Find Your Private Tutor Online

Final Year Project

Session 2017-2021

A project submitted in partial fulfillment of the degree of

BS in Computer Science

Department of Computer Science

Faculty of Computer Science & Information Technology

The Superior College, Lahore

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Type (Nature of project)	[] **D**evelopment [ ] **R**esearch [✓] **R**&**D**
Area of specialization	Web Based
FYP ID	FYP-BCSM-F20-032

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*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

Plagiarism Free Certificate

This is to certify that, I _____ S/D of Muhammad Siddique, group leader of FYP under registration no _____at Software Engineering Department, The Superior College, Lahore. I declare that my FYP report is checked by my supervisor.

Date: Name of Group Leader: M. Umar Signature: _____

Name of Supervisor: Ms. Arshia Naeem

Designation: Lecturer

Signature: _____

HOD: Dr. Irfan-ud-Din

Signature: _____

Project Report

[Find Your Private Tutor Online]

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
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M. Umar Hamza Khan Nabeel	14. .0	28-03-2019	Changes Based on Feedback from Supervisor	

H. Sabih Bilal				
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M. Umar Hamza Khan Nabeel H. Sabih Bilal	17.0	10=02-2019	Changes Based on Feedback from Supervisor	

APPROVAL

PROJECT SUPERVISOR

Comments: _____

_____

Name:_____

Date:_____ Signature:_____

PROJECT MANAGER

Comments: _____

_____

Date:_____ Signature:_____

HEAD OF THE DEPARTMENT

Comments: _____

_____

Date:_____ Signature:_____

Dedication

This work is Dedicated

To

our Parents, Teachers and Friends

Acknowledgements

The success and final outcome of this project required a lot of guidance and assistance from many people and we are extremely privileged to have got this all along the completion of our project. All that we have done is only due to such supervision and assistance and we would not forget to thank them.

We would like to express our gratitude to our advisor **Ms. Arshia Naeem** for her guidance, support and her continuous enthusiasm and encouragement throughout the project. We are also very grateful and extend our sincere thanks to the **Head of Department** and staff members of the department of CS & IT for their cooperation by sharing the load and for giving time to work on this project and throughout our study. We would not forget to remember my group members for their help, in making and *a*ssembling different parts of this project and gave suggestion about many points and more over for their timely support and guidance till the completion of our project work.

Finally, many thanks to friends, who have helped and give us suggestions, supports and corrections throughout the project.

Executive Summary

Finding out a recommended, well-educated and professional teacher is really a huge problem in Pakistan where there's a rush of academies and tutors. People don't trust on academies culture and transparency within teacher & students is also un-provided thing in academies. Every teacher has their commitments for teaching as well in the academies. And the teachers also don't get much output from the students like the best outcome from home tuition students can do.

Transparency with the teacher and the students, check and balance and fixed fees are the important for our system. Where parents can login to the portal for analysis and check the current and previous academies status of their children. People can charge fees but this system is opposite because the fees is fixed with good services.

Etutorworld, Online K-12 Tutoring are the existing systems in which offline courses are available but these courses are advanced level courses. And price of courses tuition is very high and these platforms doesn't give us online lecture.

We have developed a site where there will be 2 portals one for the student and one for the teacher. Student has to be signed in the website and give all required information which will be good for the website output for the student. Then students can select courses then teachers according to the course with review will be shown to the students and students will take three days trial without paying. In the teacher panel, teacher will give an application, select subject specialization, then interview will be conducted, after that application will be processed either given information is correct and verified or not. Then Teacher will be provided a profile from the admin panel if the required information from the teacher will be verified. And student can be take classes on zoom as well at recorded lectures.

Table of Contents

List of Figures

Chapter 1

Introduction

Chapter 1: Introduction

There are many similar existing systems in the world. But the most traffic are on two these.

1: Teacher on.

2: Tution.com.pk.

In this system (Teacher on), the best thing is they can only find a good tutor for the student requirement. But there are the problems in 'Teacher on' system. They cannot give check and balance service, not fixed price, even 'Teacher on' cannot give online services either for the students or teachers.

(Tution.com.pk) can also work like the previous one which has mentioned above. But this system is not use for finding teachers. The interfaces of the both websites are also not so much user friendly.

E-Tutor will be a web application which will allows the students to search for their teachers according to their needs. It will enhance the quality of teaching for the students who want services like home tuition and also provide facility for online session. We will also provide online payments method. As we provide online sessions so it will be very easy for those students who are far away from that teachers. We will also provide a facility that the lectures will automatically recorded and will be uploaded at cloud and the link will be send to the all students and will also updated at the teacher's profile There are many systems available in Pakistan for e-tutor but they do not provide online class facility.

It will be also very beneficial for university students who are able to teach and want to earn money. But due to their university classes they are not able to earn. So we will also provide a platform to them so they can teach students of primary and secondary class's students. It will be attractive to them because they do not want to go and search for students and even they can give online sessions so it will be very easy for them.

There will be also special criteria for teachers to join and get students

So it will be beneficial for the students they will get the best teachers and there will be also a ranking criteria so the students can easily get to know about the teacher.

