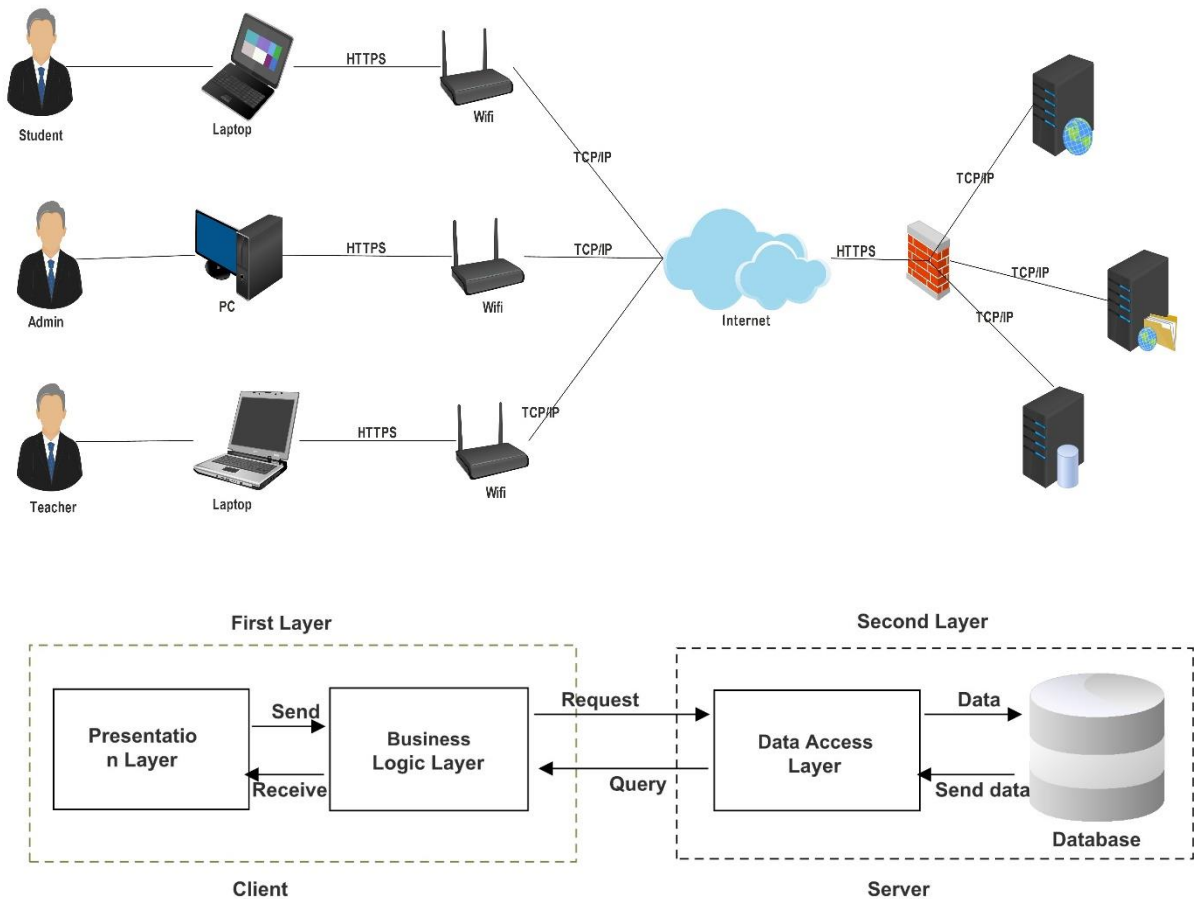
System Design

Chapter 4: System Design

This document completely describes the system at the architecture level, including subsystems and their services, hardware mapping, data management, access control, global software control structure, and boundary conditions. The SDD should define a virtual machine that implements all requirements in the Rapid Application Development (RAD), and it should provide a foundational guide for further implementation details all the way to an executable solution.

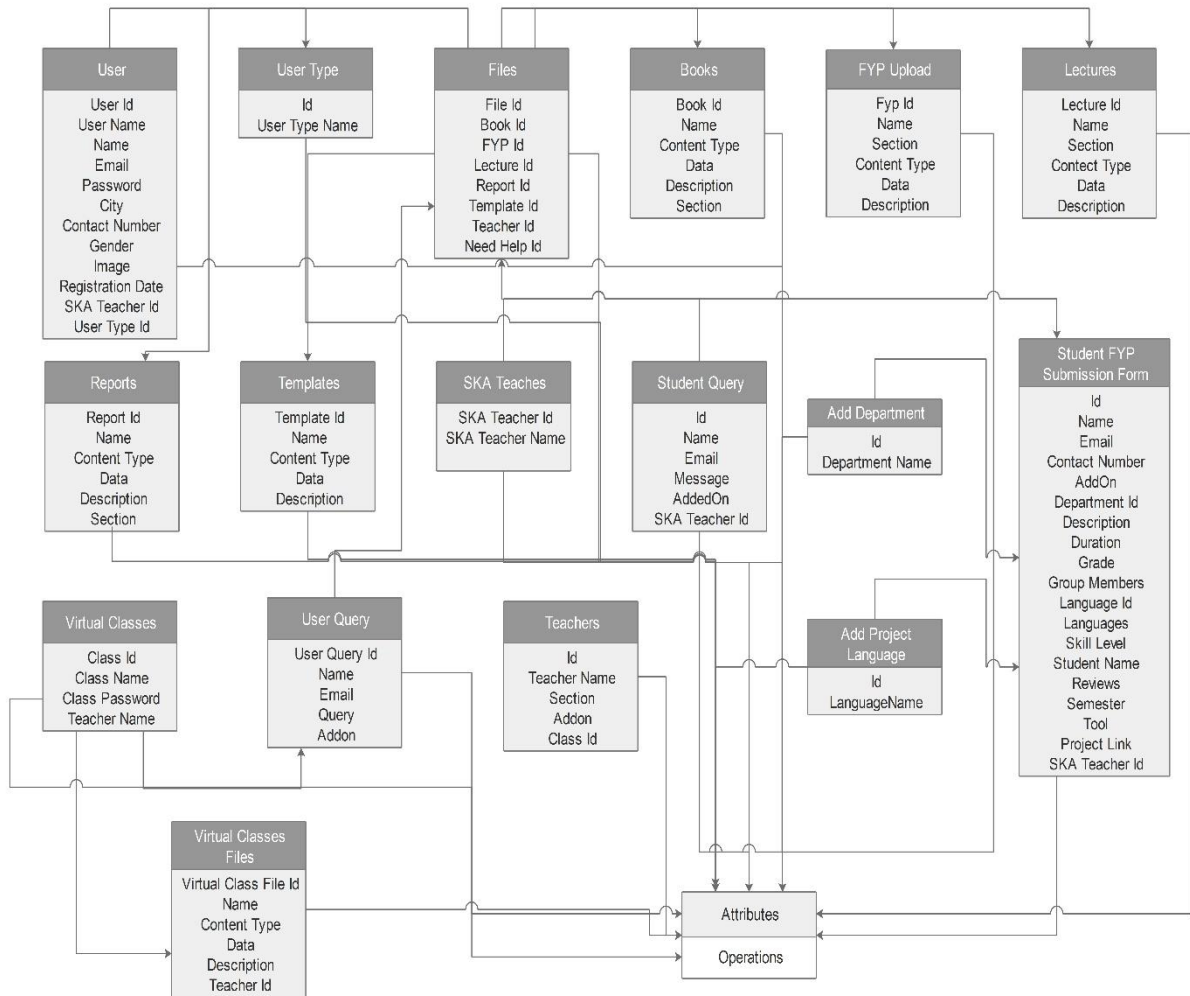
4.1. Architecture Diagram

High-Level Architecture diagram for SKA:



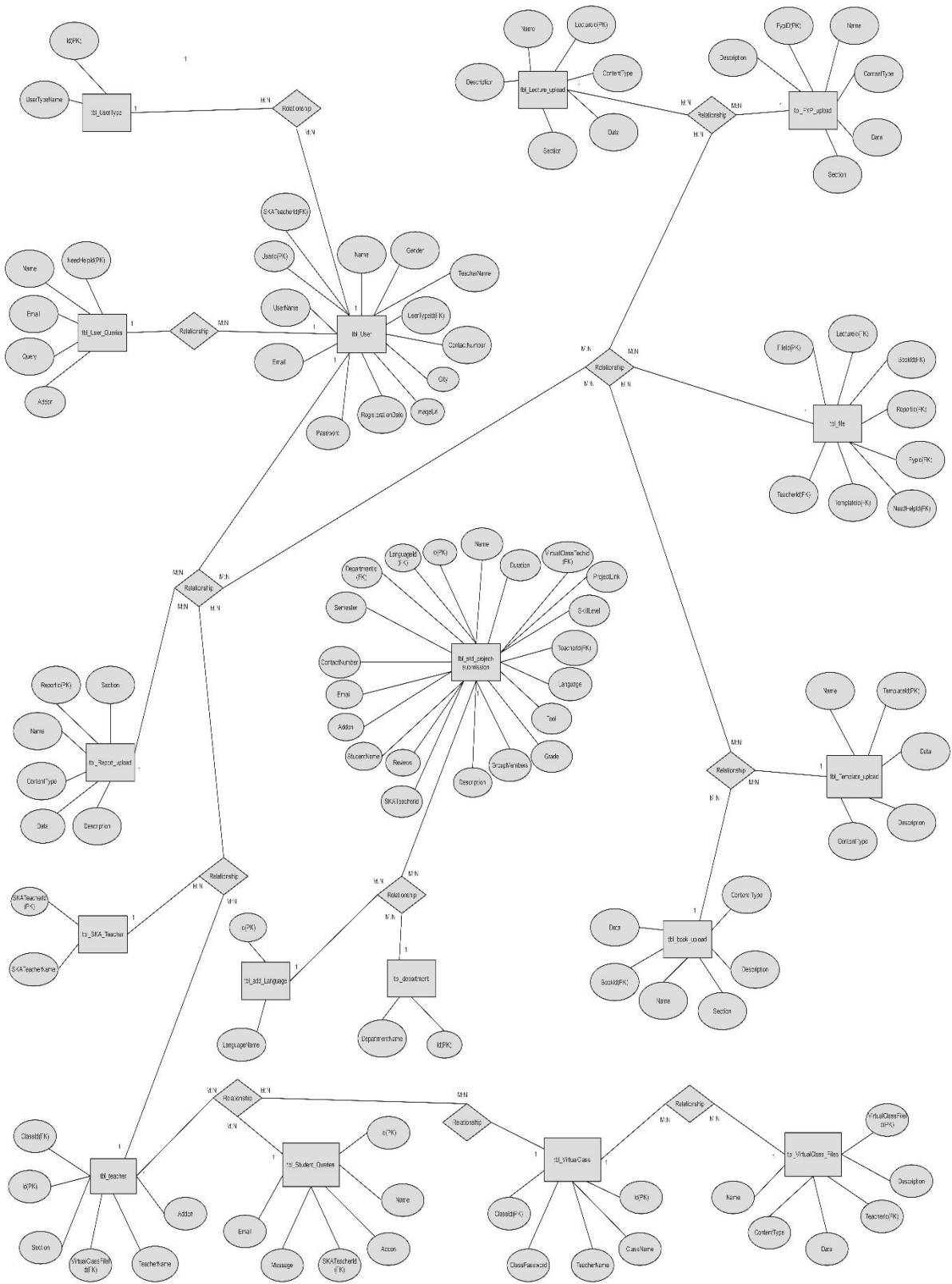
4.2. Domain Model

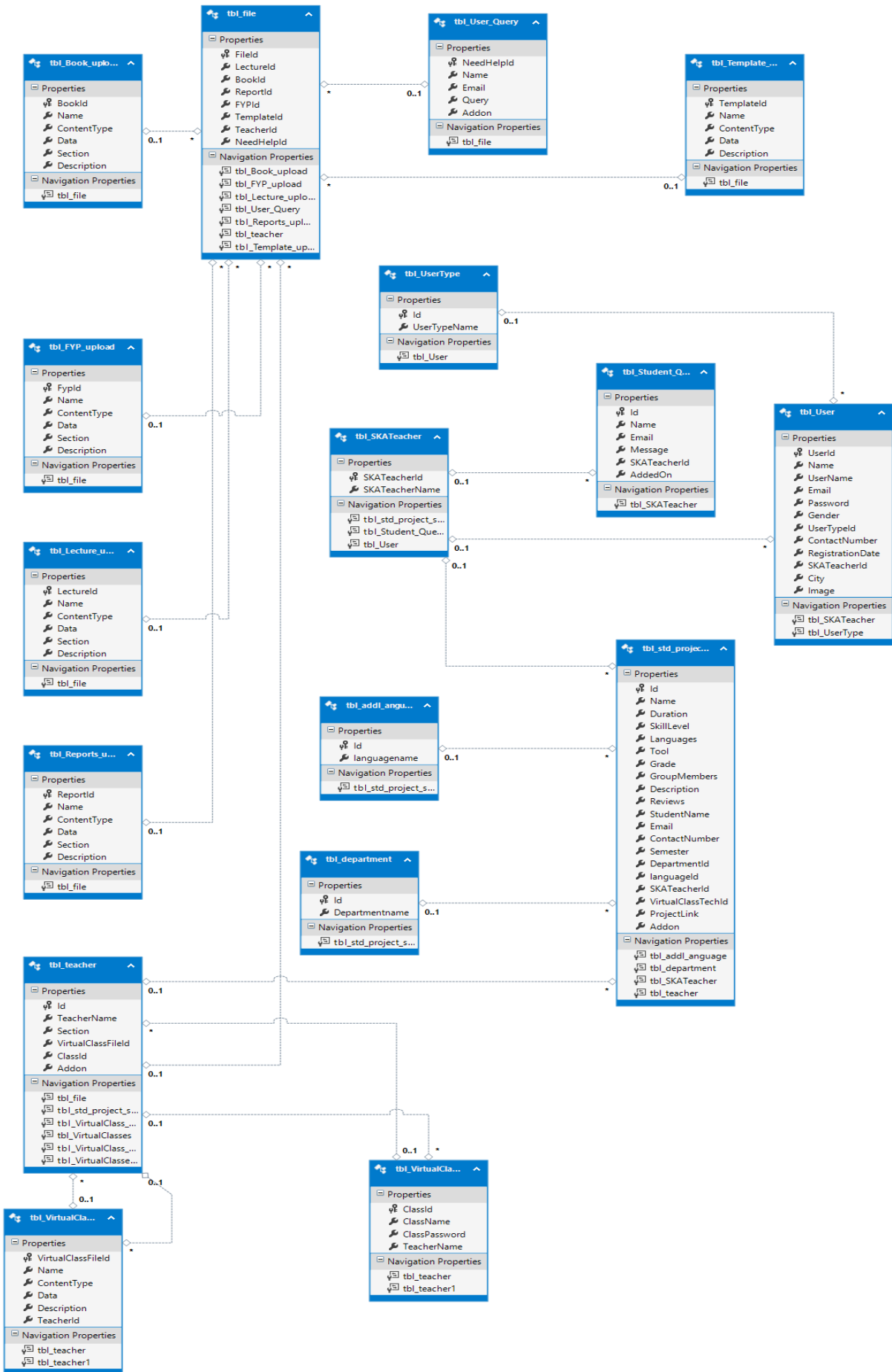
Domain Model for SKA:



4.3. Entity Relationship Diagram with data dictionary

ERD for SKA:





Data Dictionary for above ERD:

Table dbo.tbl_addl_language (1 row)

	Column	Data Type	Identity	Nullable	Default
PK	Id	int	X		
	languageName	nvarchar(50)		X	

Indexes:

PK_addlang (Primary Key) (Clustered)

Id

Referenced by:

dbo.tbl_std_project_sub (languageId -> Id)

Table dbo.tbl_Book_upload (1 row)

	Column	Data Type	Identity	Nullable	Default
PK	BookId	int	X		
	Name	nvarchar(50)		X	
	ContentType	nvarchar(200)		X	
	Data	varbinary(max)		X	
	Section	nvarchar(50)		X	
	Description	nvarchar(50)		X	

Indexes:

PK_tbl_Book_upload (Primary Key) (Clustered)

BookId

Referenced by:

dbo.tbl_file (BookId)

Table dbo.tbl_department (0 rows)

	Column	Data Type	Identity	Nullable	Default
PK	Id	int	X		
	Departmentname	nvarchar(50)		X	

Indexes:

PK_department (Primary Key) (Clustered)

Id

Referenced by:

dbo.tbl_std_project_sub (DepartmentId -> Id)

Table dbo.tbl_file (0 rows)

	Column	Data Type	Identity	Nullable	Default
PK	FileId	int	X		
FK	LectureId	int		X	
FK	BookId	int		X	
FK	ReportId	int		X	
FK	FYPId	int		X	
FK	TemplateId	int		X	
FK	TeacherId	int		X	
FK	NeedHelpId	int		X	

Indexes:

PK_tbl_file (Primary Key) (Clustered)

FileId

References:

dbo.tbl_Book_upload (BookId)

dbo.tbl_FYP_upload (FYPId -> FypId)

dbo.tbl_Lecture_upload (LectureId)

dbo.tbl_Reports_upload (ReportId)

dbo.tbl_teacher (TeacherId -> Id)

dbo.tbl_Template_upload (TemplateId)

dbo.tbl_User_Query (NeedHelpId)

Table dbo.tbl_FYP_upload (1 row)

	Column	Data Type	Identity	Nullable	Default
PK	FypId	int	X		
	Name	nvarchar(50)		X	
	ContentType	nvarchar(200)		X	
	Data	varbinary(max)		X	
	Section	nvarchar(50)		X	
	Description	nvarchar(50)		X	

Indexes:

PK_tbl_FYP_upload (Primary Key) (Clustered)

FypId

Referenced by:

dbo.tbl_file (FYPId -> FypId)

Table dbo.tbl_Lecture_upload (1 row)

	Column	Data Type	Identity	Nullable	Default
PK	LectureId	int	X		
	Name	nvarchar(50)		X	
	ContentType	nvarchar(200)		X	
	Data	varbinary(max)		X	
	Section	nvarchar(50)		X	
	Description	nvarchar(50)		X	

Indexes:

PK_tbl_Lecture_upload (Primary Key) (Clustered)

Table dbo.tbl_Reports_upload (1 row)

	Column	Data Type	Identity	Nullable	Default
PK	ReportId	int	X		
	Name	nvarchar(50)		X	
	ContentType	nvarchar(200)		X	
	Data	varbinary(max)		X	
	Section	nvarchar(50)		X	
	Description	nvarchar(50)		X	

Indexes:

PK_tbl_Reports_upload (Primary Key) (Clustered)

ReportId

Referenced by:

dbo.tbl_file (ReportId)

Table dbo.tbl_SKATeacher (2 rows)

	Column	Data Type	Identity	Nullable	Default
PK	SKATeacherId	int	X		
	SKATeacherName	nvarchar(50)		X	

Indexes:

PK_tbl_SKATeacher (Primary Key) (Clustered)

SKATeacherId

Referenced by:

dbo.tbl_std_project_sub (SKATeacherId)

dbo.tbl_Student_Queries (SKATeacherId)

dbo.tbl_User (SKATeacherId)

Table dbo.tbl_std_project_sub (1 row)

	Column	Data Type	Identity	Nullable	Default
PK	Id	int	X		
	Name	varchar(50)			
	Duration	nvarchar(50)			
	SkillLevel	nvarchar(50)			
	Languages	nvarchar(50)			
	Tool	nvarchar(50)			
	Grade	nvarchar(50)			
	GroupMembers	nvarchar(50)			
	Description	nvarchar(max)			
	Reviews	nvarchar(max)			
	StudentName	nvarchar(50)		X	
	Email	nvarchar(50)		X	
	ContactNumber	nvarchar(50)		X	
	Semester	nvarchar(50)		X	
FK	DepartmentId	int		X	
FK	languageId	int		X	
FK	SKATeacherId	int		X	
FK	VirtualClassTechId	int		X	
	ProjectLink	nvarchar(50)		X	
	Addon	datetime		X	

Indexes:

PK_drop (Primary Key) (Clustered)

Id

References:

dbo.tbl_addl_language (languageId -> Id)

dbo.tbl_department (DepartmentId -> Id)

dbo.tbl_SKATeacher (SKATeacherId)

dbo.tbl_teacher (VirtualClassTechId -> Id)

Table dbo.tbl_Student_Queries (3 rows)

	Column	Data Type	Identity	Nullable	Default
PK	Id	int	X		
	Name	nvarchar(50)		X	
	Email	nvarchar(50)		X	
	Message	nvarchar(max)		X	
FK	SKATeacherId	int		X	
	AddedOn	datetime		X	

Indexes:

PK_tbl_User_Queries (Primary Key) (Clustered)

Id

References:

dbo.tbl_SKATeacher (SKATeacherId)

Table dbo.tbl_teacher (3 rows)

	Column	Data Type	Identity	Nullable	Default
PK	Id	int	X		
	TeacherName	nvarchar(50)		X	
	Section	nvarchar(50)		X	
FK	VirtualClassFileId	int		X	
FK	ClassId	int		X	
	Addon	datetime		X	

Indexes:

PK_Teacher (Primary Key) (Clustered)

Table dbo.tbl_Template_upload (1 row)

	Column	Data Type	Identity	Nullable	Default
PK	TemplateId	int	X		
	Name	nvarchar(50)		X	
	ContentType	nvarchar(200)		X	
	Data	varbinary(max)		X	
	Description	nvarchar(50)		X	

Indexes:

PK_tbl_Template_upload (Primary Key) (Clustered)

TemplateId

Referenced by:

dbo.tbl_file (TemplateId)

Table dbo.tbl_User (2 rows)

	Column	Data Type	Identity	Nullable	Default
PK	UserId	int	X		
	Name	nvarchar(50)		X	
	UserName	nvarchar(50)		X	
	Email	nvarchar(50)		X	
	Password	nvarchar(50)		X	
	Gender	nvarchar(50)		X	
FK	UserTypeId	int		X	
	ContactNumber	nvarchar(50)		X	
	RegistrationDate	datetime		X	
FK	SKATeacherId	int		X	
	City	nvarchar(50)		X	
	Image	nvarchar(50)		X	

Indexes:

PK_registration (Primary Key) (Clustered)

UserId

References:

dbo.tbl_SKATeacher (SKATeacherId)

Table dbo.tbl_User_Query (5 rows)

	Column	Data Type	Identity	Nullable	Default
PK	NeedHelpId	int	X		
	Name	nvarchar(50)		X	
	Email	nvarchar(50)		X	
	Query	nvarchar(100)		X	
	Addon	datetime		X	

Indexes:

PK_tbl_NeedHelp (Primary Key) (Clustered)

NeedHelpId

Referenced by:

dbo.tbl_file (NeedHelpId)

Table dbo.tbl_UserType (3 rows)

	Column	Data Type	Identity	Nullable	Default
PK	Id	int	X		
	UserTypeName	nvarchar(50)			

Indexes:

PK_UserType (Primary Key) (Clustered)

Id

Referenced by:

dbo.tbl_User (UserTypeId -> Id)

Table dbo.tbl_VirtualClass_File (3 rows)

	Column	Data Type	Identity	Nullable	Default
PK	VirtualClassFileId	int	X		
	Name	nvarchar(50)		X	
	ContentType	nvarchar(200)		X	
	Data	varbinary(max)		X	
	Description	nvarchar(50)		X	
FK	TeacherId	int		X	

Indexes:

PK_tbl_VirtualClass_File (Primary Key) (Clustered)

VirtualClassFileId

References:

dbo.tbl_teacher (TeacherId -> Id)

Table dbo.tbl_VirtualClasses (8 rows)

	Column	Data Type	Identity	Nullable	Default
PK	ClassId	int	X		
	ClassName	nvarchar(50)		X	
	ClassPassword	nvarchar(50)		X	
FK	TeacherName	int		X	

Indexes:

PK_tbl_VirtualClasses (Primary Key) (Clustered)

ClassId

References:

dbo.tbl_teacher (TeacherName -> Id)

Referenced by:

dbo.tbl_teacher (ClassId)

Procedures:**Procedure dbo.forgetpassword**

Parameter	Data Type	Default	Is Output
@Email	nvarchar(100)		

Result:

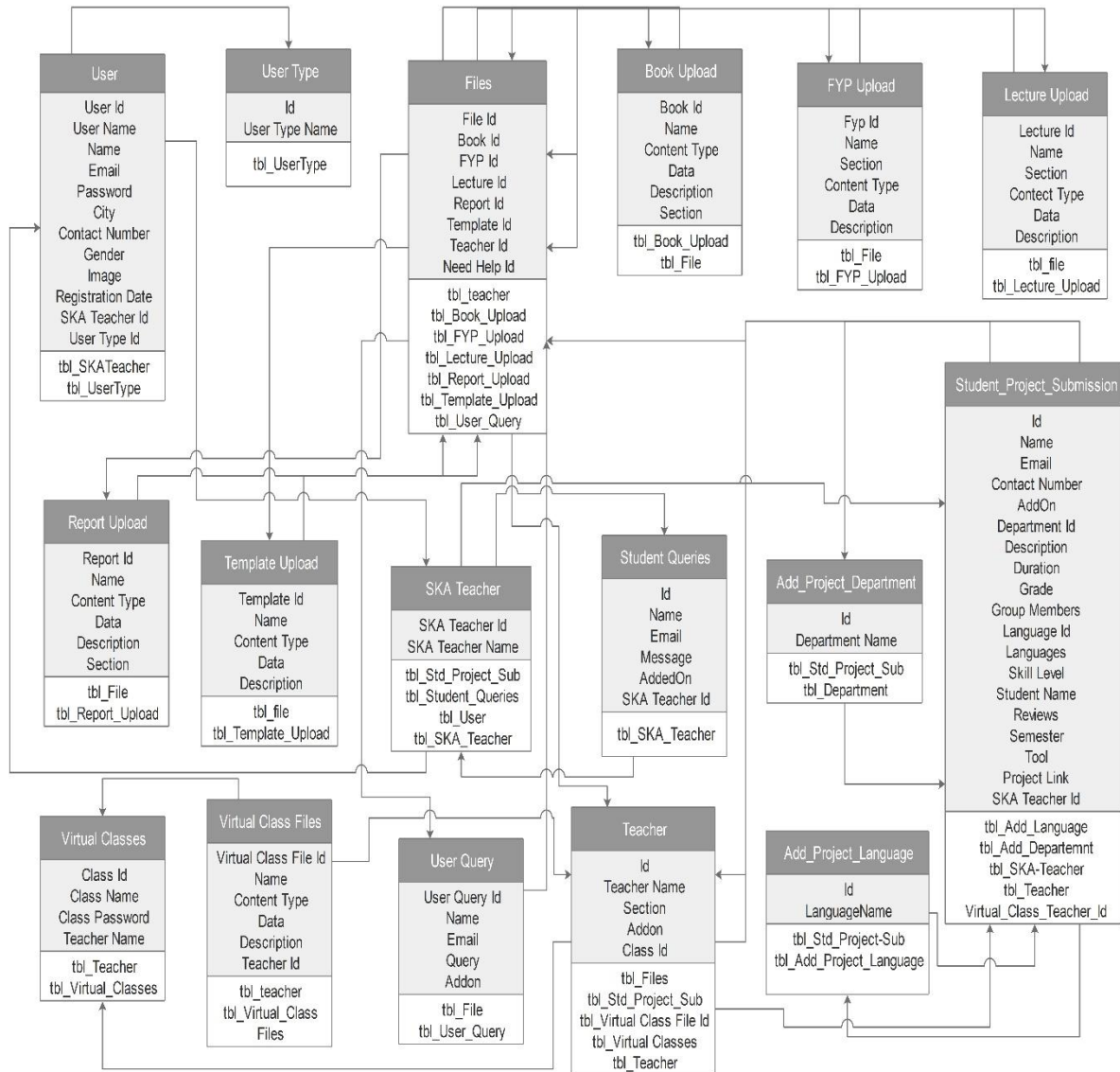
Column	Data Type	Nullable
UserId	int	
Name	nvarchar(50)	X
UserName	nvarchar(50)	X
Email	nvarchar(50)	X
Password	nvarchar(50)	X
Gender	nvarchar(50)	X
UserTypeId	int	X
ContactNumber	nvarchar(50)	X
RegistrationDate	datetime	X
SkATeacherId	int	X
City	nvarchar(50)	X
Image	nvarchar(50)	X

Procedure dbo.UpdatePassword

Parameter	Data Type	Default	Is Output
@Password	nvarchar(100)		
@Email	nvarchar(100)		

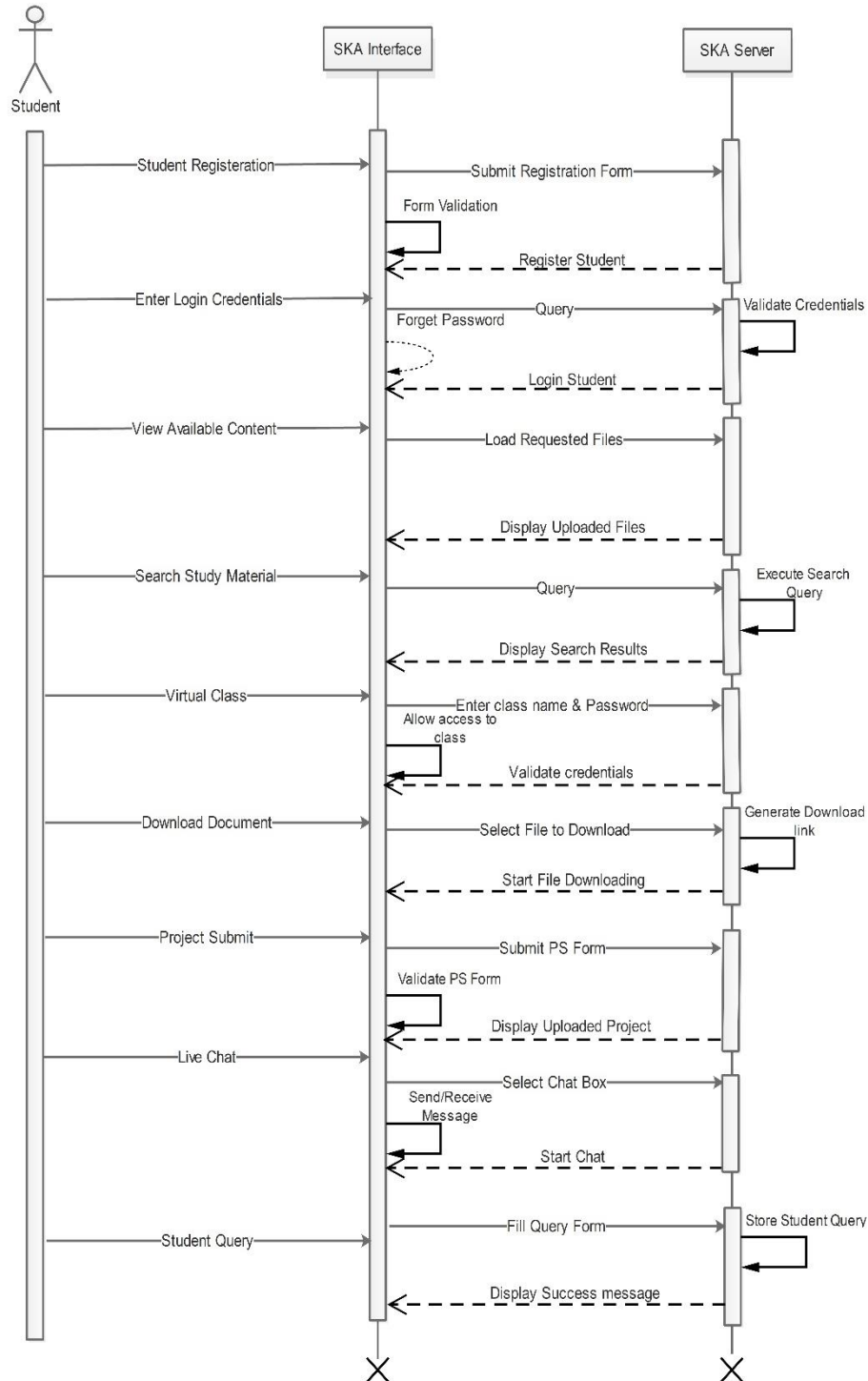
4.4. Class Diagram

Class Diagram for SKA:

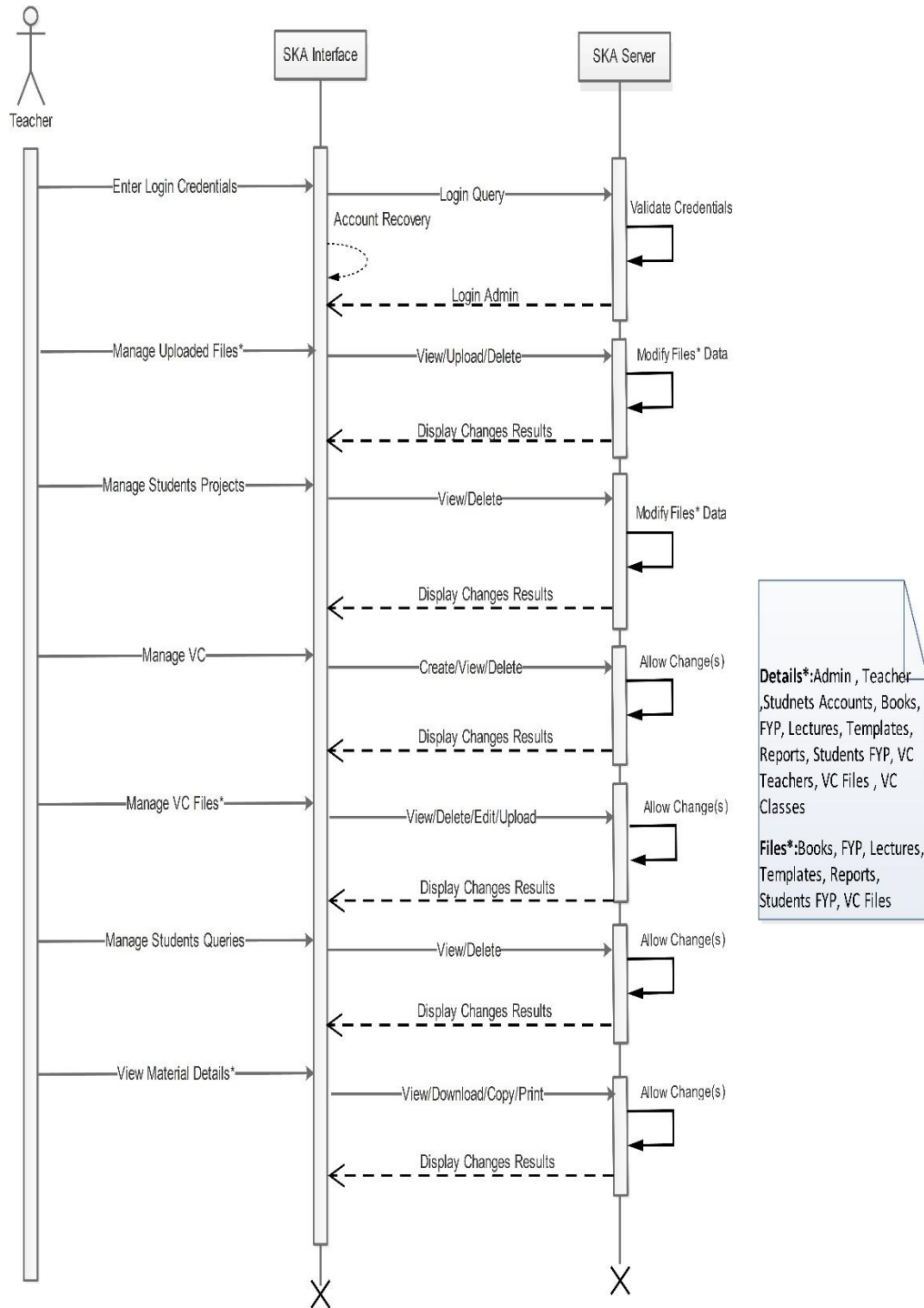


4.5. Sequence / Collaboration Diagram

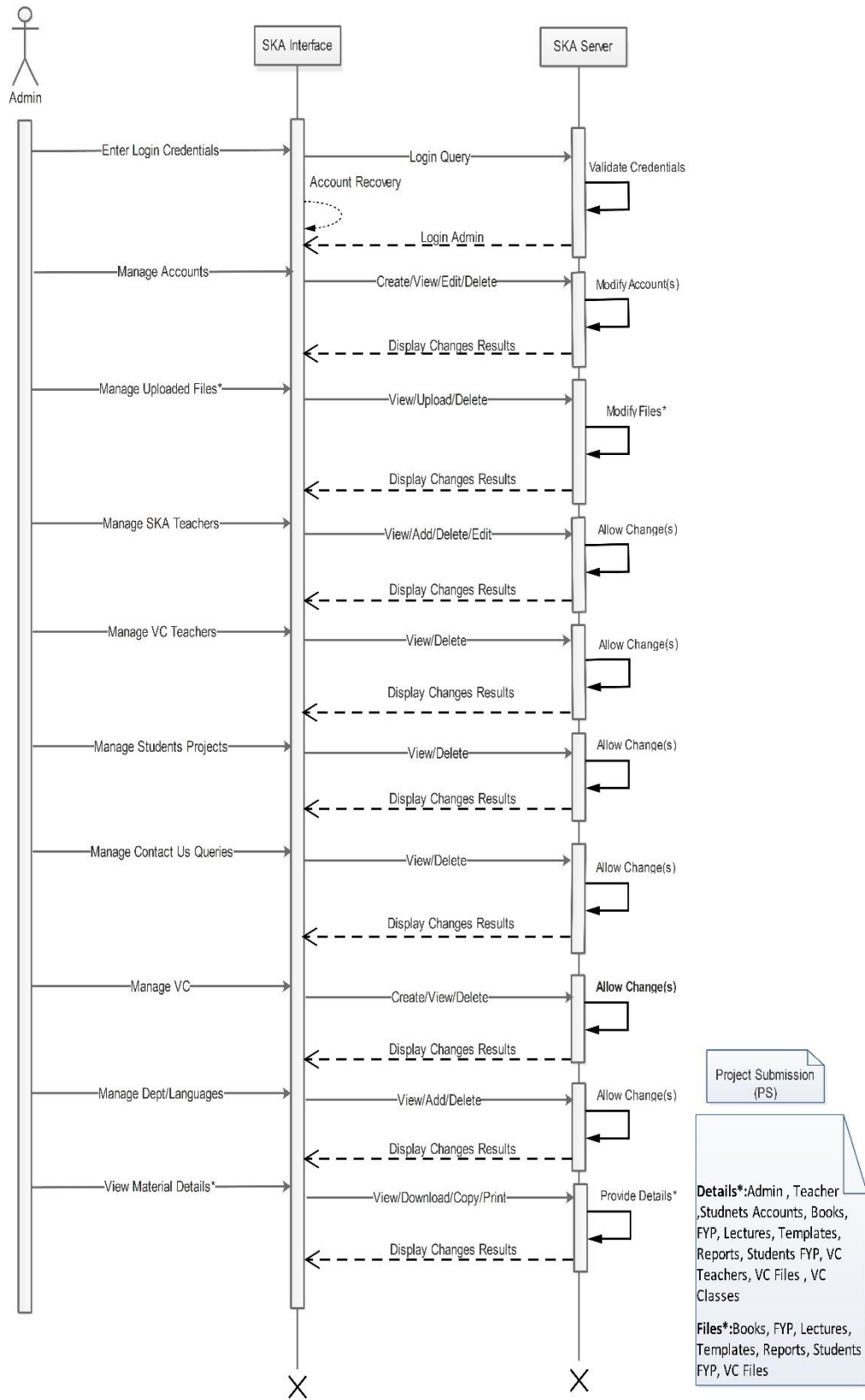
Student Sequence Diagram:



Teacher Sequence Diagram:

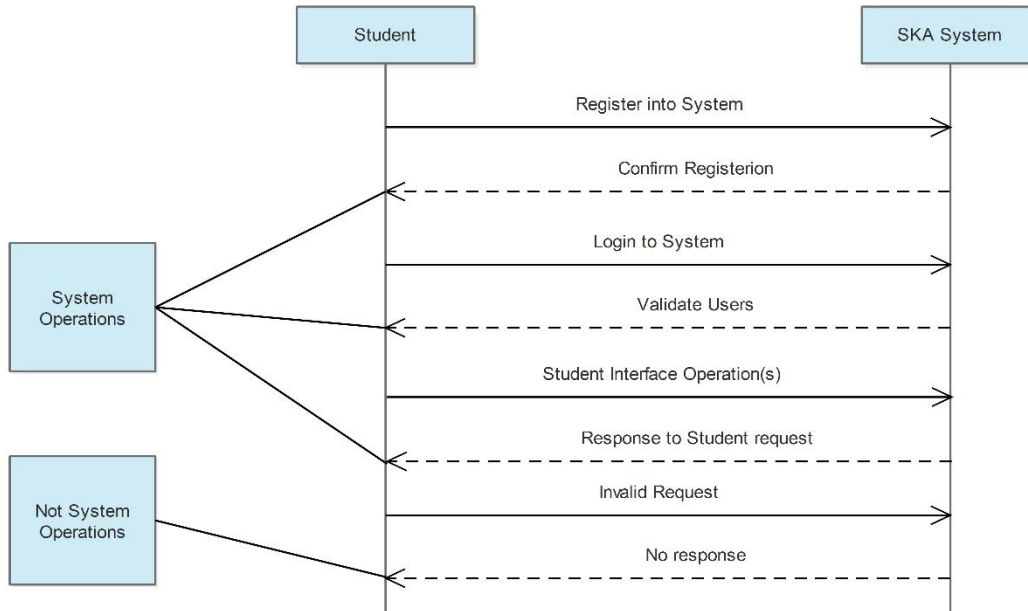


Admin Sequence Diagram:

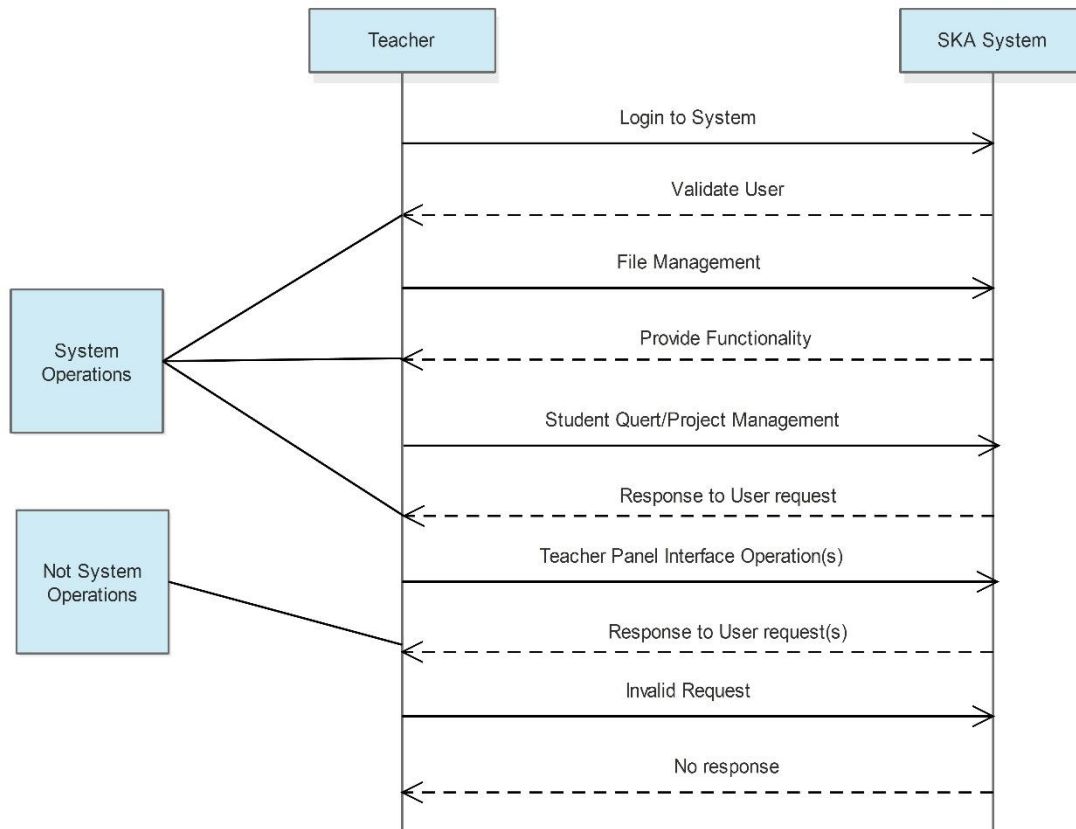


4.6. Operation contracts

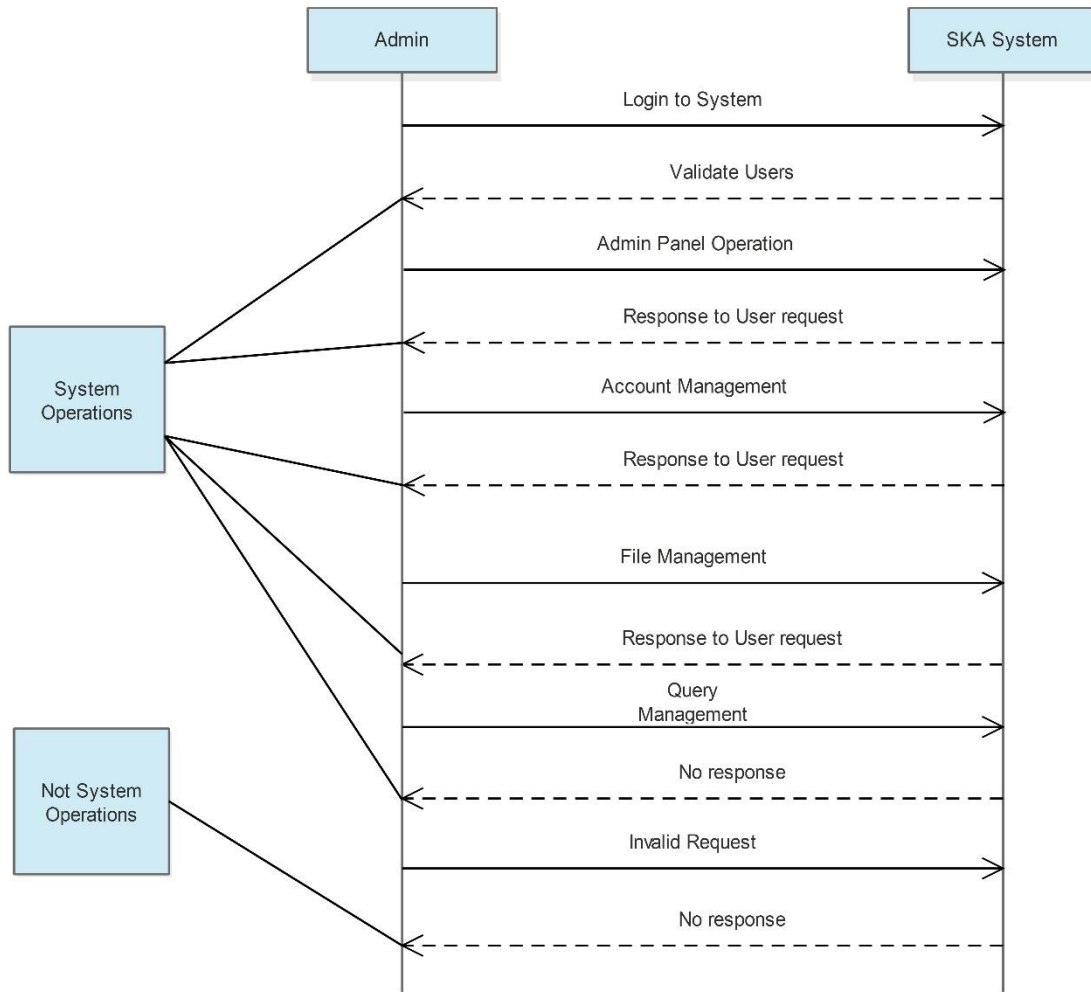
Student Operation Contracts for SKA:



Teacher Contracts for SKA:

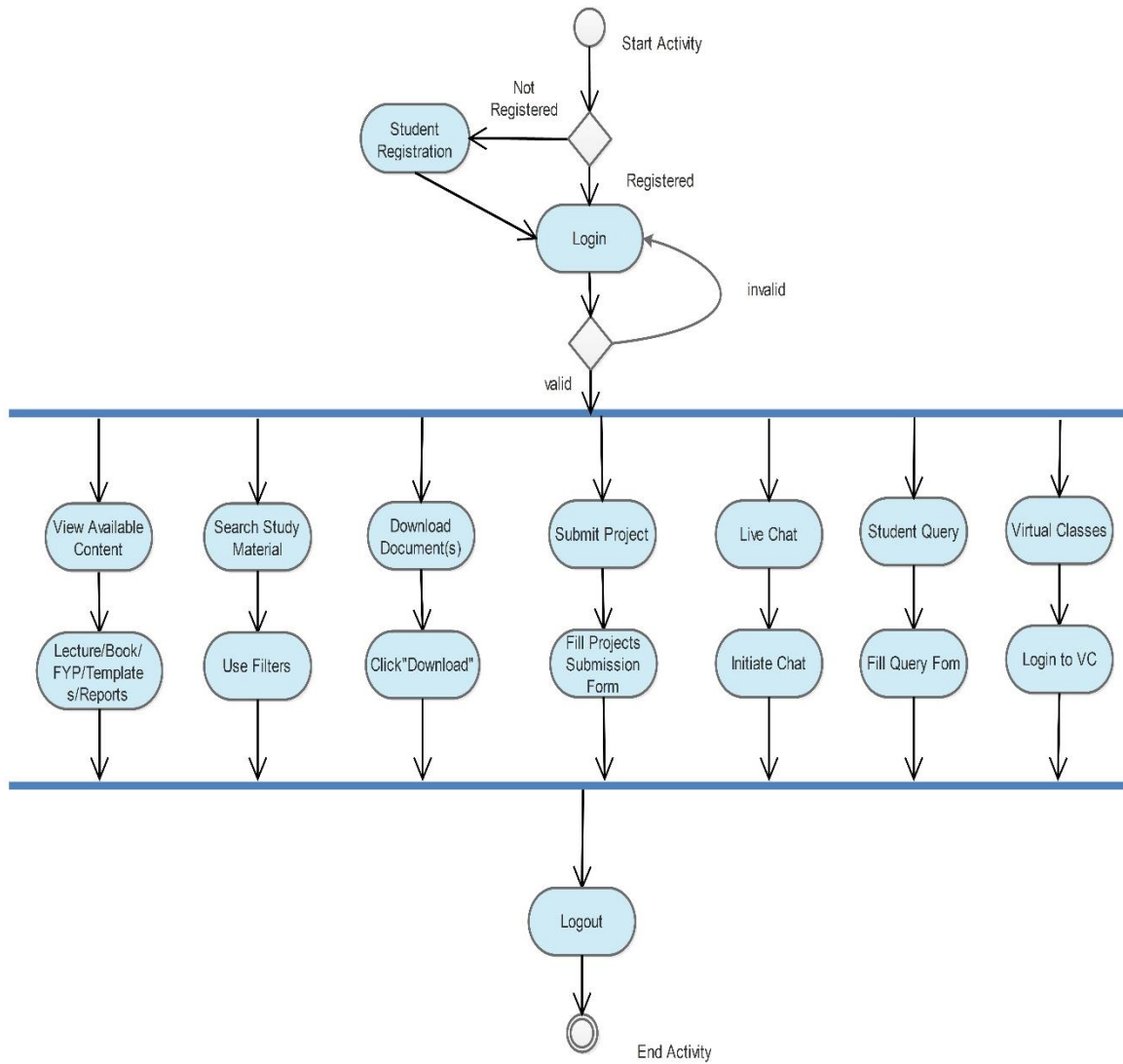


Admin Operation Contracts for SKA:

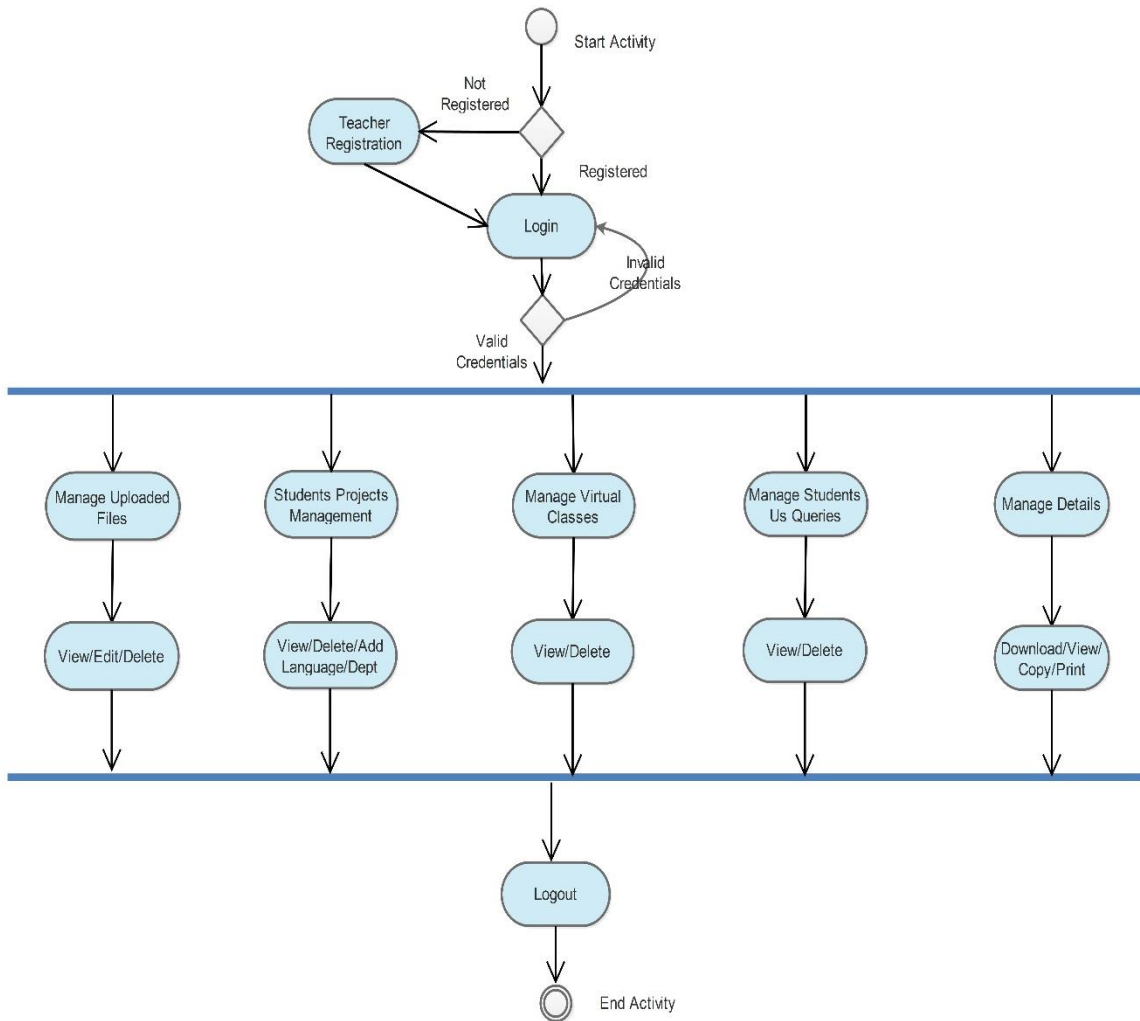


4.7. Activity Diagram

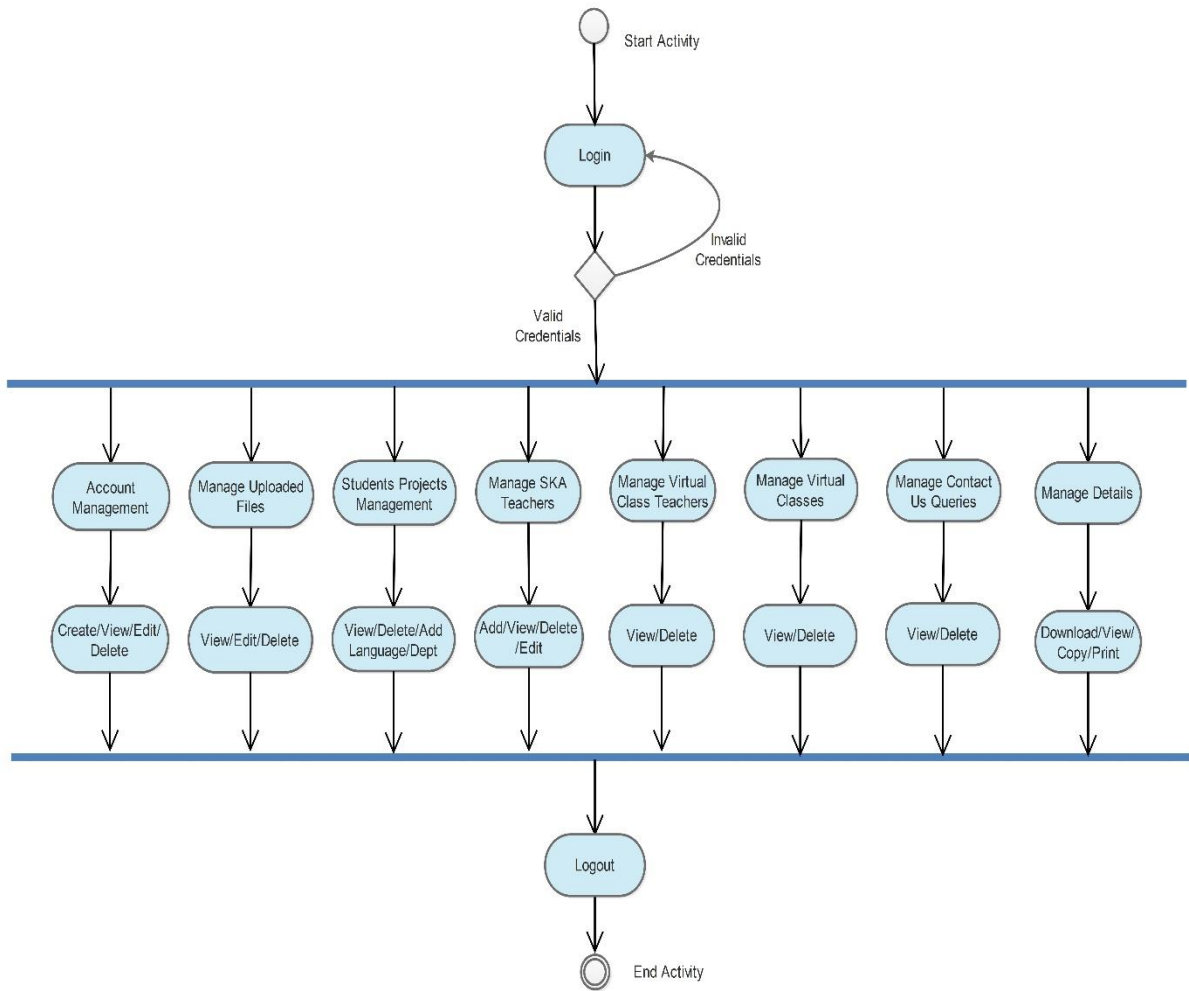
Activity Diagram for Student:



Activity Diagram for Teacher:

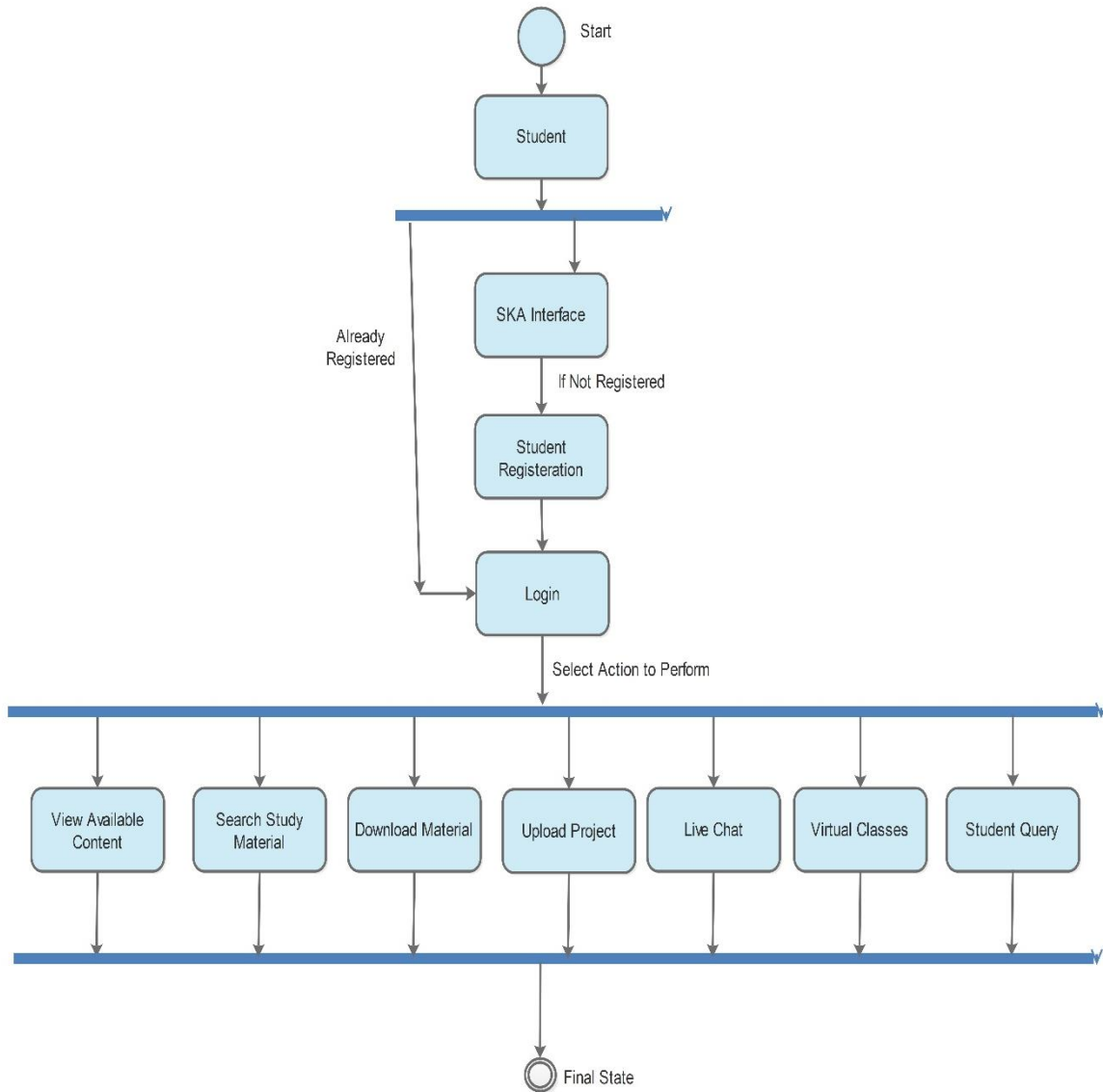


Activity Diagram for Admin:

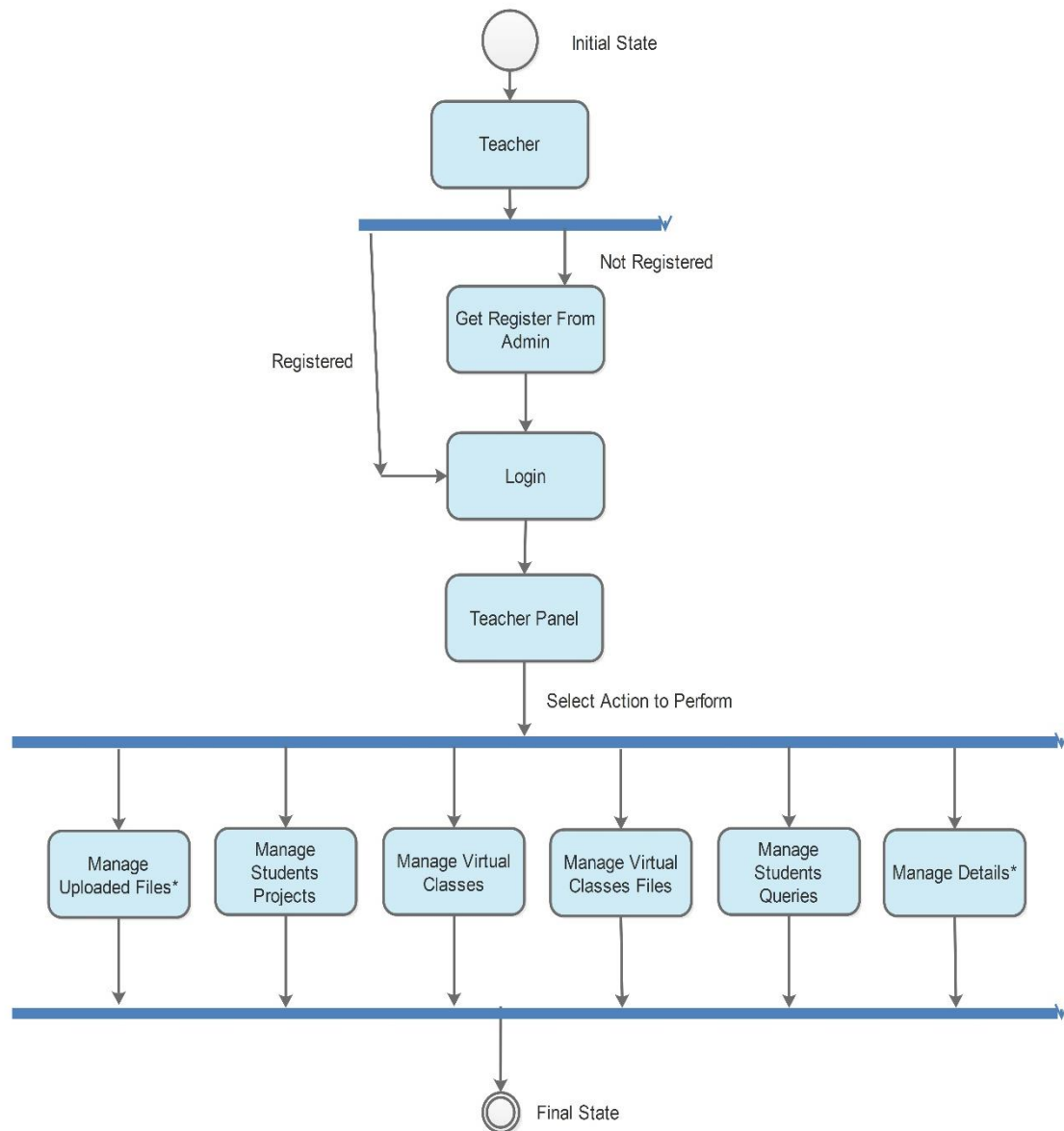


4.8. State Transition Diagram

State Transition Diagram for Student:



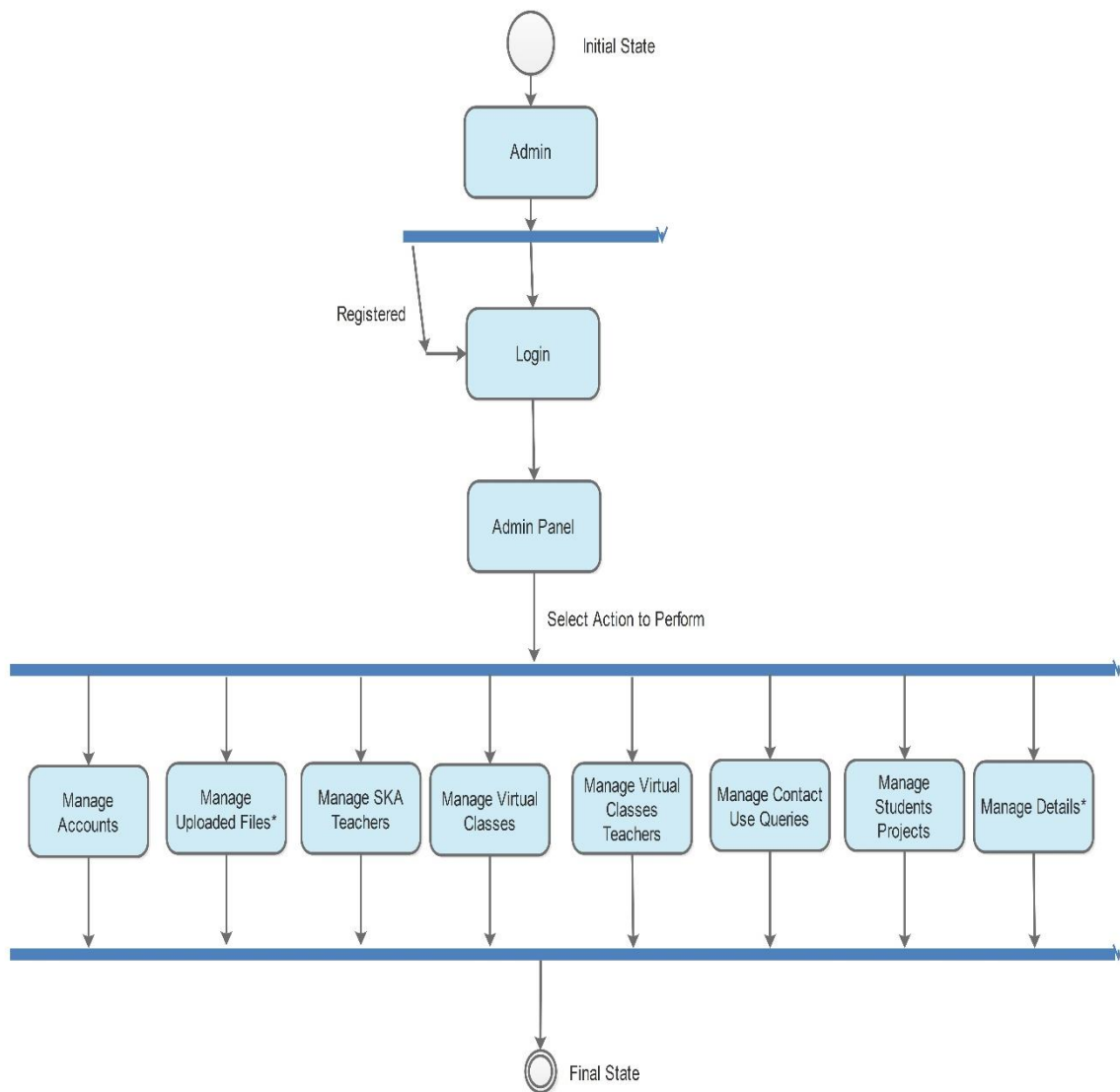
State Transition Diagram for Teacher:



Details*:Admin , Teacher ,Students Accounts, Books, FYP, Lectures, Templates, Reports, Students FYP, VC Teachers, VC Files , VC Classes

Files*:Books, FYP, Lectures, Templates, Reports, Students FYP, VC Files

State Transition Diagram for Admin:

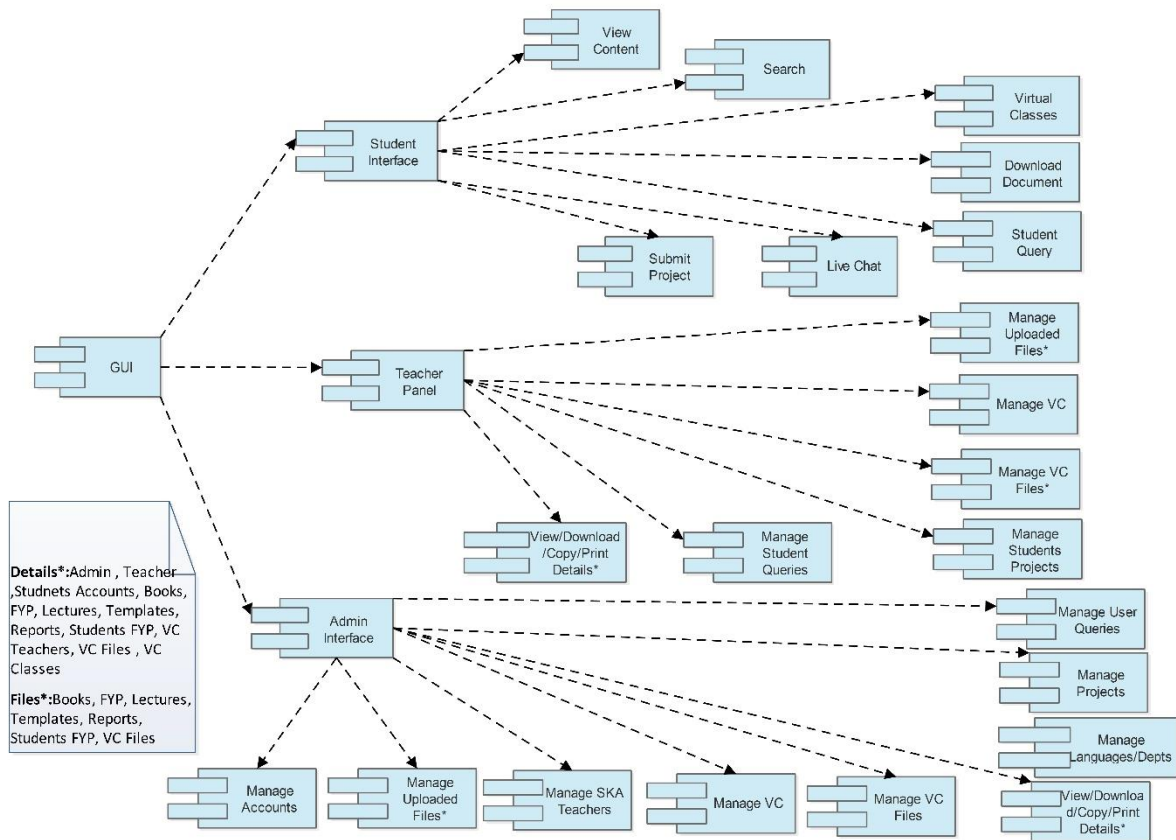


Details*:Admin , Teacher ,Students Accounts, Books, FYP, Lectures, Templates, Reports, Students FYP, VC Teachers, VC Files , VC Classes

Files*:Books, FYP, Lectures, Templates, Reports, Students FYP, VC Files

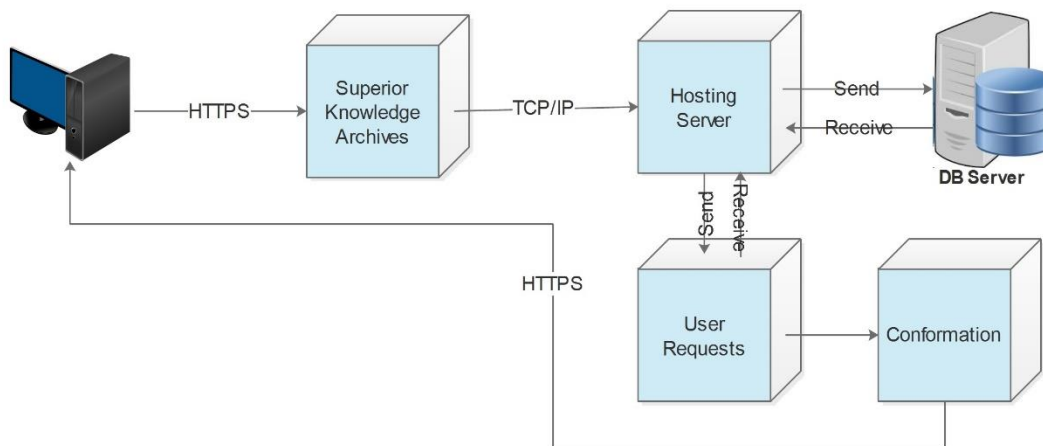
4.9. Component Diagram

Component Diagram for SKA:



4.10. Deployment Diagram

Deployment Diagram for SKA:



Chapter 5

Implementation

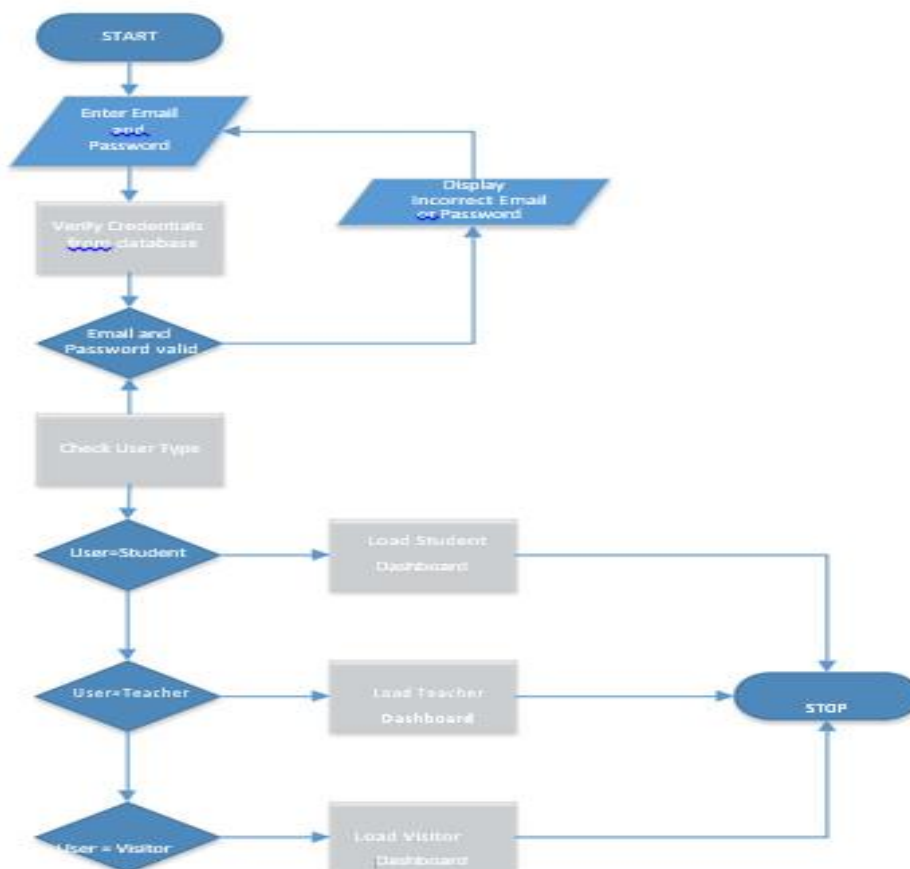
Chapter 5: Implementation

In an implementation, we have described our flow control of important modules and other methodologies that will be used to implement our project. We are following the iterative and incremental SDLC for the development of our project. There are many other components and libraries which we use in our implementation chapter such as Bootstrap 3.3.5 (for responsiveness) Google Map API (for location), FPDF (for the library for converting HTML to PDF), JQuery (for web animations), Font Awesome, Telerik UI and Send grid API.

The development environment is consist of .NET Entity Framework and uses a database first approach. We use SQL Server 2014 R2 for the database. In coding standard, we use HTML5, Externalized CSS3 and JavaScript. A tool which we use in our project in Visual Studio 2015 and for the database we use SQL Server 2014.

5.1. Important Flow Control/Pseudocodes

Flow control for SKA:



5.2. Components, Libraries, Web Services and stubs

Following are the components that are being utilized for the implementation of SKA

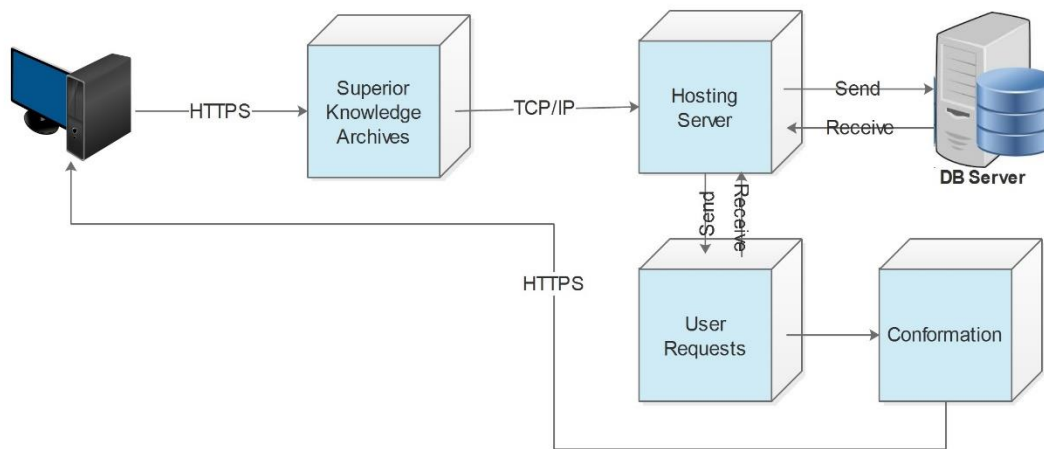
- Bootstrap 3.3.5
- Google Map API
- FPDF
- JQuery
- Font Awesome
- Telerik UI
- Send grid API

Following are the libraries that are being utilized for the implementation of SKA in .net framework

- System
- System.Collections
- System.Data
- System.Drawing
- System.IO
- System.Text
- System.Threading
- System.Timers
- System.Web
- System.Web.Services
- System.Windows.Forms
- System.Xml

5.3. Deployment Environment

SKA is C# based web application so it is deployed on a Localhost during development but after the completion of the integrations of the modules website will be deployed live on web hosting server with the appropriate domain name. Microsoft .NET Entity framework is used for deployment. In entity framework we use database first approach for development. SKA is be deployed lived on a live web server after complete functional testing.



5.4. Tools and Techniques

Following are the tools with a methodology for implementation.

Tools and techniques	
Implementation Tools	Implementation Methodology
MS Word 2013	Documentation production
Edraw-Max 7.3	UML Modelling and other E-drawings
Visual Studio 2013	Coding and debugging(C#, MVC)
Draw.io	Online UML Modelling and E-drawing tool
Ganttpro	Online tool for Gantt chart designing
Google Page Speed Insights	Google online speed and performance testing tool.

5.5. Best Practices / Coding Standards

HTML5 and CSS3:

HTML5 and CSS3 is used since it is recommended by W3C

W3 Validation:

All HTML paged are verified against the W3C validator to ensure that the markup is well Formed.

Attributes and Tags:

All tags and attributes are written in lowercase. Additionally, attribute values are also lowercase.

Indentation:

Proper indentation is used in C# and HTML to reflect logical structure.

Externalized CSS:

All the style sheets are externalized and used in HEAD of HTML

JavaScript at footer:

To make page load quickly as possible all JavaScript who perform their functionality after the page has been loaded are placed in the footer.

Responsiveness:

The website is responsive and mobile friendly to deliver content to mobile devices. The principal objective is to improve the user experience of the Web when accessed from such devices.

5.6. Version Control

GitHub Version Control:

Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Software Development Life Cycle:

Iterative and Incremental Process Model

Chapter 6

Testing and Evaluation

Chapter 6: Testing and Evaluation

In this chapter we have added the results of the testing and evaluation of our system. This chapter discusses the brief testing procedures that have been carried out throughout the testing process to test the system functionalities. Testing is performed on localhost and by using different manual and automated tools. Anyhow errors and variation may affect the actual results.

6.1. Use Case Testing

Test Case 1

Test Suite ID	TS001
Test Case ID	TC001
Test Case Summary	To verify that the user must enter valid Username and a valid password to access the system
Related Requirements	REQ-SF2-5
Prerequisites	<ol style="list-style-type: none"> 1. The user must be authorized to access system.
Test Procedure	<ol style="list-style-type: none"> 1. Enter the valid username and password on input fields 2. The user must have an internet connection.
Test Data	<ol style="list-style-type: none"> 1. Validate Username and password from the database.
Expected Result	<ol style="list-style-type: none"> 1. On clicking the login button if username and password are valid then the user can access the system. 2. On clicking the login button if either username or password any of them is invalid user cannot access the system. 3. The invalid message "Invalid Username/Password" should be displayed. 4. On clicking the login button if input fields of username or password are empty then the message will be generated that "Please Enter Username and Password" to access the system.
Actual Result	<ol style="list-style-type: none"> 1. On clicking the login button if username and password are valid then the user can access the system. 2. On clicking the login button if either username or password any of them is invalid user cannot access the system. 3. On clicking the login button if any field is invalid then the invalid message "Invalid Username/Password" is displayed. 4. On clicking the login button if inputs fields are empty then the message will be generated that "Please Enter Username and Password".