1.1. Background

In this modern era, where the whole world is teaching and learning by using different computational tools but we are on the same and on the previous methods of teaching and learning because the people cannot know about the online teaching as much as Europeans and Americans are. There academy culture is not good as the online culture because the students

have many options in selecting a tutor for the specific course. Dynamic fees and transparency between the students, teachers and the parents are also the problem in the academy culture.

1.2. Motivations and Challenges

The main purpose of making this system is that student doesn't need to go teacher place. They getting classes easily with online session at any place. If student loss their internet connection, lectures recorded automatically. Even student give lectures to primary and secondary classes student and earn from them.

1.3. Goals and Objectives

To develop an easy-to-use web-based interface where users can search for courses, view a complete description of the teachers and courses. A search engine that provides an easy and convenient way to search for teachers specific to their courses domain. The search engine would list a set of products based on the search term and the user can further filter the list based on various parameters. A user can view the complete specification of the teachers along with various experience and also view the courses details. They can also write their own reviews.

1.4. Literature Review/Existing Solutions

The literature review of my site is that before making my site I take a review a of different sites. These are some existing system and our competitive. They do not provide that facility which we are providing. Like they are not user friendly and not providing online session facility. They do not provide lectures automatically recorded on cloud facility.

https://www.teacheron.com/

http://tuition.com.pk/

1.5. Gap Analysis

Student facing problem is that they need to search home-tuition, they need to go outside for searching home-tuitions and different academies. Some students just need to learn few courses but academies teach all the courses they don't need to teach selected courses.

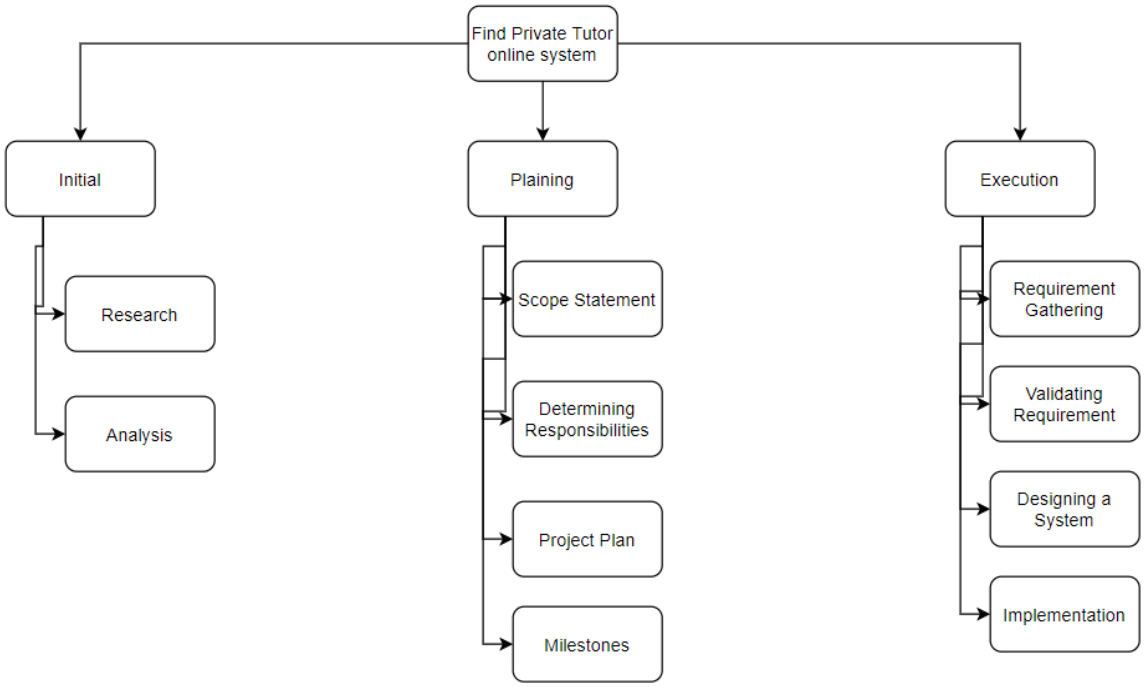
1.6. Proposed Solution

Our Web application gives a platform for the students and teachers where they can meet each other. Price will be reasonable for every student. Time for the home tuition and online classes will be maximized and limited. Scheduled of home tuition will be set by the students or by their parents according to the availability of students. Resumes of teachers will be shared to the students. The interface of our application will be very user friendly for all the users. We will also provide the platform for the online classes and also provide a storage space to the teachers so as their lectures could be recorded and save to the cloud so students can easily access them after the lecture and if loss of internet connection. We will also provide online payments method so the students can easily pay the teachers.

1.7. Project Plan

The plan of our project is that we are working in a team and make a good responsive and attractive website in which we are using web services and different connectivity's. Every team member has different responsibilities like development, documentation etc.