Status	Pass
Remarks	This is a user validation test case.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none">• OS: Windows 7, 8.1, 10• Browser: Chrome Firefox

Test Case 2

Test Suite ID	TS002
Test Case ID	TC002
Test Case Summary	To verify that the user enters a valid username.
Related Requirements	REQ-SF2-5
Prerequisites	1. User has a valid username.
Test Procedure	1. The user enters his/her username.
Test Data	1. Validate User from the database.
Expected Result	<ol style="list-style-type: none"> 1. If On clicking the login button if the username is valid then the user can enter a password. 2. The otherwise invalid message “Invalid username should be displayed”.
Actual Result	<ol style="list-style-type: none"> 1. On clicking the login button if the username is valid user can enter his password. 2. On clicking the login button if the username is invalid error message is displayed.
Status	Pass
Remarks	This is a user verification test case.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 3

Test Suite ID	TS003
Test Case ID	TC003
Test Case Summary	To verify that the user enters a valid password.
Related Requirements	REQ-SF2-5
Prerequisites	1. User has a valid password.
Test Procedure	1. The user enters his/her password.
Test Data	1. Validate User from the database.
Expected Result	<ol style="list-style-type: none"> 1. If On clicking the login button password is valid then the user can access the system. 2. The otherwise invalid message “Invalid password should be displayed”.
Actual Result	<ol style="list-style-type: none"> 1. On clicking the login button if the password is valid user can access the system. 2. On clicking the login button if the password is invalid error message is displayed.
Status	Pass
Remarks	This is a user verification test case.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 4

Test Suite ID	TS004
Test Case ID	TC004
Test Case Summary	To verify that the user can recover/modify his/her forgotten user Password either it is username or password.
Related Requirements	REQ-SF4-1, REQ-SF4-2, REQ-SF4-3, REQ-SF4-4
Prerequisites	<ol style="list-style-type: none"> 1. User must have a valid E-mail address. 2. The user is authorized.
Test Procedure	<ol style="list-style-type: none"> 1. If the user has forgotten his/her user account password they have to enter his/her E-mail in order to recover/modify his/her forgotten password.
Test Data	<ol style="list-style-type: none"> 1. Validate the E-mail from the database.
Expected Result	<ol style="list-style-type: none"> 1. On clicking forgot password system prompt user to enter his/her E-mail. 2. On clicking forgot password system ask the user to enter his/her E-mail. 3. The user can recover his/her account through his/her Registered Email. 4. If email is invalid or enters in an invalid email format warning message "Invalid E-mail" should be displayed.
Actual Result	<ol style="list-style-type: none"> 1. On clicking system ask the user to enter his/her E-mail 2. On entering email system prompt user to check his Email where the system sends your Password. 3. If email is invalid or enters in an invalid email format warning message "Invalid E-mail" is not displayed.
Status	Pass
Remarks	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Created By	80/08/2018
Date of Creations	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Executed By	80/08/2018
Date of Execution	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 5

Test Suite ID	TS005
Test Case ID	TC005
Test Case Summary	To verify that upon clicking the login button system must move a user (Admin, Teacher and Student) to their appropriate user page where they can access their relevant data.
Related Requirements	REQ-SF2-1, REQ-SF2-2, REQ-SF2-3, REQ-SF2-4, REQ-SF2-5
Prerequisites	<ol style="list-style-type: none"> 1. The user must enter their username and password and click on the Login button. 2. The user has a valid username and password.
Test Procedure	<ol style="list-style-type: none"> 1. If the user has entered a valid username and password system move the user to their relevant page to access their appropriate user data. 2. The user must click login after entering their username and password.
Test Data	<ol style="list-style-type: none"> 1. To provide user access to their account to access the system resources.
Expected Result	<ol style="list-style-type: none"> 1. On clicking the login button after entering username and password the user must move to their appropriate user page.
Actual Result	<ol style="list-style-type: none"> 1. On clicking the login button after entering username and password system move the user to their appropriate user page.
Status	Pass
Remarks	Test case for checking system functionality.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 6

Test Suite ID	TS006
Test Case ID	TC006
Test Case Summary	To verify that Admin with administration rights can manage Teacher and Students accounts.
Related Requirements	REQ-SF12-2, REQ-SF12-3, REQ-SF12-4, REQ-SF12-5, REQ-SF12-6, REQ-SF12-6, REQ-SF12-7, REQ-SF12-8,
Prerequisites	<ol style="list-style-type: none"> 1. The user is authorized. 2. Admin must be logged in to a system with admin rights.
Test Procedure	<ol style="list-style-type: none"> 1. Admin can manage Teacher and Students accounts.
Test Data	<ol style="list-style-type: none"> 1. To manage Teacher and Students accounts.
Expected Result	<ol style="list-style-type: none"> 1. On clicking manage accounts button system provide different options to admin to manage Teacher and Students accounts like Create, Update and Delete. 2. The system allows Admin to manage accounts and provide options to manage the accounts
Actual Result	<ol style="list-style-type: none"> 1. On clicking manage employees account button system provide different options to admin to manage the accounts. 2. On clicking manage accounts button system allow admin to manage Teacher and Students accounts.
Status	Pass
Remarks	Test case to manage Teacher and Students accounts and to verify system functionality.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 7

Test Suite ID	TS007
Test Case ID	TC007
Test Case Summary	To verify that the admin can update and delete Files (Books, Lecture etc.) uploaded by Teacher
Related Requirements	REQ-SF12-11, REQ-SF12-13
Prerequisites	<ol style="list-style-type: none"> 1. Admin is authorized. 2. Admin must be logged in to a system with admin rights.
Test Procedure	<ol style="list-style-type: none"> 1. Admin can delete and update Files uploaded by Teacher
Test Data	<ol style="list-style-type: none"> 1. To manage File uploaded by Teacher.
Expected Result	<ol style="list-style-type: none"> 1. On clicking Delete File button system must be deleted the selected file 2. On clicking update File button system must be updated by section, description and File.
Actual Result	<ol style="list-style-type: none"> 1. On clicking Delete File button system must be deleted from the database. 2. On clicking Delete File button system must be deleted a selected file from the database
Status	Pass
Remarks	Test Case to manage Files(Lecture, Books, Templates, FYP and Also Reports) uploaded by Teacher
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 8

Test Suite ID	TS008
Test Case ID	TC008
Test Case Summary	To verify that the Admin can Download Account's Details In (PDF & Excel) and also print Accounts Details.
Related Requirements	REQ-SF12-5, REQ-SF12-6,
Prerequisites	<ol style="list-style-type: none"> 1. The user is authorized. 2. Admin must be logged in to a system with admin rights.
Test Procedure	<ol style="list-style-type: none"> 1. Admin can Download Account's Details In (PDF & Excel) and also print Accounts Details.
Test Data	<ol style="list-style-type: none"> 1. Download and print Accounts Details.
Expected Result	<ol style="list-style-type: none"> 1. On clicking the download button system provide different options to admin to choose options like download data as PDF, Excel file. 2. On click Print button system fetch all accounts records and then prints the records. 3. System print accounts record. 4. System Download accounts records.
Actual Result	<ol style="list-style-type: none"> 1. On clicking Download button system download account record. 2. On clicking print button system print account record.
Status	Pass
Remarks	Test case to download and print account records.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 9

Test Suite ID	TS009
Test Case ID	TC009
Test Case Summary	To verify that the Teacher can Upload Files(Lecture, Books, Templates, FYP and Also Reports)
Related Requirements	REQ-SF11-1, REQ-SF11-2, REQ-SF11-3
Prerequisites	<ol style="list-style-type: none"> 1. The user is authorized. 2. The teacher must be logged in to a system with Teacher rights.
Test Procedure	1. The teacher can Upload Files(Lecture, Books, Templates, FYP and Also Reports)
Test Data	1. To upload Files(Lecture, Books, Templates, FYP and Also Reports)
Expected Result	<ol style="list-style-type: none"> 1. On clicking Uploaded button system must be uploaded a file and also save into the database. 2. System Upload Files(Lecture, Books, Templates, FYP and Also Reports)
Actual Result	<ol style="list-style-type: none"> 1. On clicking Uploaded button system must be uploaded a file and also save into the database. System Upload Files(Lecture, Books, Templates, FYP and Also Reports)
Status	Pass
Remarks	Test case to upload Files(Lecture, Books, Templates, FYP and Also Reports) by Teacher
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 10

Test Suite ID	TS010
Test Case ID	TC010
Test Case Summary	To verify that the Teacher can update and delete Files (Books, Lecture etc.) uploaded by the teacher
Related Requirements	REQ-SF11-5, REQ-SF11-6
Prerequisites	<ol style="list-style-type: none"> 1. The user is authorized. 2. The teacher must be logged in to a system with specific rights.
Test Procedure	<ol style="list-style-type: none"> 1. The teacher can delete and update Files(Lecture, Books, Templates, FYP and Also Reports)
Test Data	<ol style="list-style-type: none"> 2. To manage File uploaded by Teacher.
Expected Result	<ol style="list-style-type: none"> 3. On clicking Delete File button system must be deleted the selected file 4. On clicking update File button system must be updated by section, description and File.
Actual Result	<ol style="list-style-type: none"> 3. On clicking Delete File button system must be deleted from the database. 4. On clicking Delete File button system must be deleted a selected file from the database
Status	Pass
Remarks	Test Case to manage Files(Lecture, Books, Templates, FYP and Also Reports) uploaded by Teacher
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 11

Test Suite ID	TS011
Test Case ID	TC011
Test Case Summary	To verify that the Teacher can view and delete FYP projects uploaded by Student
Related Requirements	REQ-SF11-5, REQ-SF11-6
Prerequisites	<ol style="list-style-type: none"> 1. The user is authorized. 2. The teacher must be logged in to a system with specific rights.
Test Procedure	<ol style="list-style-type: none"> 1. The teacher can view and delete FYP projects uploaded by Student
Test Data	<ol style="list-style-type: none"> 1. To manage FYP projects uploaded by Student.
Expected Result	<ol style="list-style-type: none"> 1. On clicking Delete File button system must be deleted selected FYP Projects. 2. On clicking View File button system must be show Uploaded FYP projects details.
Actual Result	<ol style="list-style-type: none"> 1. On clicking Delete File button system must be deleted selected FYP Projects. 2. On clicking View File button system must be show Uploaded FYP projects details.
Status	Pass
Remarks	Test Case to manage FYP projects uploaded by students.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 12

Test Suite ID	TS012
Test Case ID	TC012
Test Case Summary	To verify that the Student can Download Files(Lecture, Books, Templates, FYP and Also Reports) uploaded by Teacher
Related Requirements	REQ-SF6-1, REQ-SF6-2
Prerequisites	<ol style="list-style-type: none"> 1. The student is authorized. 2. The student must be logged in to a system with specific rights.
Test Procedure	<ol style="list-style-type: none"> 1. A student can download Files (Lecture, Books, Templates, FYP and Also Reports) which is saved in the database.
Test Data	<ol style="list-style-type: none"> 1. To Download Files (Lecture, Books, Templates, FYP and Also Reports)
Expected Result	<ol style="list-style-type: none"> 1. On clicking Download button system allow the user to download requested Files (Lecture, Books, Templates, FYP and Also Reports) 2. Download Files (Lecture, Books, Templates, FYP and Also Reports) from the database
Actual Result	<ol style="list-style-type: none"> 1. Download Files (Lecture, Books, Templates, FYP and Also Reports) from the database.
Status	Pass
Remarks	Test case to download Files (Lecture, Books, Templates, FYP and Also Reports) from the database.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 13

Test Suite ID	TS013
Test Case ID	TC013
Test Case Summary	To verify that the Student can Upload FYP projects With Details
Related Requirements	REQ-SF10-1, REQ-SF10-2, REQ-SF10-3, REQ-SF10-4
Prerequisites	<ol style="list-style-type: none"> 1. The student is authorized. 2. The student must be logged in to a system with Teacher rights.
Test Procedure	<ol style="list-style-type: none"> 1. A student can Upload FYP projects
Test Data	<ol style="list-style-type: none"> 1. To Upload FYP projects
Expected Result	<ol style="list-style-type: none"> 1. On clicking Uploaded button system must be uploaded FYP project and also save into the database. 2. System Upload FYP projects
Actual Result	<ol style="list-style-type: none"> 1. On clicking Uploaded button system must be uploaded project file and also save into the database. 2. System Upload FYP projects
Status	Pass
Remarks	Test case to check project submission functionality.
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 14

Test Suite ID	TS014
Test Case ID	TC014
Test Case Summary	To verify that the Student can manage FYP project uploaded by His/her
Related Requirements	REQ-SF10-1, REQ-SF10-3, REQ-SF10-4,
Prerequisites	<ol style="list-style-type: none"> 1. The student is authorized. 2. The student must be logged in to a system with specific rights.
Test Procedure	<ol style="list-style-type: none"> 1. Student can delete and update Projects Files
Test Data	<ol style="list-style-type: none"> 1. To manage Project File uploaded
Expected Result	<ol style="list-style-type: none"> 1. On clicking Delete File button system must be deleted selected Project file 2. On clicking update Project File button system must be updated Project file
Actual Result	<ol style="list-style-type: none"> 1. On clicking Delete File button system must be deleted selected Project file 2. On clicking update Project File button system must be updated Project file
Status	Pass
Remarks	Test Case to manage uploaded project file by Student
Created By	Rana Waji Ul Hassan, Shiraz Naseer Ahmad
Date of Creations	80/08/2018
Executed By	Rana Waji Ul Hassan , Shiraz Naseer Ahmad
Date of Execution	80/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 15

Test Suite ID	TS015
Test Case ID	TC015
Test Case Summary	1. To verify that the student can chat with another student
Related Requirements	REQ-SF8-1, REQ-SF8-2, REQ-SF8-3, REQ-SF8-4
Prerequisites	1. The student is authorized. 2. The student must be logged in to a system with specific rights.
Test Procedure	1. A student can chat with another student (Open Chat)
Test Data	1. To chat with other students
Expected Result	1. On clicking send message button system to allow to student send his/her message to the other student before writing a message to the textbox 2. Message send to the student
Actual Result	1. On clicking send message button the message was sent to the other student before writing a message to the textbox 2. Message send to the student
Status	Pass
Remarks	Test case to check Live chat functionality.
Created By	Rana Waji Ul Hassan
Date of Creations	08/08/2018
Executed By	Rana Waji Ul Hassan
Date of Execution	08/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 16

Test Suite ID	TS016
Test Case ID	TC016
Test Case Summary	1. To verify that the student can search the File with filter (by Name, Section and also Description)
Related Requirements	REQ-SF8-1, REQ-SF8-2, REQ-SF8-3, REQ-SF8-4, REQ-SF8-5
Prerequisites	1. The student is authorized. 2. The student must be logged in to a system with specific rights.
Test Procedure	2. A student can search the File by Name, Section and also Description
Test Data	1. To Search File with filters 2. The student must select filter then write search content in the textbox for searching the data
Expected Result	1. On clicking the search button system allow showing relevant data which come from a database 2. The system must show relevant data
Actual Result	1. On clicking the search button system allow showing relevant data which come from a database 2. The system must show relevant data
Status	Pass
Remarks	Test case to test the search with drop down with filter functionality.
Created By	Rana Waji Ul Hassan
Date of Creations	08/08/2018
Executed By	Rana Waji Ul Hassan
Date of Execution	08/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 17

Test Suite ID	TS017
Test Case ID	TC017
Test Case Summary	1. To verify that the teacher can create and manage the virtual class and files
Related Requirements	REQ-SF9-1, REQ-SF9-2, REQ-SF9-3, REQ-SF9-4, REQ-SF9-5, REQ-SF9-6, REQ-SF11-8, REQ-SF11-9
Prerequisites	1. The teacher is authorized. 2. The teacher must be logged in to a system with specific rights.
Test Procedure	1. A teacher can manage virtual classes 2. A teacher can create virtual classes 3. A teacher can view virtual classes 4. A teacher can delete virtual classes 5. A teacher can upload files into virtual classes
Test Data	1. To create virtual class enter class name and set a password 2. To upload files in virtual class teacher must register class
Expected Result	1. On clicking the "Create class" the system must create the virtual class 2. After registering the class, on completing the upload file form the system must upload files into the system 3. On clicking "Edit Class" system must allow editing its specific class 4. On clicking "Delete Class" system must allow deleting its specific class 5. On clicking "View Class" system must allow viewing teacher its specific class 6. The system must show relevant data on each operation
Actual Result	1. On clicking the "Create class" the system allow to create the virtual class 2. After registering the class, on completing the upload file form the system allows the teacher to upload files into the system 3. On clicking "Edit Class" system allow the teacher to edit teacher its specific class 4. On clicking "Delete Class" system allow the teacher to delete teacher its specific class 5. On clicking "View Class" system allow the teacher to view teacher its specific class 6. The system showed relevant data on each operation
Status	Pass
Remarks	Test case to test the virtual class module functionality.

Created By	Rana Waji Ul Hassan
Date of Creations	08/08/2018
Executed By	Rana Waji Ul Hassan
Date of Execution	08/08/2018
Test Environment	<ul style="list-style-type: none"> • OS: Windows 7, 8.1, 10 • Browser: Chrome Firefox

Test Case 18

Test Suite ID	TS018
Test Case ID	TC018
Test Case Summary	1. To verify that the student can access the virtual class with specific class name and password
Related Requirements	REQ-SF9-6
Prerequisites	The student is authorized. The student must be logged in to a system with specific rights.
Test Procedure	<ol style="list-style-type: none"> 1. A student can access virtual classes 2. A student can view virtual classes files 3. A student can download virtual classes files
Test Data	To access virtual class student must enter class name and password To download files in virtual class student must click the "Download" link.
Expected Result	<ol style="list-style-type: none"> 1. On clicking the "Virtual Class" the system must navigate student to the virtual class login page 2. After entering the class name and password student must access the specific class and view its class data 3. On clicking "Download" system must allow downloading files 4. The system must show relevant data on each operation
Actual Result	<ol style="list-style-type: none"> 1. On clicking the "Virtual Class" the system navigate student to the virtual class login page 2. After entering the class name and password student can access the specific class and view its class data 3. On clicking "Download" system allow students to download files 4. The system must show relevant data on each operation
Status	Pass

Remarks	Test case to test the virtual class Module functionality.
Created By	Rana Waji Ul Hassan
Date of Creations	08/08/2018
Executed By	Rana Waji Ul Hassan
Date of Execution	08/08/2018
Test Environment	<ul style="list-style-type: none">• OS: Windows 7, 8.1, 10• Browser: Chrome Firefox

6.2. Equivalence partitioning

Test Scenario: To test the Students access security through equivalence partitioning

Equivalence partitioning		
Invalid	Valid	Invalid
Not registered	Registered	Visitor
Result Status	Pass	Fail

Test Scenario: To test the teacher access security through equivalence partitioning

Equivalence partitioning		
Invalid	Valid	Invalid
Not registered	Registered	Visitor
Result Status	Pass	Fail

Test Scenario: To test the admin access security through equivalence partitioning

Equivalence partitioning		
Invalid	Valid	Invalid
Not registered	Registered	Visitor
Result Status	Pass	Fail

Test Scenario: To test the visitor access security through equivalence partitioning

Equivalence partitioning		
Invalid	Valid	Invalid
Download	Visit	Upload
Result Status	Pass	Fail

6.3. Data flow testing

Data Flow Testing Results		
Data Unit Name	Data Flow Method	Test Results
Student Registration Form	Interface-->Database, Database-->Interface	Pass
Login Form	Interface-->Database, Database-->Interface	Pass
Account Recovery	Interface-->Database, Database-->Interface	Pass
View Files Function	Interface-->Database, Database-->Interface	Pass
Download File Function	Interface-->Database, Database-->Interface	Pass
Upload File Function	Interface-->Database, Database-->Interface	Pass
Project Submission Module	Interface-->Database, Database-->Interface	Pass
Search with filter	Interface-->Database, Database-->Interface	Pass
Live Chat	Interface-->Database, Database-->Interface	Pass
Virtual Class Module	Interface-->Database, Database-->Interface	Pass
Admin Panel	Interface-->Database, Database-->Interface	Pass
Teacher Panel	Interface-->Database, Database-->Interface	Pass

6.4. Unit testing

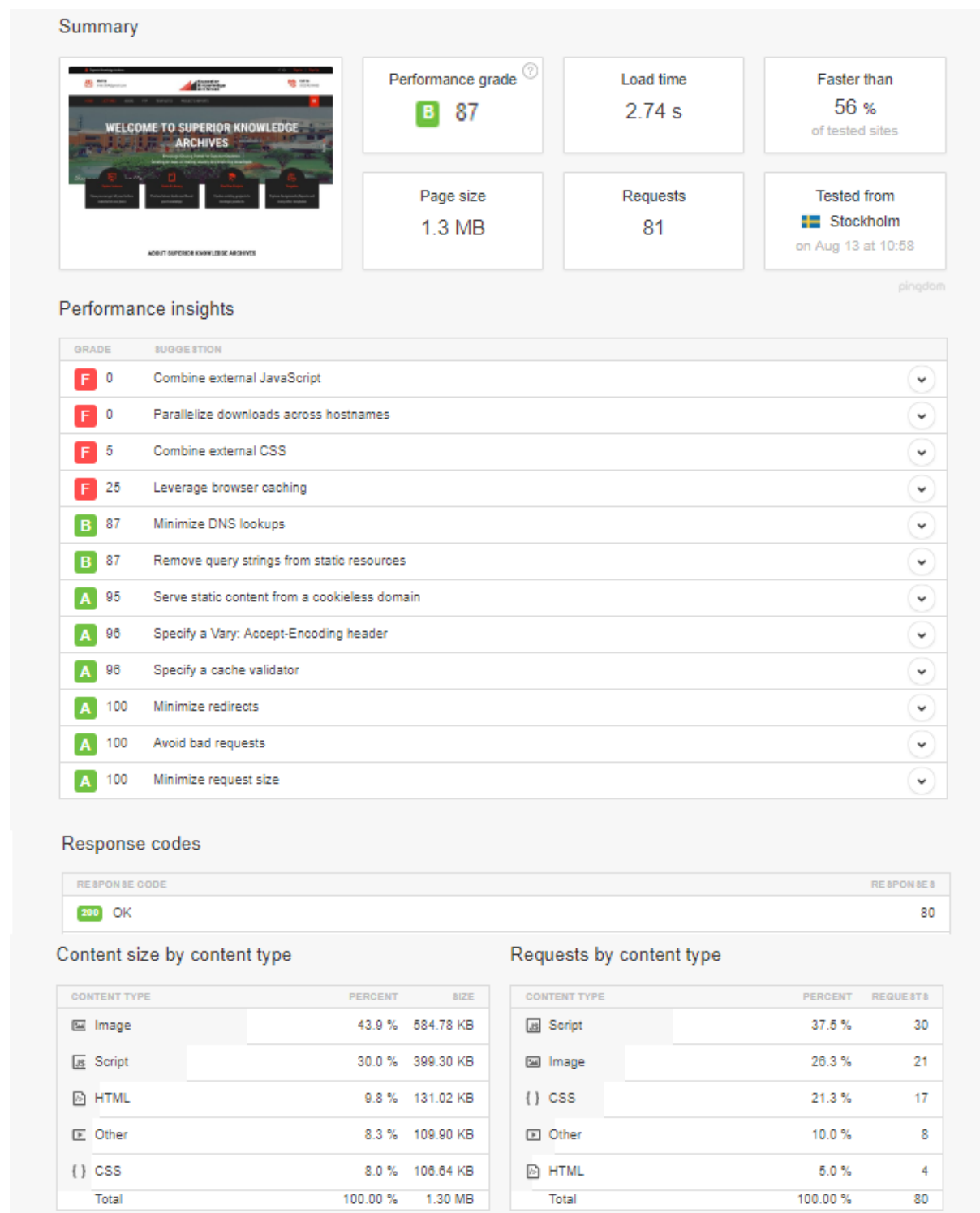
Unit Testing of SKA Software Units		
Software Unit Name	Testing Method	Test Results
Student Registration Form	Manual testing on localhost	Pass
Login Form	Manual testing on localhost	Pass
Account Recovery	Manual testing on localhost	Pass
View Files Function	Manual testing on localhost	Pass
Download File Function	Manual testing on localhost	Pass
Upload File Function	Manual testing on localhost	Pass
Project Submission Module	Manual testing on localhost	Pass
Search with filter	Manual testing on localhost	Pass
Live Chat	Manual testing on localhost	Pass
Virtual Class Module	Manual testing on localhost	Pass
Admin Panel	Manual testing on localhost	Pass
Teacher Panel	Manual testing on localhost	Pass