1.7.1. Work Breakdown Structure

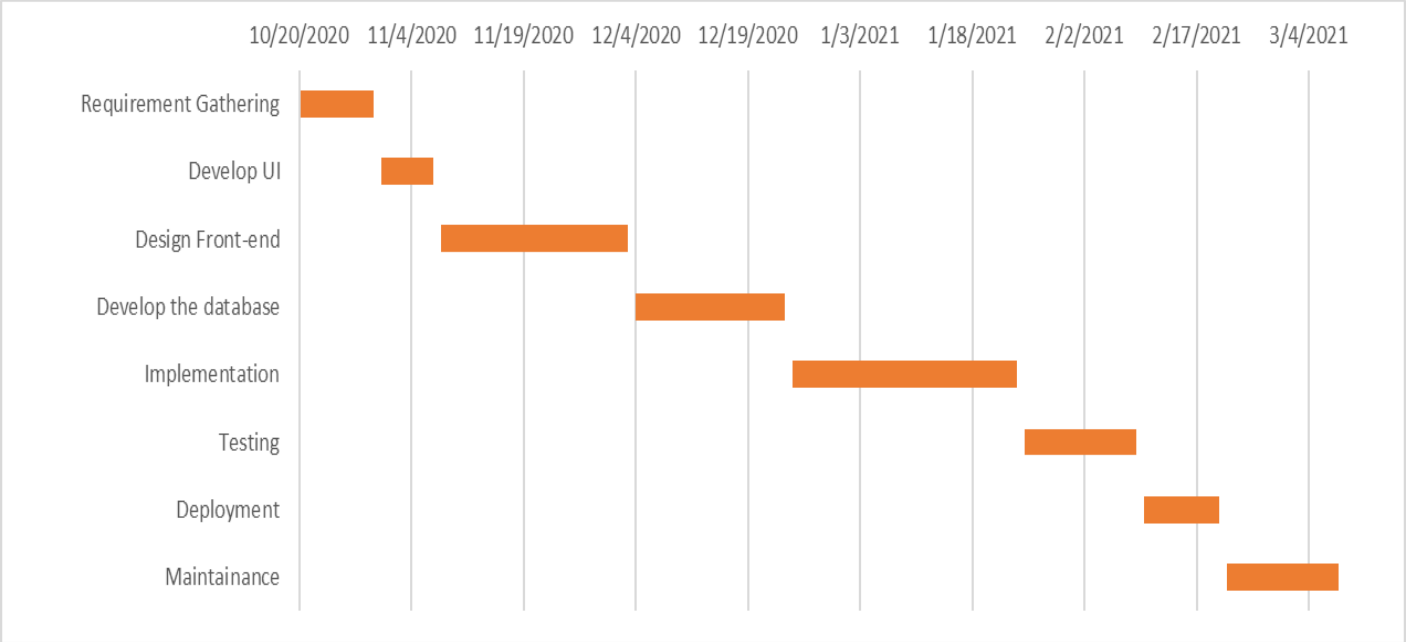


1.7.2. Roles & Responsibility Matrix

WBS #	WBS Deliverable	Activity #	Activity to Complete the Deliverable	Duration (# of Days)	Responsible Team Member(s) & Role(s)
1	1.1 Initial	1.1.1	Research	7	Hamza
		1.1.2	Analysis	3	Nabeel , Bilal
	1.2 Planning	1.2.1	Scope Statement	1	Whole Team
		1.2.2	Determining Responsibilities	1	Whole Team
		1.2.3	Project Plan	2	Whole Team
		1.2.4	Milestones	3	Whole Team
	1.3 Execution	1.3.1	Requirement Gathering	7	Nabeel,Bilal

		1.3.2	Validating Requirement	7	Hamza
		1.3.3	Designing a system	20-25	Umar , Sabih
		1.3.4	Implementation	25-30	Umar , Sabih

1.7.3. Gantt Chart:



1.8. Report Outline

This project is on Online E-tutor system in which admin, student and teachers are having their own login. It will be easy for the users to select courses and teachers sitting at home, they don't need to go out for searching and their parents don't need to waste their time in pick and drop. Admin can do different things manage website, manage tutors, view and response users' feedbacks which users gives.

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1. Introduction

2.1.1. Purpose

The purpose of this product is to provide online platform for students and this is the best way to earn money for teachers and for students and share their experience. We provide zoom meeting and also provide cloud for storing recorded lectures.

2.1.2. Document Conventions

Document Conventions

Entire document should be justified.

Convention for Main title Font face: Calibri style: Bold Font Size: 22

Convention for Sub title Font face: Calibri style: Bold Font Size: 14

Convention for body Font face: Calibri Font Size: 12

2.1.3. Intended Audience and Reading Suggestions

Intended Audience and Reading Suggestions. The intended audiences for this document are:

The members of our team. Our supervisor, project manager, internal and external evaluator.

The document will be reviewed frequently by the above audiences to check if the different phases of the project are being completed to meet the given requirements.

2.1.4. Product Scope

This project has a great scope. It will be very beneficial for the students and teachers they can easily get knowledge or pass knowledge. It will very beneficial for the university students. They can earn a handsome amount per month from teaching.

2.1.5. References

These websites are user friendly, have attractive interface. These are American websites.

3. https://www.etutorworld.com/
4. https://clubztutoring.com/

5. Department of Electronics & Communication Engineering, Amity School of Engineering & Technology, Amity University Lucknow, India **"Applications of Machine Learning in Improving Learning Environment.**

5.1. Overall Description

5.1.1. Product Perspective

The proposed E-tutor System which is being developed by Innovative E-tutor solutions team. In this user, admin will have their own login ID, Password where they can access different functions easily.

5.1.2. User Classes and Characteristics

The user classes and characteristics of E-tutor system are:

- Admin of website who will manage all the functions.
- Student who will take online lectures.
- Student who will enroll courses.
- Student who will select teachers according to their need.
- Teachers will deliver their lectures.

5.1.3. Operating Environment

The product will be operating in windows/OS/android. A Most of the features will be compatible with the any web browser. The main requirement is that you would have the good or better internet connection.

5.1.4. Design and Implementation Constraints

The design and implementation constraints for this product developed using HTML, CSS and bootstrap. For the backend, Laravel and the database for this is MySQL. The product is login facility so that specific function is available to specific students, teachers and for admin.

5.1.5. Assumptions and Dependencies

The project assumptions and dependencies are:

- MySQL
- Web Browser

5.2. External Interface Requirements

5.2.1. User Interfaces

The user interface for the software shall be compatible to any browser such as Internet Explorer, Mozilla, google chrome or Netscape Navigator by which student, teacher and admin can access to the system. The user interface shall be implemented using any tool or software package like visual studio code and MySQL.

5.2.2. Hardware Interfaces

Software Requirements Specification for this product

Operating System: Windows xp, Windows vista, window 8, window 10, android and IOS.

Processor: Pentium 2.0 GHz or higher

RAM: 256 Mb or more

Hard Drive: 15 GB or more

5.2.3. Software Interfaces

- Browser to load and view the web page
- *Operating system*

5.2.4. Communications Interfaces

- Internet
- email
- windows
- social media
- HTTP standard.
- **Communication security are,**
    - IRC Channels
    - Secure file-sharing apps
    - Encrypted emails

5.3. System Features

5.3.1. System Feature 1

First feature is admin who will manage all the things.

5.3.1.1. Description and Priority

Admin has a feature in which he will do all the work and responsibilities given by the head of a E-tutor site.

5.3.1.2. Stimulus/Response Sequences

All the data compiling will be done by the admin he will manage all the Courses and teachers of a site he will check that user is selecting anything course. He will give response to the user's feedback.

5.3.1.3. Functional Requirements

The functions requirements of Admins are:

REQ-SF1-1: Approves the registered users.

REQ-SF1-2: Can manage the tutors (add/view/update/delete)

REQ-SF1-3: Can update the user details.

REQ-SF1-4: Can manage login password.

REQ-SF1-5: Can block a tutor in case of continuous poor rating.

5.3.2. System Feature 2

Second feature is student who will select courses and teachers according to their need sitting at their home.

5.3.2.1. Description and Priority

Students will be selecting courses and teachers by sitting at their home. He/she will not need to go outside for searching tuitions.

5.3.2.2. Stimulus/Response Sequences

Students can select courses and teachers according to their needs and they take lectures easily.

5.3.2.3. Functional Requirements

The functions requirements of Students are:

REQ-SF2-1: Can register and login.

REQ-SF2-2: Can view and update their profile.

REQ-SF2-3: Can search for all available tutors.

REQ-SF2-4: All available tutor's details.

REQ-SF2-5: Can search tutors with their experience.

REQ-SF2-6: Student will search for the teacher according to their needs.

REQ-SF2-7: Student will book a tutor.

REQ-SF2-8: Student will give rating of the tutor according to the lecture.

5.3.3. System Feature 3

Third feature is teacher who will teach students sitting at their home and earn money from them.

1.1.1.1. Description and Priority

Teacher will teach students sitting at their home and earn money.

1.1.1.2. Stimulus/Response Sequences

Teachers teach students and deliver their knowledge and experience.

1.1.1.3. Functional Requirements

The functions requirements of Tutors are:

REQ-SF2-1: Can register and login.

REQ-SF2-2: Make their profile including their name, qualification, experience, subjects of interest, level and their location.

REQ-SF2-3: Can view / update their profile.

REQ-SF2-4: Can check the rating given by the students.

1.2. Nonfunctional Requirements

1.2.1. Performance Requirements

The proposed system that we are going to develop a system that will be used as a chief performance system within the E-tutor. Therefore, it is expected that the database would perform all functionality and the requirements that are specified by the E-tutor system.

1.2.2. Safety Requirements

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup so that the database is not lost. Proper UPS/inverter facility should be there in case of power supply failure.

1.2.3. Security Requirements

- In our system, we'll use advance secured database.
- System will have different type of users and every user has access constraints.
- There should be separate account for admin and users such that no member can access the database and only admin has the rights to update the database.
- Proper user authentication should be provided.
- No one should be able to hack user's password.
- Non-users will just visit our website and explore everything about our website.

1.2.4. Usability Requirements

- Design Process and Evaluation
- Optimizing the user experience
- Accessibility
- Hardware and software.
- Content organization.
- Usability testing.

1.2.5. Reliability Requirements

We provide better reliability. We provide different servers if one server crashes other respond that help to reduce failure of system.