6.5. Integration testing

Integration testing of SKA units			
Software Unit Name	Test with Unit	Testing Method	Test Results
Student Registration Form	SKA Interface and relevant feature	Manual testing on localhost	Pass
Login Form	SKA Interface and relevant feature	Manual testing on localhost	Pass
Account Recovery	SKA Interface and relevant feature	Manual testing on localhost	Pass
View Files Function	SKA Interface and relevant feature	Manual testing on localhost	Pass
Download File Function	SKA Interface and relevant feature	Manual testing on localhost	Pass

Software Unit Name	Test with Unit	Testing Method	Test Results
Upload File Function	SKA Interface and relevant feature	Manual testing on localhost	Pass
Project Submission Module	SKA Interface and relevant feature	Manual testing on localhost	Pass
Search with filters	SKA Interface and relevant feature	Manual testing on localhost	Pass
Live Chat	SKA Interface and relevant feature	Manual testing on localhost	Pass
Virtual Class Module	SKA Interface and relevant feature	Manual testing on localhost	Pass
Admin Panel	SKA Interface and relevant feature	Manual testing on localhost	Pass
Teacher Panel	SKA Interface and relevant feature	Manual testing on localhost	Pass

6.6. Performance testing



6.7. Stress/Load Testing

Performed by using “BlazeMeter” online tool:



LOAD TEST REPORT

Superior Knowledge Archives



Report created by Rana Waji ul hassan.
Date of Run: Mon, 08/13/2018 - 18:27
Duration: a minute

HIDE SUMMARY

DESCRIPTIVE SUMMARY / CONCLUSIONS



Average Throughput

1.1

Hits/s



Avg. Response Time

3

Milliseconds



90% Response Time

1

Milliseconds



Error Rate

100.00

%

TOP 5 SLOW RESPONSES

5

Request	% of executions	Avg Time	90% Time	Max Time
My first url	100.00%	2.529 ms	1 ms	119 ms

TOP 5 ERRORS

5

Error Message	% of executions	Count
Non HTTP response code: java.net.UnknownHostException	90.00%	63
Non HTTP response code: java.net.UnknownHostException	10.00%	7

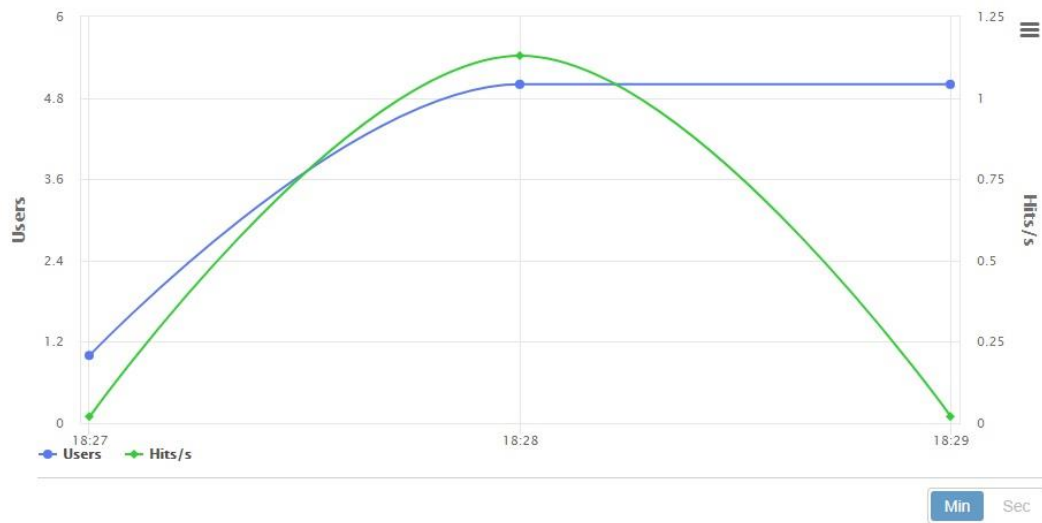
TEST SETUP DETAILS



Link to the report	https://a.blazemeter.com/app/executive-summary/index.html?master_id=18076417#/
User Name	Rana Waji ul hassan
Locations Used	Sandbox
Ramp-Up Times	300
Test Types	URL
Test Started	Mon, 08/13/2018 - 18:27
Test Finished	Still running...
Elapsed	a few seconds

TIMELINE GRAPHS

Concurrent Users and Hits/s







AGGREGATE REPORT

Label	#Samples	Average	90% Line	99% Line	Error %	Hits/s
My first url	70	2.529 ms	1 ms	10 ms	100.00%	1.11

ERROR REPORT

Error	Count	URLs
Non HTTP response code: java.net.UnknownHo Non HTTP response message: knowledgearchive	63	http://knowledgearchives.com
Non HTTP response code: java.net.UnknownHo Non HTTP response message: knowledgearchive	7	http://knowledgearchives.com

GLOSSARY

-  **Virtual User**
The entity used by load generation tool to simulate real users accessing the system under test.
-  **Throughput**
Number of requests completed in a time interval.
-  **Response Time**
The time that passed to perform the request and receive full response.
-  **Bandwidth Usage**
Amount of the network traffic that goes through network infrastructure.

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

Project Title: Superior Knowledge Archives

Project Supervisor: Usman Akbar

Project Team: Rana Waji ul Hassan
Shiraz Naseer Ahmad.

The area to be served: Superior University, Lahore (Department of CS&IT)

Purpose: The core purpose of this project is to fulfill the FYP requirement for the completion of the degree program in University Level. It also included providing students and dedicated platform to students to share knowledge easily and to serve humanity.

Description: The project SKA is developed by the two students of the department of CS&IT under the supervision of Mr. Usman Akbar (Lecturer CS&IT Dept.) with the sponsorship of FYP committee of Superior University.

Benefit: This project facilitates the students and teachers of the university to share the study material using the website SKA. It provides the state of the art solution for sharing knowledge with others. This system is easy to use and very responsive in eliminating the gap between the teacher and students for sharing study material.

Output/Outcome: Website based knowledge sharing portal

7.2. Achievements and Improvements

Our achievements throughout the project are given below:

- On time project delivery with complete functionality.
- Completely tested and problem-solving solution for superior students.
- Most visited team for meeting with the supervisor.
- Satisfaction of serving the humanity with knowledge.
- Satisfaction of meeting deadlines.
- Confidence to solve a problem that we have faced during our stay a university life.

7.3. Critical Review

Problem

In this modern era of technology paperwork is near to eliminate in upcoming decades, nowadays lectures are delivered through electronic media using multiple mediums like PPT Slides, E-books and videos lectures.

Review of Literature

According to our findings, during our stay of four years at university we find some certain gaps that will need to be solved. For example students have to wait for the SVL's and CR's to get the study material form the teacher and then upload it somewhere platform e.g. Facebook groups, Google Drive, WhatsApp groups so that students can access it. If a student is not a part of these platforms/groups he/she cannot access the data. Also these procedures are little complicated for students and teachers to manage many links and pages for different sections and semester.

Objectives

1. To provide a dedicated platform to students and teachers to share knowledge.
2. To develop software by following software engineering best practices by utilizing the latest tools available in the market.
3. To help students and teacher of CS&IT to improve academic processes by providing the best solution to their problems.
4. To continue the previous year's project to develop mature products that solve some real-life problems and facilitate the university.
5. To serve humanity.

Methodology

We have found that students and teachers should have a dedicated platform. Where a teacher can easily upload their lectures, books, assignments and other study materials for students and students can access this material with ease, without depending on someone else. So we decided to make our project SKA an opportunity to resolve teachers and students communication gap and solve their problem.

Conclusions

The project Superior Knowledge Archives (SKA) is developed with the aim to provide a dedicated platform to students and teachers to share knowledge. This project is undergone many improvements and changes under the requests of the stakeholders. Ultimately project SKA is developed under the supervision of the supervisor and members of the team and provide a useful system to facilitate the students and teachers.

7.4. Lessons Learnt

Following are the learning outcome that we have learned during the development of the project:

- Learn how to apply software engineering techniques on a project.
- Learn about the importance and role of documentation in a software project.
- Learning of new technology and tools.
- Learn to meet deadlines.
- Learn to be flexible while developing a software project.
- Team building skill and responsibilities.
- Learn to manage the project effectively.
- Learn how to tackle the changes to the software scope during development.
- Learn how to develop use full and live working project.
- Learn communication skill for better project communication management.
- Learn new testing and development tools.
- Learn to develop better documentation.

7.5. Future Enhancements/Recommendations

Following are the future recommendations for our project SKA.

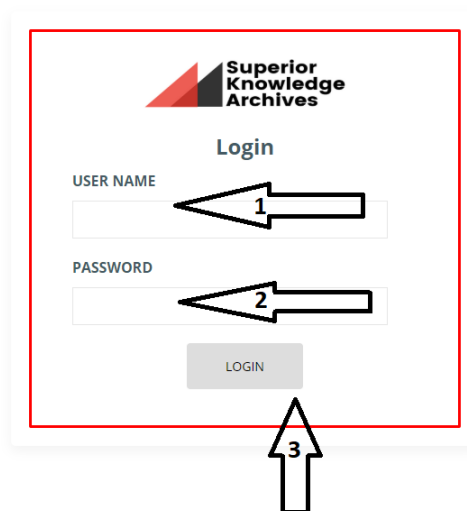
- Add new features and functionalities if needed and requested by the students and teacher.
- Perform the SEO of the website to rank the site at the first top ten results of Google search.
- Improve the performance of the website recommended by automated tools such as Google website insights and on the request of the users.
- Perform the data warehousing of data of websites after two to five years to make knowledge archives.
- Allow students to upload files by adding more security feature to the project.
- Add the role of moderator to reduce the workload of the admin of the system.
- Any other changes and improvements for positive improvement for the project are welcome in future.

Appendices

Appendix A: User Manual

User Manual explains the step by step activities that should be performed to use the system. It provides all step to carry out system tasks. It provides screenshots of the system functionality for Students.

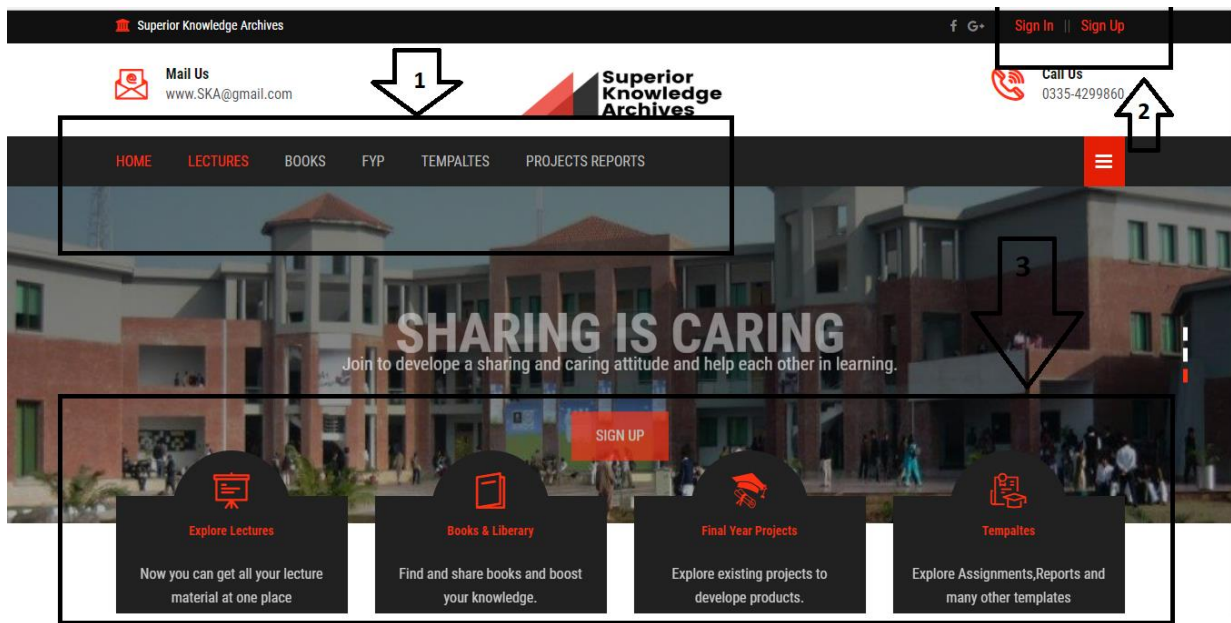
A.1. User login



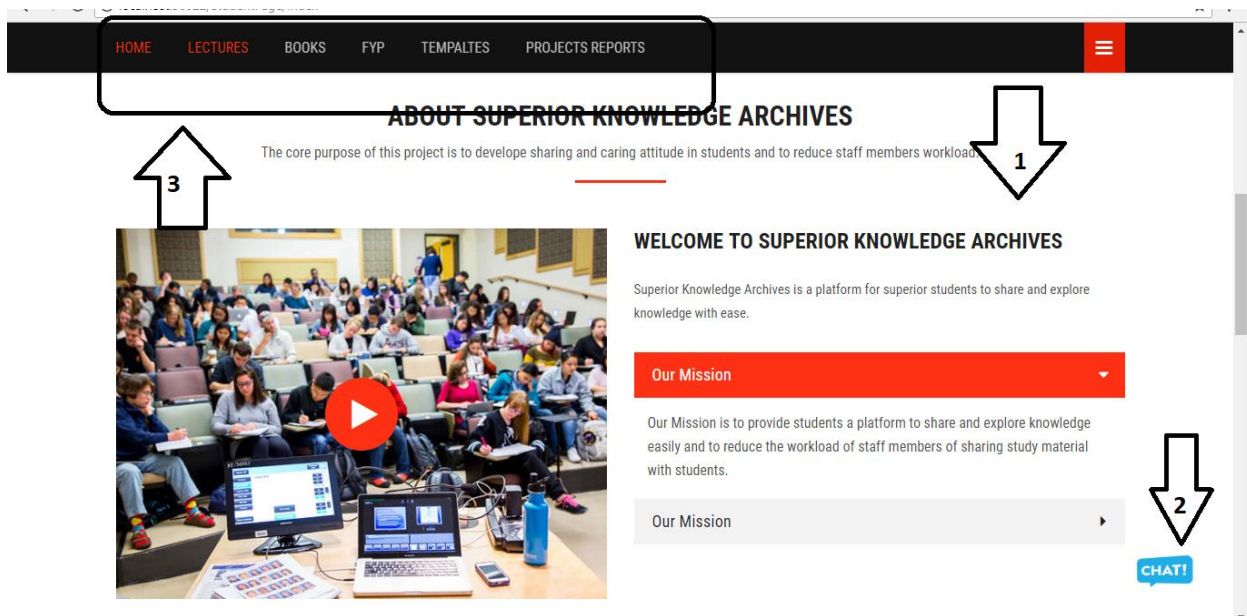
The screenshot shows the login interface for Superior Knowledge Archives. At the top left is the logo, which consists of a red triangle and the text 'Superior Knowledge Archives'. Below the logo is the word 'Login'. There are two input fields: 'USER NAME' and 'PASSWORD'. A grey button labeled 'LOGIN' is located below the password field. Three numbered arrows indicate the steps: arrow 1 points to the 'USER NAME' field, arrow 2 points to the 'PASSWORD' field, and arrow 3 points to the 'LOGIN' button.

This is a login page where the student enters his/her username in step 1 and student enters his/her password in step 2 then press login button in step 3. After pressing the button, the SKA system redirects the student through their website pages. If a student enters the wrong user and password then SKA system message generate “Invalid Username/Password”.

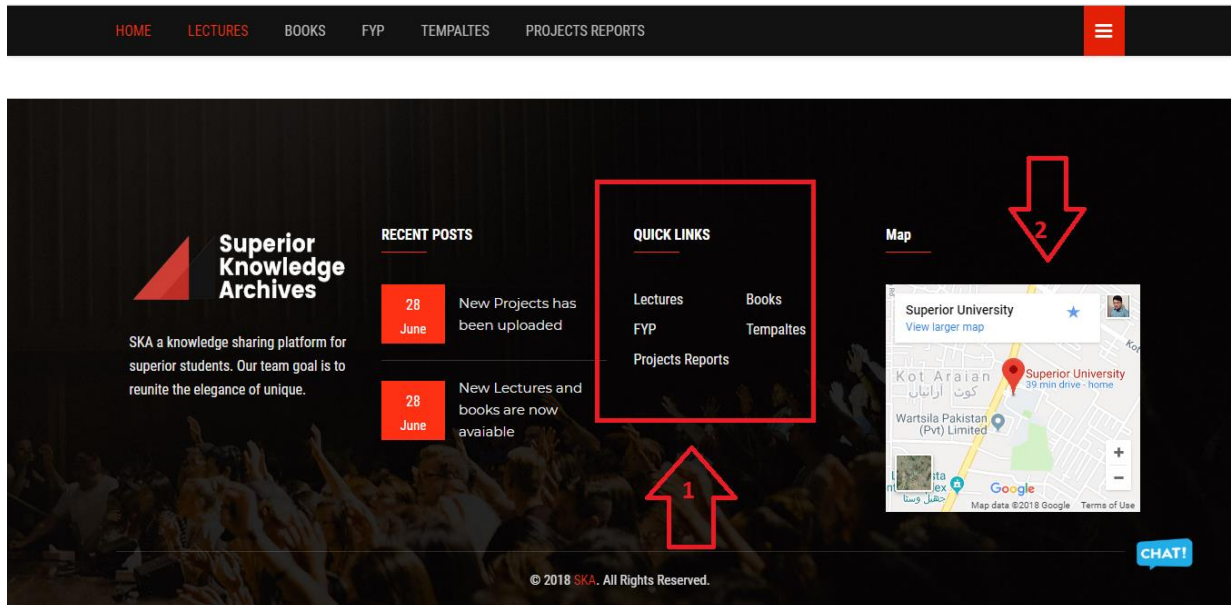
A.1.1. User interface



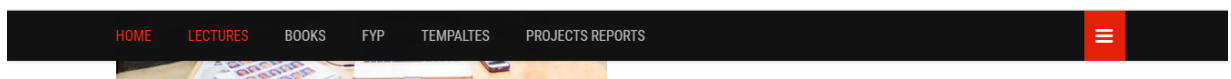
There is a student web interface wherein step 1 student has navigation in which they have multiple page link. From this link they access all web pages as they want. In step 2, the SKA system has two links (Sing in, Sing up).from these link students get to sign up form and sig in from. In step 3 there are four different section in which they have different pages link such as uploaded books, lecture, fyp, templates and reports.



This picture describes the SKA system vision and mission in step 1. In step 2 there is a chat button when the student clicks them, the system redirects them to a new page where they communicate with one another. In step 3 there is a fixed navigation bar which multiple pages links.



This picture also gives pages links in step 1 from a student can go all web pages as they want. In step 2 there is a location map for the student.



File Name	Section	Description	Download
shiraz	bbb	hhhh	Download File
1aw.jpg	302	Lecture 5(weeek4)	Download File
6.jpg	302	this is demo	Download File
12pak.html	320	kjjjjkk	Download File
books.txt	450	Lecture 5(weeek4)	Download File
5.html	302	helo worldEWFJJHKJERHFJKRKHJ	Download File
6a.css	379	Lecture 5(weeek4)	Download File
2.html	Null	Lecture 5(weeek4)	Download File

In this picture student can view all uploaded files, but they get these files after sign in.

A.1.2. User Activities

Search Book

Select CheckBox...! The Search

Name Section Description

Search

SearchingALL || 8 Records found

File Name	Section	Description	Download
shiraz	bbb	hhhh	Download
1aw.jpg	302	Lecture 5(weeek4)	Download
2a.css	450	Lecture 5(weeek4)	Download
lec.txt	302	this is demo	Download
password.txt	379	Lecture 5(weeek4)	Download
__VSDeploymentFailure__.txt	302	Lecture 5(weeek4)	Download

In this picture student access page (book, lectures) after successful sing in .student can download files in step1 also view all uploaded files (books). A student can search books by name, by section and by description as they need, in step2.