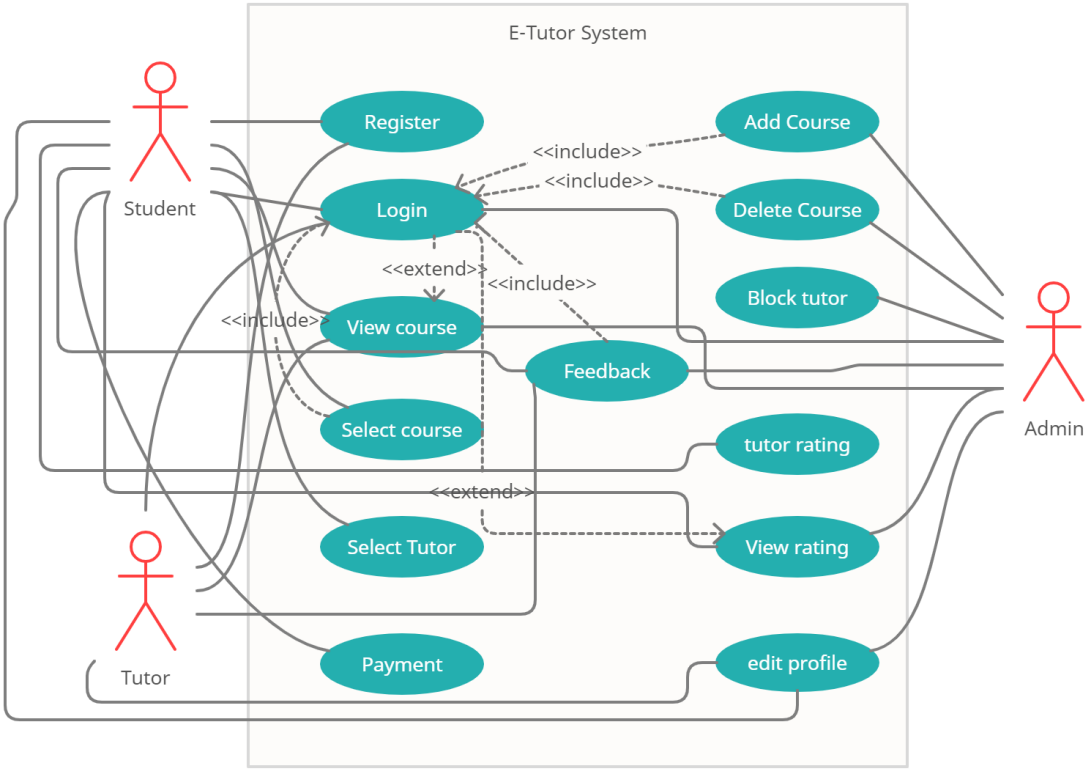
Chapter 3

Use Case Analysis

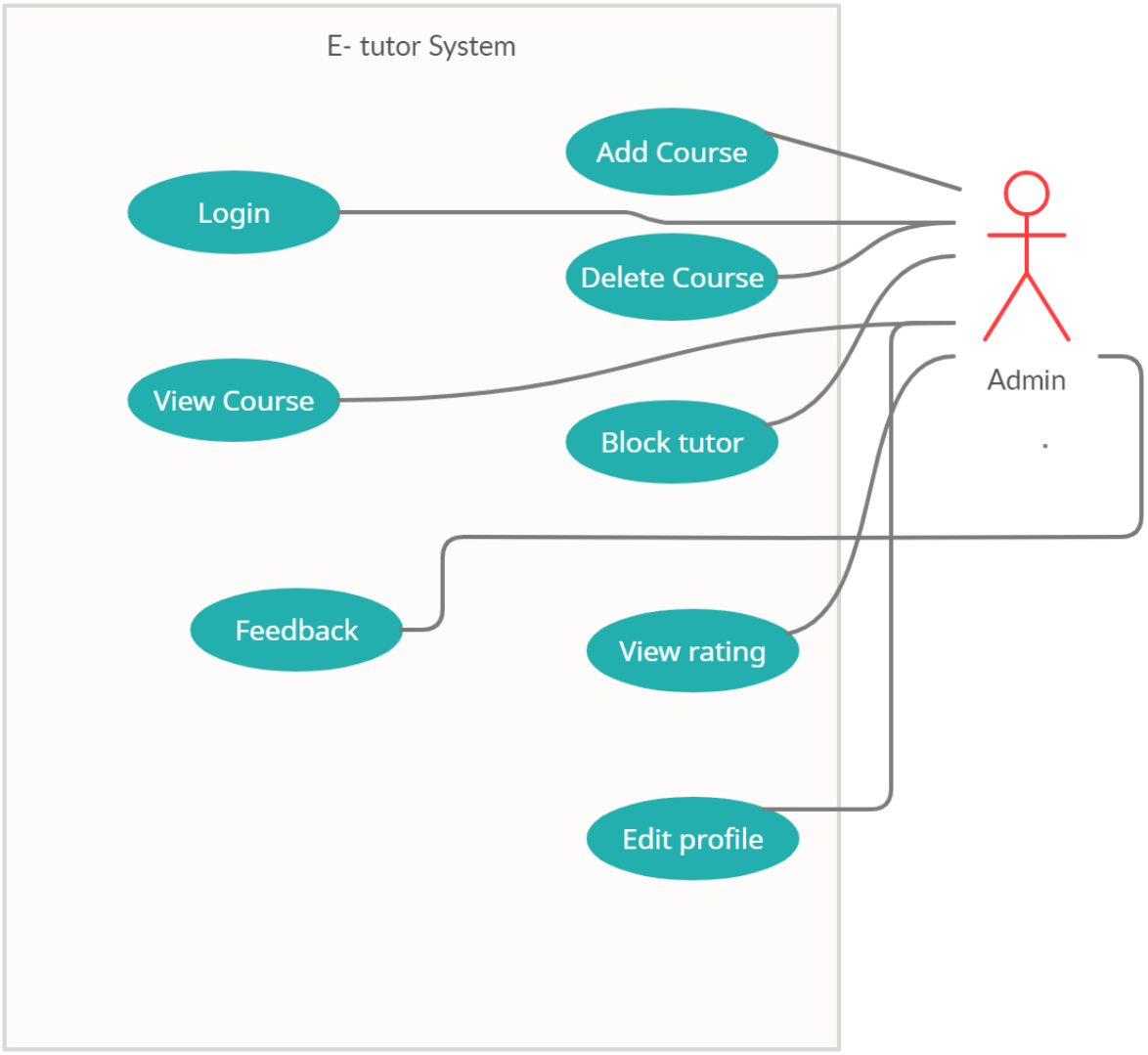
Chapter 3: Use Case Analysis

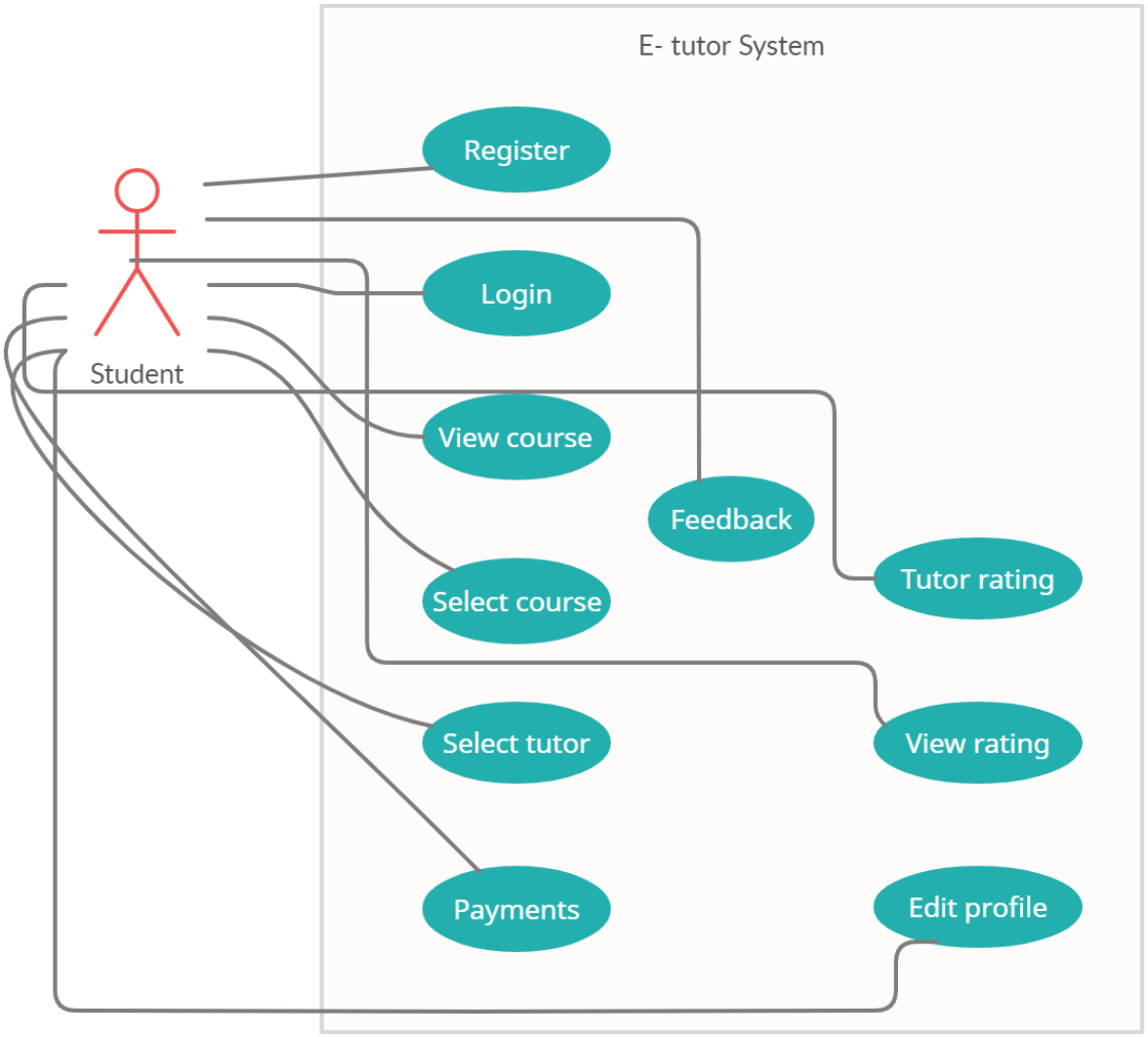
In this chapter we make use case model, use cases and uses cases description.