Superior Knowledge Archives

NAME

SUBMISSION

SKELETON

LANGUAGE

TOOL

GRADE

GROUP MEMBERS

DESCRIPTION

REVIEWS

STUDENT NAME

EMAIL

CONTACT NUMBER

SEMESTER

DEPARTMENT

COURSE

TEACHER

LEVEL

CREATE

In step 1, there is a “Final Year Project (Details)” submit the form by the student. All fields are required, otherwise the SKA system shows a message “Please Enter Filed Data”. After fill all fields student click on submit button and the information will save in SKA database.

A.1.3. Projects Section

mozzam
Teacher

1

GET THE CODE

Project Features	
Project Name	Superior Knowledge Archives
Duration	8-Months
Skill level	Professional Levels
Language	C#, HTML5, CSS3, JQuery
Tool	visual studio 2015
Grade	A+
Group Members	2 Members

2

STUDENT INFORMATION

> Group Leader Ans. Waqar

> Email ans.waqar@superior.edu.pk

This picture describes the final year project.

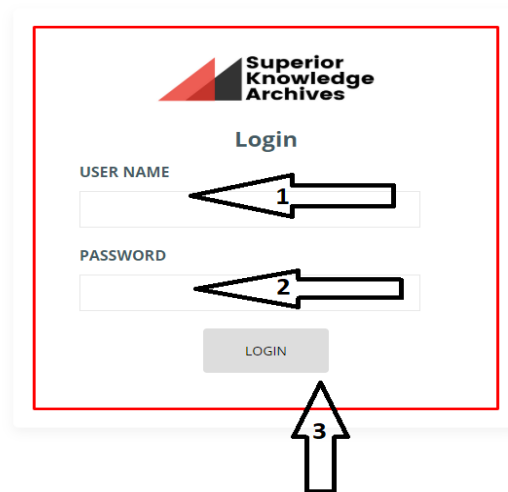
Step1 Student can click the button to get the code

Step2 view the project information uploaded by the student.

Appendix B: Administrator Manual

Admin Manual explain the step by step activities that should be performed to use the system. It provides all step to carry out system tasks. It provides screenshots of the system functionality for admin.

B.1. Logging in the admin panel



This is a login page where Admin enters his/her username in step 1 and admin enter his/her password in step 2 then press login button in step 3. After pressing the button, SKA system redirects Admin in their Admin Panel. If admin enters the wrong user and password then SKA system message generate "Invalid Username/Password".

B.1.1. Admin Panel Interface

The screenshot displays the Admin Panel Interface for Superior Knowledge Archives. The interface includes a sidebar with navigation options and a main content area with account statistics and a user list table. Numbered arrows (1-7) highlight specific features:

- 1: Total Accounts 5
- 2: Admin Accounts 2
- 3: Teacher Account 2
- 4: Student Account 1
- 5: Export options (Copy, CSV, Excel, PDF, Print)
- 6: User list table
- 7: Search bar

Name	UserName	Email	Gender	Registration Date	City
admin	admin	shiraznaaeerahmad@gmail.com	Male	5/29/2018 12:00:00 AM	lahore
Ans	azai	ans@gmail.com	Male	5/29/2018 12:00:00 AM	lahore
BilalCEO	biloo	bilal@gmail.com	Male	5/29/2018 12:00:00 AM	lahore
shiraz	shirazii	shiraznaaeerahmad@gmail.com	Male	5/29/2018 12:00:00 AM	lahore
talha	talhaali	talha@gmail.com	Male	5/29/2018 12:00:00 AM	sialkot

After successful login admin redirect in their panel. There is an Admin panel interface. In this picture there are many steps which I tell one by one. In step 1 admin view total SKA system accounts, in step 2 admin view total admin accounts, in step 3 admin view teacher accounts, in step 4 admin view total student accounts, in step 5 admin get account details in different formats (Pdf, Excel, Word and Print), in step 6 admin view all account and in step 7 admin search All user accounts.

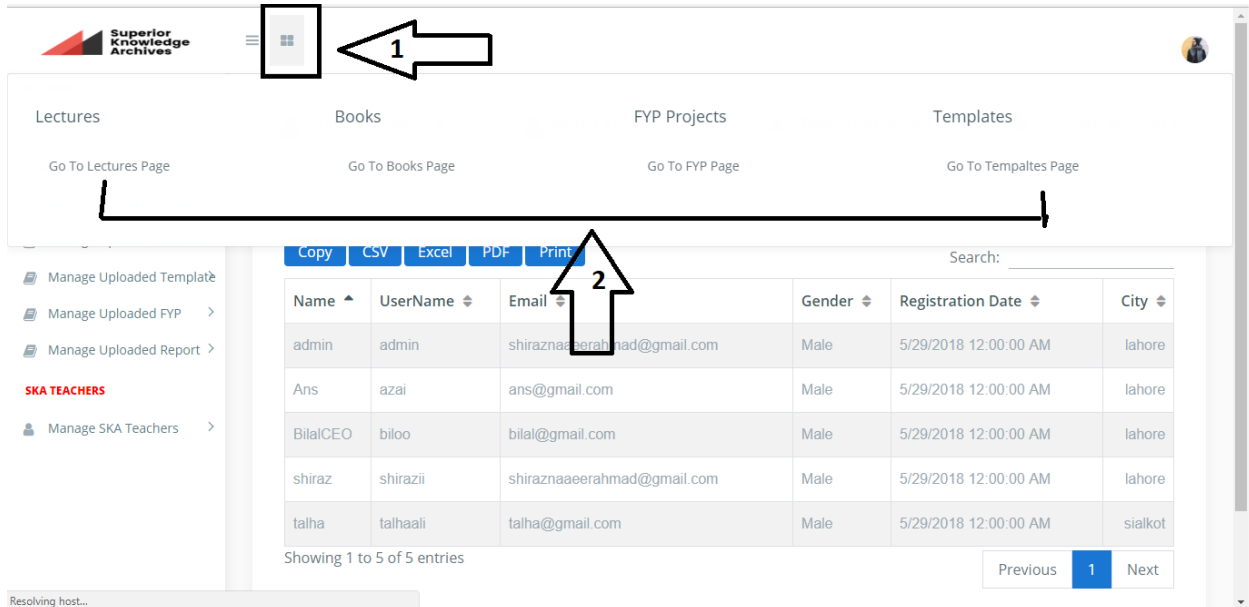
B.1.1.1. Performing Admin activities

The screenshot displays the 'ACCOUNTS' section of the Superior Knowledge Archives system. On the left, a sidebar menu is highlighted with a box and an arrow labeled '1', pointing to the 'Manage Accounts' option. The main content area features four summary cards: 'Total Accounts 5', 'Admin Accounts 2', 'Teacher Account 2', and 'Student Account 1'. Below these cards are buttons for 'Copy', 'CSV', 'Excel', 'PDF', and 'Print', along with a search bar. A table lists the accounts with columns for Name, UserName, Email, Gender, Registration Date, and City. The table contains five entries, all registered on 5/29/2018 at 12:00:00 AM. The first entry is 'admin' with username 'admin' and email 'shiraznaaeerahmad@gmail.com'. The second entry is 'Ans' with username 'azai' and email 'ans@gmail.com'. The third entry is 'BilalCEO' with username 'biloo' and email 'bilal@gmail.com'. The fourth entry is 'shiraz' with username 'shirazii' and email 'shiraznaaeerahmad@gmail.com'. The fifth entry is 'talha' with username 'talhaali' and email 'talha@gmail.com'. At the bottom of the table, it says 'Showing 1 to 5 of 5 entries' and 'Previous 1 Next'.

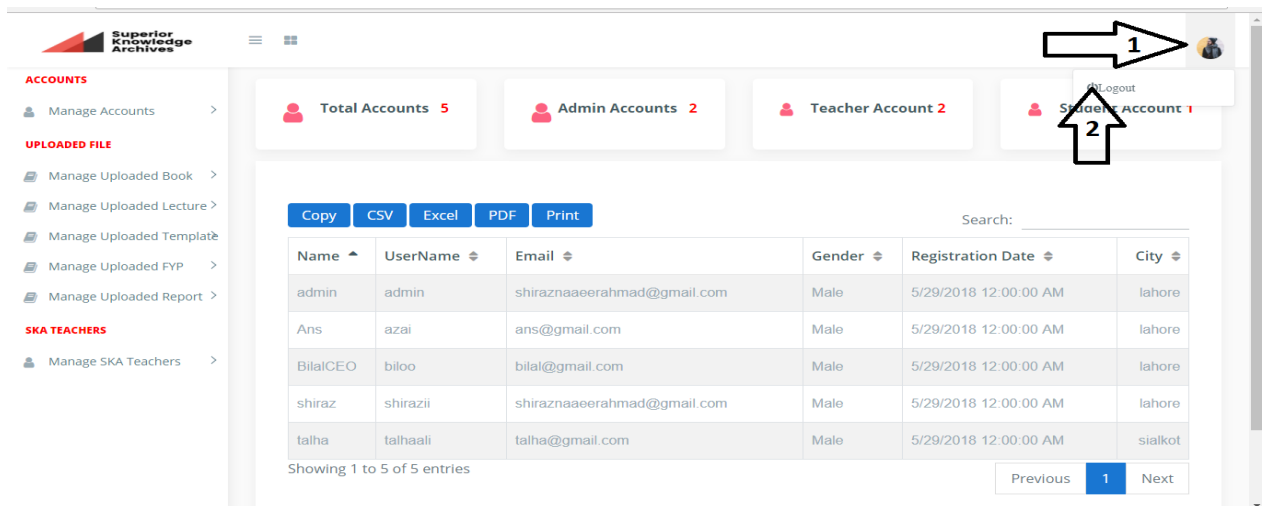
In this picture, the SKA system provides a function to manage the account where admin creates, update and delete teacher and student accounts. Only Admin create a teacher account.

The screenshot displays the 'UPLOADED FILE' section of the Superior Knowledge Archives system. On the left, a sidebar menu is highlighted with a box and an arrow labeled '1', pointing to the 'Manage Uploaded Book' option. The main content area features four summary cards: 'Total Accounts 5', 'Admin Accounts 2', 'Teacher Account 2', and 'Student Account 1'. Below these cards are buttons for 'Copy', 'CSV', 'Excel', 'PDF', and 'Print', along with a search bar. A table lists the accounts with columns for Name, UserName, Email, Gender, Registration Date, and City. The table contains five entries, all registered on 5/29/2018 at 12:00:00 AM. The first entry is 'admin' with username 'admin' and email 'shiraznaaeerahmad@gmail.com'. The second entry is 'Ans' with username 'azai' and email 'ans@gmail.com'. The third entry is 'BilalCEO' with username 'biloo' and email 'bilal@gmail.com'. The fourth entry is 'shiraz' with username 'shirazii' and email 'shiraznaaeerahmad@gmail.com'. The fifth entry is 'talha' with username 'talhaali' and email 'talha@gmail.com'. At the bottom of the table, it says 'Showing 1 to 5 of 5 entries' and 'Previous 1 Next'. An arrow labeled '2' points to the 'Copy' button, and an arrow labeled '3' points to the 'Manage SKA Teachers' option in the sidebar.

In this picture, in step 1 & 2 admin view all uploaded files (Books, Lectures, Templates, FYP and Reports). Admin deletes all uploaded files (Books, Lectures, Templates, FYP and Reports). Admin edit all uploaded files (Books, Lectures, Templates, FYP and Reports). In step 3 admin add SKA system Teachers and also manage teachers.



In this picture, admin pressing step 1 button they get all website pages links. In step 2 admin view all website pages links. From this link admin go these pages after pressing on these links.



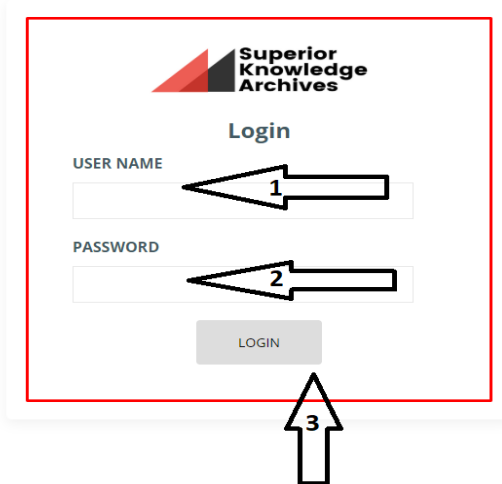
In this picture, in step 1 admin press pic-icon then a small pop-up appear in step 2 which have log out option. When admin press it, the admin redirect in the website page first page where the admin has again login option.

Appendix C: Teacher Manual

Follow are the promotional materials that we will utilize to promote or project in the market and in front of clients and users.

C.1. Logging in to Teacher Panel

This is a login page where Admin enters his/her username in step 1 and admin enter his/her



The image shows a login form for Superior Knowledge Archives. The form includes a logo at the top, the title "Login", and two input fields labeled "USER NAME" and "PASSWORD". A "LOGIN" button is located below the password field. Three numbered arrows indicate the steps: arrow 1 points to the "USER NAME" field, arrow 2 points to the "PASSWORD" field, and arrow 3 points to the "LOGIN" button.

password in step 2 then press login button in step 3. After pressing the button, SKA system redirects Admin in their Admin Panel. If admin enters the wrong user and password then SKA system message generate "Invalid Username/Password".

C.2. Teacher Panel Interface

The screenshot shows the Teacher Panel Interface. On the left is a sidebar with 'FILES' and 'UPLOADED FILE' sections. The main area features a dashboard with four summary cards: Books (8), FYP (2), Lectures (1), and Reports (2). Below these cards is a table of uploaded files. A large arrow labeled '1' points to the table.

Name	Section	Description
12pak.html	320	kjjjjkk
1aw.jpg	302	Lecture 5(week4)
2.html	Null	Lecture 5(week4)
2a.css	450	Lecture 5(week4)

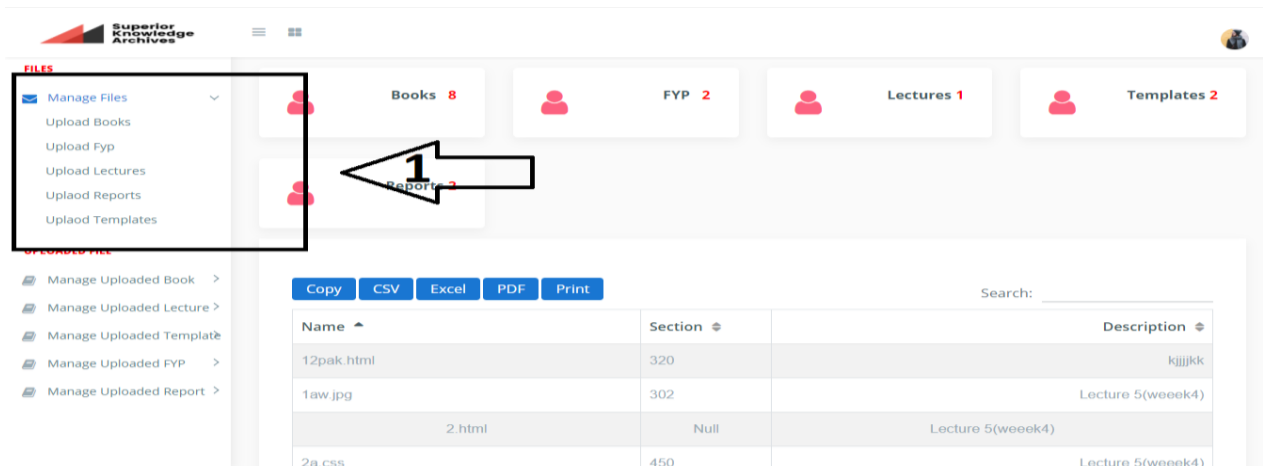
After successful login teacher redirects in their teacher panel. There is a Teacher panel interface. In step 1 teacher view total uploaded books, total uploaded final year projects, total uploaded lectures, total uploaded templates and total uploaded reports.

C.3. Performing Teacher Activities

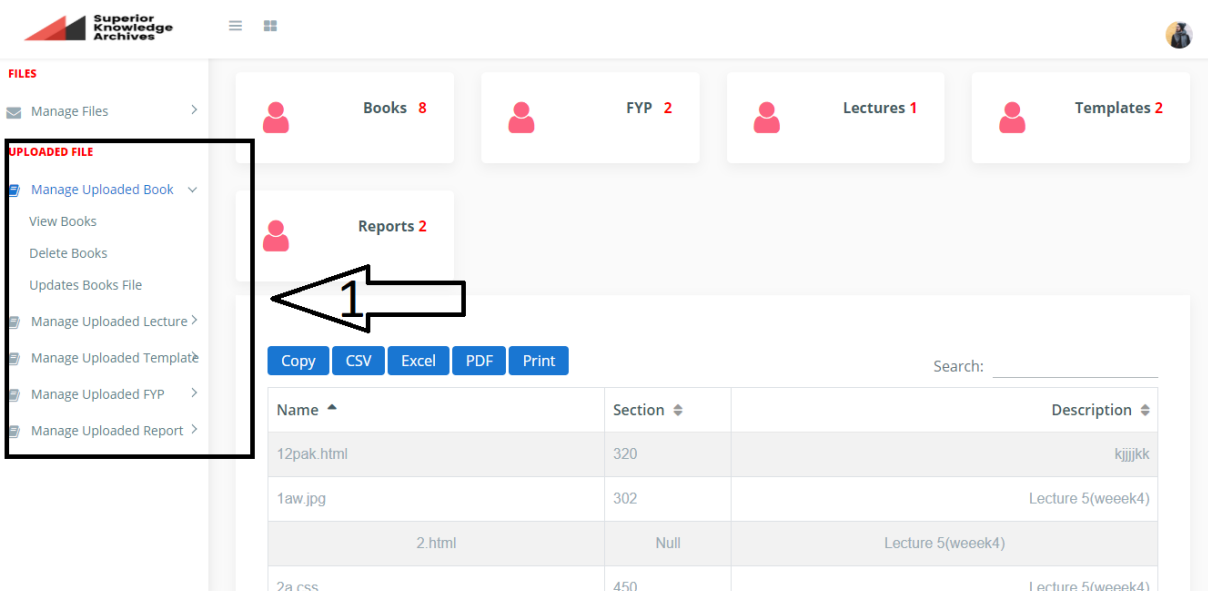
The screenshot shows the Teacher Panel Interface with a focus on the table of uploaded files. A large arrow labeled '2' points to the search bar, and a large arrow labeled '1' points to the table.

Name	Section	Description
12pak.html	320	kjjjjkk
1aw.jpg	302	Lecture 5(week4)
2.html	Null	Lecture 5(week4)
2a.css	450	Lecture 5(week4)
5.html	302	helo worldEWFJJHKJERHFJKHRKHJ
6.jpg	302	this is demo
6a.css	379	Lecture 5(week4)
ature__txt	302	Lecture 5(week4)

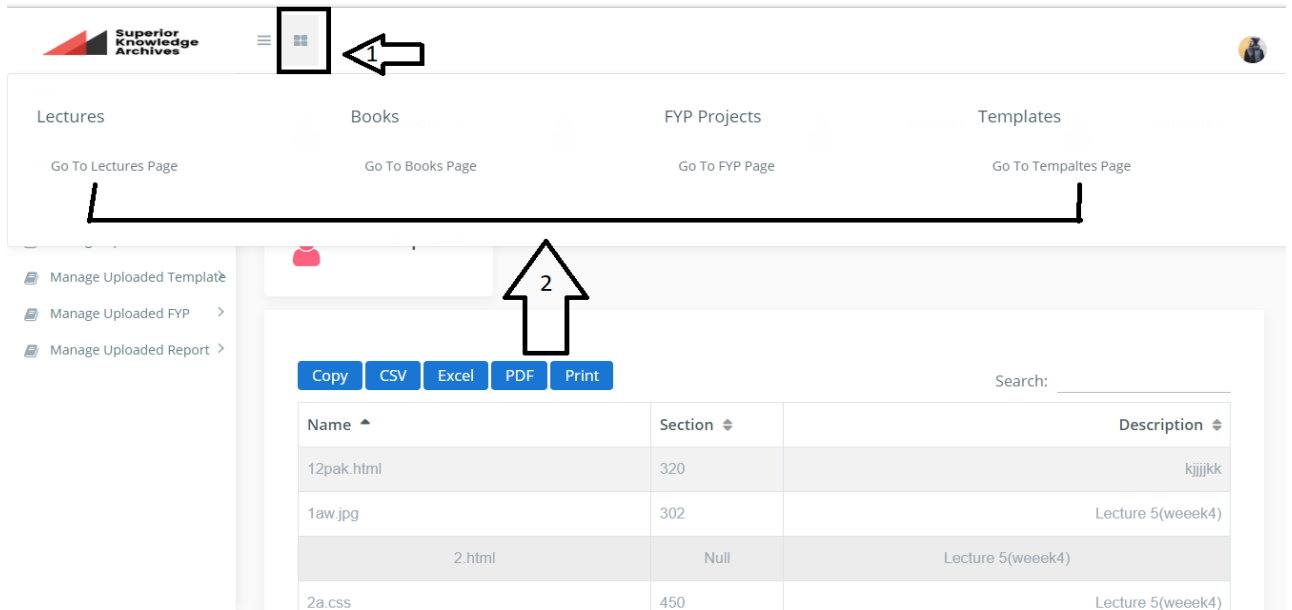
In step 1 teacher get account details in different formats (Pdf, Excel, Word and Print), also teacher view all uploaded files, in step 2 teacher search all uploaded file (books, lectures, FYP, templates and reports).