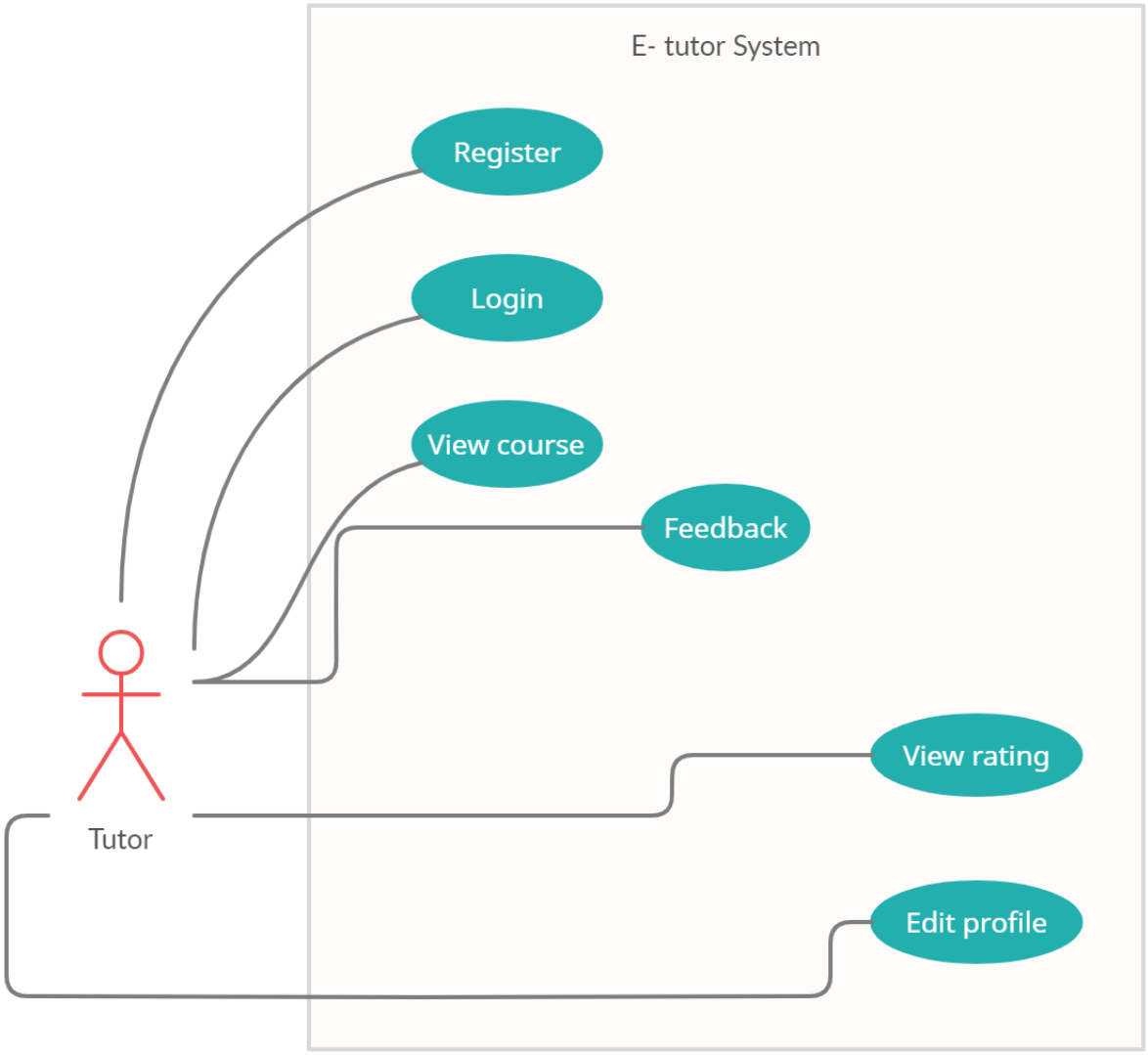
3.1. Use Case Model



Use cases


E- tutor System
Add Course
Login
Delete Course
View Course
Block tutor
Admin
Feedback
View rating
Edit profile


E- tutor System
Register
Login
View course
Feedback
Tutor rating
Select course
Select tutor
View rating
Payments
Edit profile
Student



3.2. Use Cases Description

- **Use Case Name:** Create Account

Scope: E-tutor

Primary Actor: Student and teacher

Stakeholders and Interests:

- Student and teacher**:**

-wants to open his/her account so that he/she will be able to do their functions

-wants to have his/her information saved and secured.

-wants fast service with minimal effort.

Pre-conditions:

No pre-conditions required.

Success Guarantee:

Student and teacher information is valid and is saved into database. Account is created successfully. Student and teacher logins into account.

Main Success Scenario:

1. Student and teacher open the E-tutor system through a device (mobile phone/PC etc.).
1. Student and teacher click on the 'Create Account' option.
2. Student and teacher enter the Username in the field.
3. Student and teacher enter the Password in the field.
4. Student and teacher enter contact number in field.
5. Student and teacher enter email address.
6. Student and teacher click on the Register Button.
7. System checks if the information entered by the Student and teacher are valid.
8. System saves student and teacher information in database and creates account.

Student and teacher logins into his/her account successfully.

- **Use Case Name:** Login

Scope: E-tutor

Primary Actor: Student and teacher

Stakeholders and Interests:

- **Student and teacher:**

-wants to open his/her account so that he/she will be able to do their functions.

-wants to have his/her information saved and secured.

-wants fast service with minimal effort.

Pre-conditions:

- User must have Username and Password
- If not have Account, then have to create an Account

Success Guarantee:

Student and teacher have username and password that are verified with the records present in database. They have successfully opened his/her account.