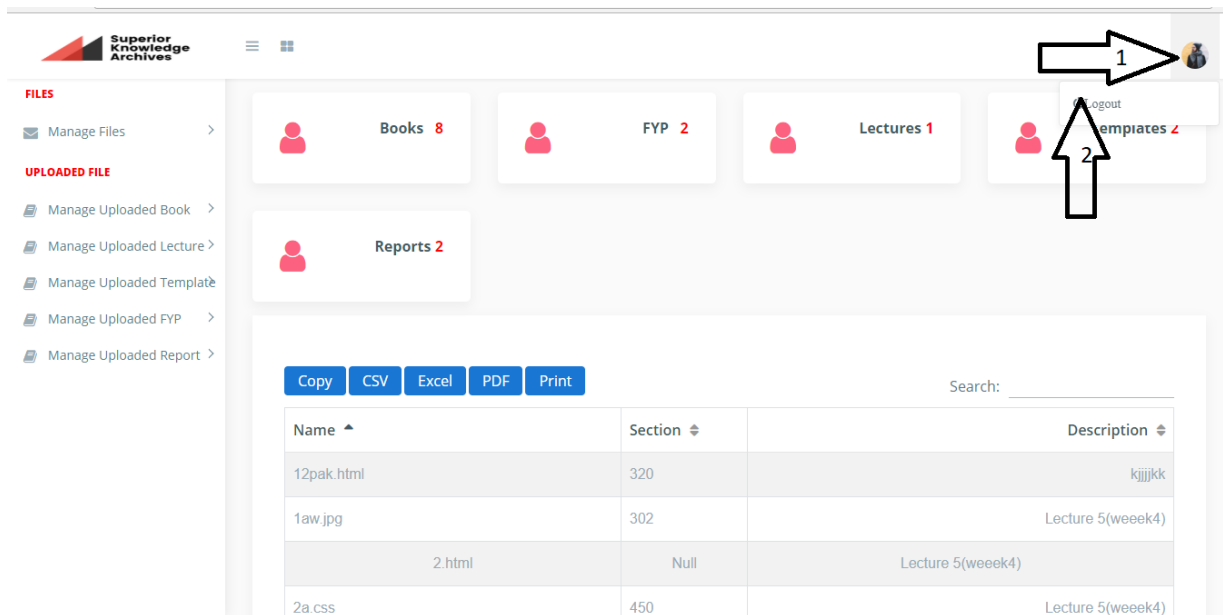
In this step 1, teacher uploaded lectures, FYP, templates, books and reports by file uploading page.



In this step 1 teacher manage all uploaded lectures, FYP, templates, books and reports by file uploading page, and also manage all uploaded files i.e. delete, create and update.



In this picture, the teacher pressing step 1 button they get all website pages links. In step 2 teacher view all website pages links. From this link teacher go these pages after pressing on these links.



In this picture, in step 1 teacher press pic-icon then a small pop-up appear in step 2 which have log out option. When admin press it, the teacher redirects in the website page first page where the teacher has again login option.

Appendix D: Information / Promotional Material

Follow are the promotional materials that we will utilize to promote or project in the market and in front of clients and users.

D.1. Broacher

OBJECTIVES

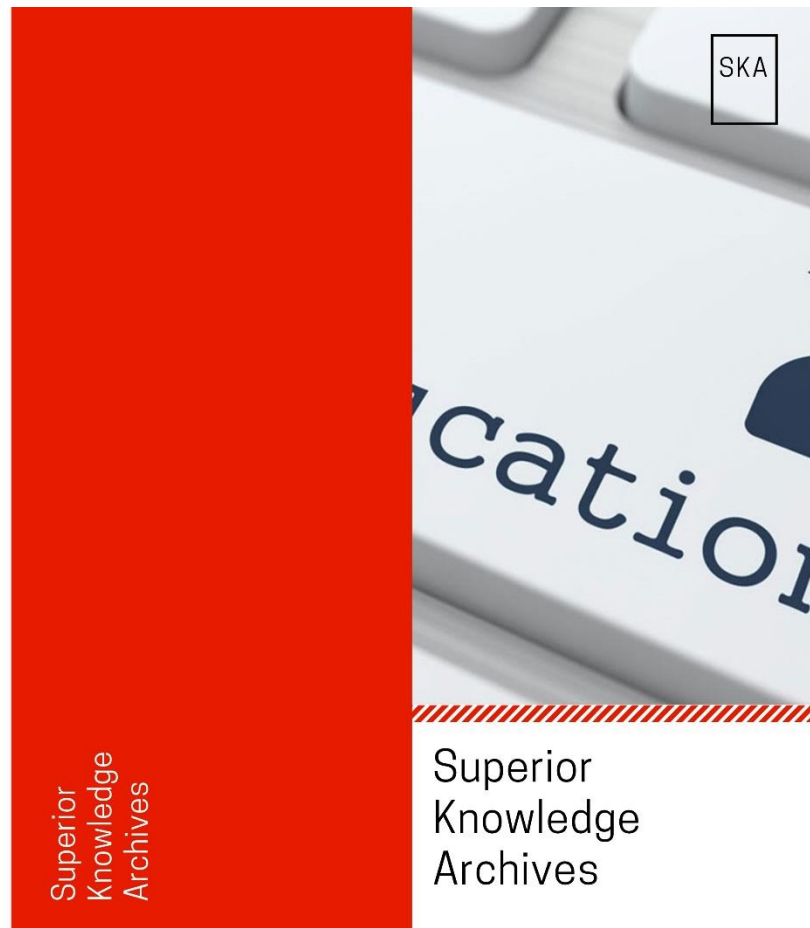
HOW HELPFUL OUR SYSTEM IS:

- Need Improvements
- Interactive
- Very Responsive
- Problem Solving
- Very Helpful
- Excellent
- Medium
- Poor

Visitor Regular Student

SIGNATURE

*Please share you experience with our system..



Superior Knowledge Archives

Superior Knowledge Archive (SKA) is a website based knowledge sharing portal for superior students to share and explore knowledge. This website based knowledge sharing portal will be helpful for students to get new horizons of knowledge and facilitate the teacher to share study material with students, with a vision of serving humanity.

Our system not only saves students and teachers time and effort but also allow them to share and explore existing knowledge. SKA will provide a unique feature which allows the students to continue the existing projects.



About Project

TEAM MEMBERS

- Rana Waji ul Hassan
- Shiraz Naseer Ahmad

MISSION

- Our Mission is to provide students a platform to share and explore knowledge easily and to reduce the workload of staff members of sharing study material with students

VISION

- Our vision is to serve humanity.

FEATURES

- Share Knowledge
- Get Projects Code
- Templates
- Lectures
- Reports
- Live Chat
- Admin panel
- Teacher Panel

D.2. Flyer



D.3. Standee



D.4. Banner



Appendix E: Feature Achievement Mechanism

E.1. FAM Table

Feature Achievement Mechanism Table			
SR.No	Functional Requirements	Non Functional requirements	Achievement Status
1	Student Registration Form	Usability, Data integrity	Achieved
2	Login Form	Usability, Data integrity	Achieved
3	Account Recovery	Maintainability, Security	Achieved
4	View Files Function	Reliability, Usability	Achieved
5	Download File Function	Availability, Usability	Achieved
6	Upload File Function	Availability, Usability	Achieved
7	Project Submission Module	Availability, Usability	Achieved
8	Search with drop down filter	Effectiveness, Capacity	Achieved
9	Live Chat	Availability, Usability	Achieved
10	Virtual Classes Module	Availability, Usability	Achieved
11	Admin Panel	Maintainability, Security	Achieved
12	Teacher Panel	Maintainability, Security	Achieved

Appendix F: Project Management Plan

F.1. Project Charter

General Project Information

Project Name	Superior Knowledge Archives
Project Sponsor	FYP Committee
Department Sponsor	Department of CS&IT SUL
Impact of Project	FYP Project

Project Team

	Name	Department	Cell#	Email
Project Manager	Rana Waji ul Hassan	CS&IT	03035999005	ranawajiulhassan@gmail.com
Supervisor	Usman Akbar`	CS&IT	03456532077	usman.akbar@superior.edu.pk
Team Member	Shiraz Naseer Ahmad	CS&IT	03354299860	shiraznaaeerahmad@gmail.com
	Rana Waji ul Hassan	CS&IT	03035999005	ranawajiulhassan@gmail.com

Mission

Our Mission is to provide students a platform to share and explore knowledge easily and to reduce the workload of staff members of sharing study material with students.

Vision

Our vision is to serve humanity.

Objectives

1. To practically utilized tools and skills for the formulation and development of a software project.
2. To provide a dedicated platform to students and teachers to share knowledge.
3. To develop software by following software engineering best practices by utilizing the latest tools available in the market.
4. To help students and teacher of CS&IT to improve academic processes by providing the best solution to their problems.
5. To continue the previous year's project to develop mature products that solve some real-life problems and facilitate the university.
6. To serve humanity.

Stakeholders

Title	Authority and Roles
Project Sponsor	Authorize the project
Department Sponsor	Approve the project
Project Manager	Manage the overall project
Supervisor	Supervise the project and team
Admin	Have all rights to access and modify system features
Staff/Faculty member as End-users	Have rights to modify specific system features
Student as End-users	Can access system but cannot modify the system

Scope Statement

In this modern era of technology paperwork is near to terminate. Now a day's study material is delivered through the soft form so we take this problem as an opportunity to develop a one-stop solution to university to solve this problem.

This project facilitates superior university students and staff to share knowledge by proving website based one-stop solution. This project will be complete by fall semester i.e. August 2018.

The user must register itself into the system so they can: download, upload, share, lectures, assignments, final year project reports, read e-books online, chat with each other and continue existing projects and communicate with each other via one to one chat feature.

High-Level Requirements

The following Table shows the high-level requirements of the project.

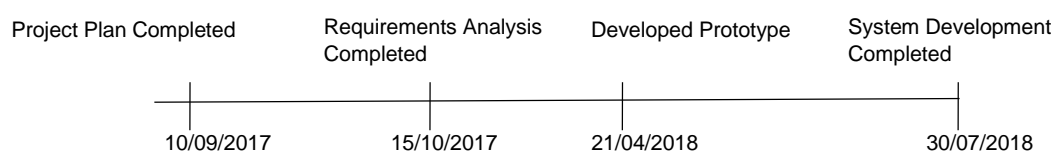
Requirement No	Description
1	The system must have Download File functionality
2	The system must have Upload File functionality
3	The system must have Registration & Login functionality
4	The system must have Searched with drop down filters functionality
5	The system must have Data View functionality
6	The system must have Live Chat functionality
7	The system must have Project Submission functionality
8	The system must have virtual classes functionality
9	The system must have Admin Panel functionality
10	The system must have Teacher Panel functionality

Project Boundaries

Superior Knowledge Archive (SKA) has specific boundaries. In SKA students share and explore existing knowledge. Students can register into our system so they can download, upload, share, lectures, assignments, final year Project Reports and read e-books online. Students can also communicate with each other via one to one chat feature to help each other. SKA provides a feature that allows the students to continue the existing project to resolve and improve the projects in order to develop a mature product that can be used to solve real-life problems rather than starting the same project from scratch.

Duration

The duration timeline for website SKA Project is one year (365 days) beginning on August 2017 through August 2018. All work must be scheduled to complete within this timeframe. Any modifications or extensions may be requested through Dept. CS&IT SUL and supervisor for review and discussion.



Project Deliverables

- Feasibility report
- Project plan
- SOW
- Project Charter
- Prototype
- Domain Name with live hosting
- Full functional Project with all integrated modules over hosting server.

Project Milestones

Milestones	Forecast Date
Concept approval	20 Sept- 2017
Requirement review	18 October 2017
Preliminary design review	10 December 2017
Critical design review	05 April 2018
Test Plan review	21 April 2018
Test execution review	05 May 2018
System test review	10 June 2018
Operational readiness review	02 August 2018
Product operational	10 September 2018

Risk management (Risk forecast, impact, probability and RMMM)

Risk Type: Project Risk

The risk associated with project management activities that involve identifying, assessing, measuring, documenting, communicating, avoiding, mitigating, accepting, controlling and managing risk for the above-described project involves.

Impact:

Each risk factor impact depends upon the probability of its occurrence that may lead to project failure, termination and incompleteness or even have negligible impact.

Scale Key: Impact – (1) catastrophic-100% (2) critical-75% (3) marginal-50% (4) negligible-5% to 25%

Risk Description	Risk Category	Probability	Impact (1-4)	RMMM
If requirements are not feasible, missing or are apart from realities, the project may fail.	Project Risk: <ul style="list-style-type: none"> Requirements 	75%	2 Critical	Monitoring approach: <ul style="list-style-type: none"> Risk Mitigation Contingency plan: <ul style="list-style-type: none"> Gather the requirements again
The quality of estimates and scope management. The estimate is just a guess, that's a risk. Whenever a team is unsure about a particular estimate then it is a risk.	Project Risk: <ul style="list-style-type: none"> Scope 	75%	2 Critical	Monitoring approach: <ul style="list-style-type: none"> Risk Mitigation Contingency plan: <ul style="list-style-type: none"> Terminate the project if the scope is unclear. Estimated resources: <ul style="list-style-type: none"> All stakeholders
A continuous complex changes requests can increase the complexity of the project and may lead to project failure because they continually add budget and time to the project.	Project Risk: <ul style="list-style-type: none"> Change Management 	50%	3 Marginal	Monitoring approach: <ul style="list-style-type: none"> Risk Monitoring Contingency plan: <ul style="list-style-type: none"> Avoid the complex changes and perform minor changes Estimated resources: <ul style="list-style-type: none"> Team Resources e.g. 2 Members
If there is a lack of cooperation between stakeholders then the team will document it as a risk. Like stakeholders with a negative attitude towards a project may lead to project failure risk.	Project Risk: <ul style="list-style-type: none"> Stakeholders 	50%	3 Marginal	Monitoring approach: <ul style="list-style-type: none"> Risk Monitoring Contingency plan: <ul style="list-style-type: none"> Involve stakeholders and eliminate nonserious behavior towards the project. Estimated resources: <ul style="list-style-type: none"> All stakeholders

Risk Description	Risk Category	Probability	Impact (1-4)	RMMM
Resource issues such as learning curves e.g. if team members are inexperienced or need to acquire new skills are common project risks.	Project Risk: <ul style="list-style-type: none"> Resources & Team 	50%	3 Marginal	Monitoring approach: <ul style="list-style-type: none"> Risk Monitoring Contingency plan: <ul style="list-style-type: none"> Team training toward a new skill Estimated resources: <ul style="list-style-type: none"> Team Members
Low quality of technical components (e.g. stability, availability, scalability, usability, security) and to identify the expected risk in each component lead to quality risk. For example, the risk that a component will have a security flaw.	Project Risk: <ul style="list-style-type: none"> Technical Risk 	50%	3 Marginal	Monitoring approach: <ul style="list-style-type: none"> Risk Mitigation Contingency plan: <ul style="list-style-type: none"> Estimated resources: <ul style="list-style-type: none"> 2 persons for survey
Use of improper medium, late communication can lead to delay in project development. For example: If stakeholders become unserious (e.g. ignore project communications), that's a risk.	Project Risk: <ul style="list-style-type: none"> Communication Risk 	25%	4 Negligible	Monitoring approach: <ul style="list-style-type: none"> Risk Monitoring Contingency plan: <ul style="list-style-type: none"> Use effective communication medium Schedule meeting Estimated resources: <ul style="list-style-type: none"> All stakeholders

Change Control Plan

Change no.	Requested by:	Description	Target Date	Date completed
01	FYP Committee	Specify the type of chat either one to one or community chat	15/09/2017	20/09/2017
02	FYP Committee	Redesign the ERD and data dictionary for project	21/04/2018	25/06/2018
03	Supervisor	User Interface change request	10/05/2018	15/06/2018
04	Supervisor	User registration method change request	18/05/2018	20/05/2018
05	Supervisor	Navigation bar user interface change request	09/07/2018	15/07/2018
06	Supervisor	Admin panel functionality change request	09/07/2018	15/07/2018

System documentation

- Software requirement specification (SRS)
- Software Design Description (SDD)
- Feature Achievement Mechanism (FAM)
- Test Cases Development
- Project Progress Report
- Project Charter
- Statement of Work (SOW)
- End User Documentation
- User Manuals

Communication Matrix

Stakeholder	Messages	Medium	Frequency	Communicators	Feedback Mechanisms
Project Sponsor	Defense	Presentation	Half Yearly	Project team	Report document
Project Manager	Guidelines	Personal meetings or social media WhatsApp	Minimum five times a week form 9:00am to 11:00 pm	Project team	Report document

Stakeholder	Messages	Medium	Frequency	Communicators	Feedback Mechanisms
Supervisor	Guidelines	Personal meetings social media WhatsApp or skype	Twice per week Monday at 9:00 am and Friday at 2:00 pm	Project team	Report document
Admin	Guidelines	Personal Meetings	Once per week	Project team	Report document
Staff/Faculty member as End-users	System Interaction	Personal Meetings	Once per week	Project team	Report document
Student as End-users	System Interaction	Personal Meetings	Once per week	Project team	Report document

Project Charter approval Sign off

Members have reviewed, authorized and sponsor the Superior Knowledge Archives after reading the project charter any changes occur in this charter will be verified by these members and then issues the changes.

	Name	Signature
Project Supervisor and Project Manager	Usman Akbar	
Team Leader and Project Manager	Rana Waji ul Hassan	

F.2. Statement of Work

Introduction/Background

Department of CS&IT Superior University Lahore (Dept. CS&IT SUL) has recently approved the Superior Knowledge Archives (SKA) FYP Project in support of its strategic plan to enhance students learning. In order to provide more timely feedback to prospective students and improved user interaction, the Website SKA will focus on building a content-rich website which provides a simplified and more user-friendly interface for university students. It is imperative that SUL utilizes this website as a platform for communicating new developments, client testimonials, recent news, and other educational specific information. SUL also realizes the importance of working with students to develop tailored consulting solutions which the new website will allow the ability to do. In order to accomplish this, SUL seeks to insource the design, testing, implementation, and training for the new website.

Scope of Work

The scope of work for the SKA includes all planning, execution, implementation, and deploying for a new public-facing internet site for superior Students. The selected FYP team will be responsible for the design of the new website based on feedback to be provided by Dept. CS&IT SUL and FYP team. Each stage of the project will require approval from the supervisor and team before moving on to the next stage. The selected FYP team must ensure it has adequate resources for designing, building, testing, and deploying the new website. Specific deliverables and milestones will be listed in the Work Requirements and Schedules and Milestones sections of this SOW.

Period of Performance

The period of performance for the Website SKA Project is one year (365 days) beginning on 22 August 2017 through 21 August 2018. All work must be scheduled to complete within this timeframe. Any modifications or extensions will be requested through Dept. CS&IT SUL and supervisor for review and discussion.

Place of Performance

The selected FYP team for the SKA project will perform a majority of the work at its own facility. The FYP team will be required to meet supervisor at facility twice per week (Monday at 9:00 AM and Friday at 2:00 PM PST) for a weekly status meeting. Additionally, all project gate reviews will be held by a supervisor at the facility office and attended by the FYP team. The university will provide and arrange for meeting spaces within its facility for all required FYP team meetings. Once the project reaches the deployment phase, all training will be conducted at supervisor facility.

Work Requirements

As part of the SKA the FYP team will be responsible for performing tasks throughout various stages of this project. The following is a list of these tasks which will result in the successful completion of this project:

1.1. Kickoff:

- FYP team will create and present detailed project plan including schedule, WBS, testing plan, implementation plan, training plan, and progress plan
- FYP team will present a project plan to the FYP committee for review and approval

1.2. Design Phase:

- Work with stakeholders to gather requirements and establish metrics
- Create a site design based on collected requirements
- Develop site design proposal for university review and approval
- Present written status at a weekly meeting

1.3. Build Phase:

- FYP team will complete all coding for approved site design
- FYP team will provide the supervisor with a detailed testing plan
- FYP team will include all content provided by Supervisor on the redesigned website
- FYP team will conduct testing in both their local machine as well as in a limited beta release
- FYP team will resolve any coding and site issues identified in testing
- FYP team will compile a testing report to present to the supervisor for review/approval
- Present written status at a weekly meeting

1.4. Implementation Phase:

- FYP team will implement the newly redesigned website on hosting servers
- FYP team will begin providing 24x7 website support at this point forward until the end of the period of performance
- Present written status at a weekly meeting

1.5. Project Handoff/Closure:

- FYP team will provide the supervisor with all documentation in accordance with the approved project plan
- FYP team will present project closure report to supervisor for review and approval
- FYP team will complete the project requirements checklist showing that all project tasks have been completed
- FYP team will conclude 24x7 web support on the final day of the period of performance
- Present written status at a weekly meeting

Schedule/Milestones

The below list consists of the initial milestones identified for the SKA Project:

SOW Release	September 20, 2017
FYP team Selection Review	December 10, 2017
Period of Performance Begins	September 25, 2017
Website Design Review	April 05, 2018
Website Implementation Review	April 21, 2018
Implementation Complete	June 02, 2018
Project Completion Review	July 10, 2018
Project Closure/Archives Complete	August 06, 2018

Acceptance Criteria

For the SKA Project the acceptance of all deliverables will reside with supervisor and FYP committee SUL. The supervisor will maintain small meetings in order to ensure the completeness of each stage of the project and that the scope of work has been met. Once a project phase is completed and the FYP team provides their report/presentation for review and approval, the supervisor will either sign off on the approval for the next phase to begin, or reply to the FYP team, in writing, advising what tasks must still be accomplished.

Once all project tasks have been completed, the project will enter the handoff/closure stage. During this stage of the project, the FYP team will provide their project closure report and project task checklist to supervisor and FYP committee. The acceptance of this documentation by the supervisor will acknowledge acceptance of all project deliverables and that the vendor has met all assigned tasks.

Project Acceptance

Approved by: Rana Waji ul Hassan (Project Manager)

Signature _____

Reference and Bibliography

Reference and Bibliography

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- [10] Project Management Plan for SKA from SPM final project
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