Main Success Scenario:

1. Student and teacher open the E-tutor system through a device (mobile phone/PC etc.).
1. Student and teacher click on the ‘Login’ option.
2. Student and teacher enter the Username in the field.
3. Student and teacher enter the Password in the field.
4. Student and teacher click on the Login Button.
5. System verifies the username and password entered by the Student and teacher with the records present in the database.

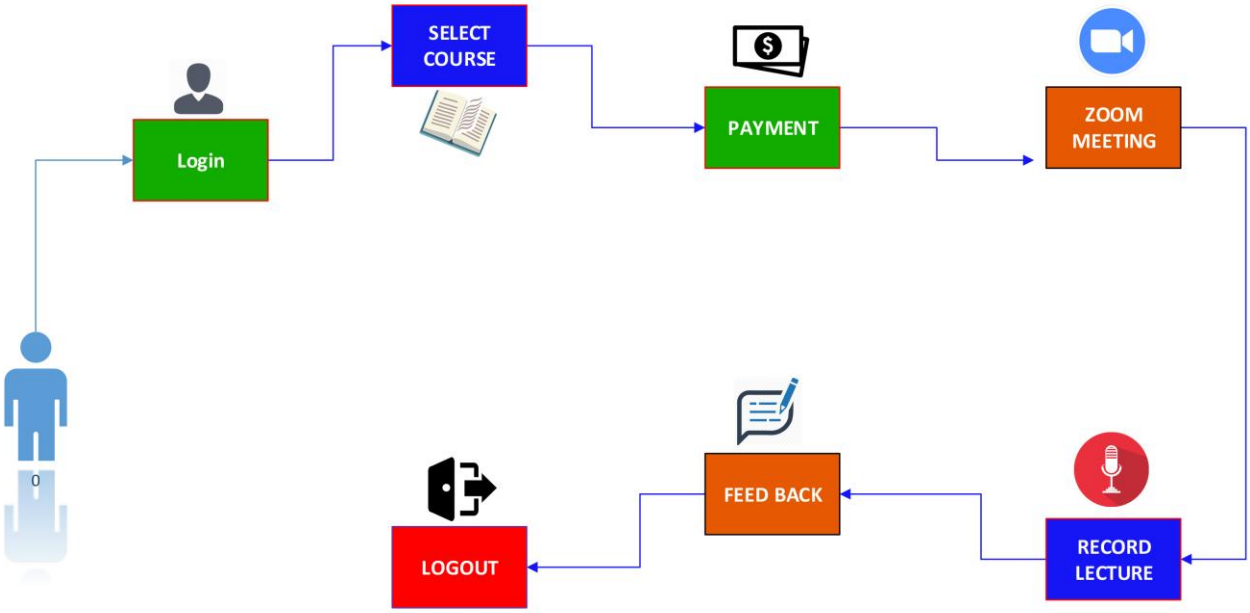
Student and teacher logins into his/her account successfully.

Chapter 4
System Design

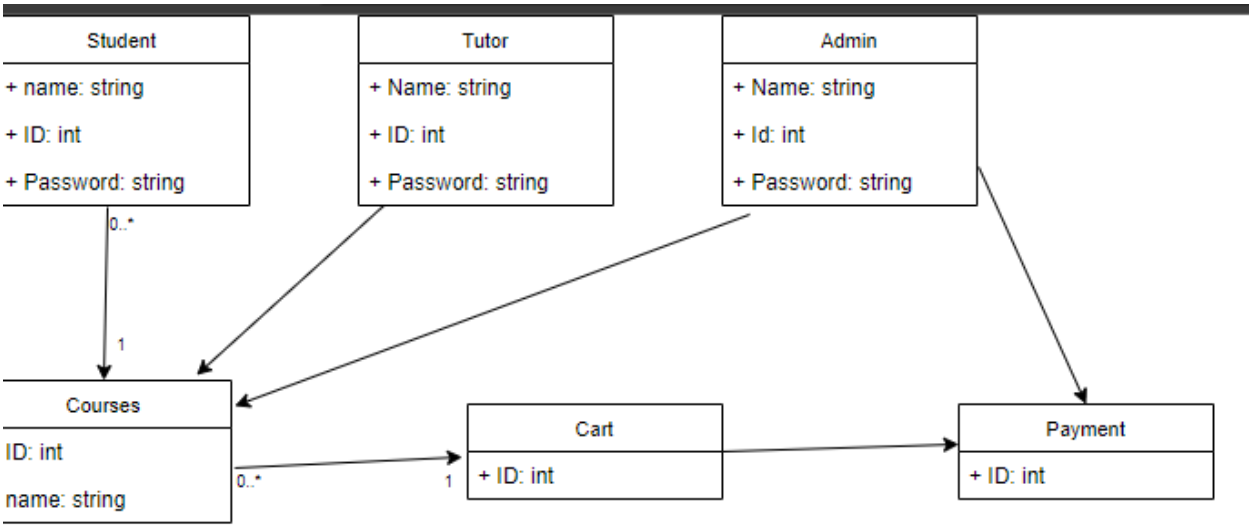
Chapter 4: System Design

System design is the process of defining the architecture, modules, interfaces and data for a system to satisfy specified requirements. There is some overlap with the disciplines of system analysis, system architecture and systems engineering.

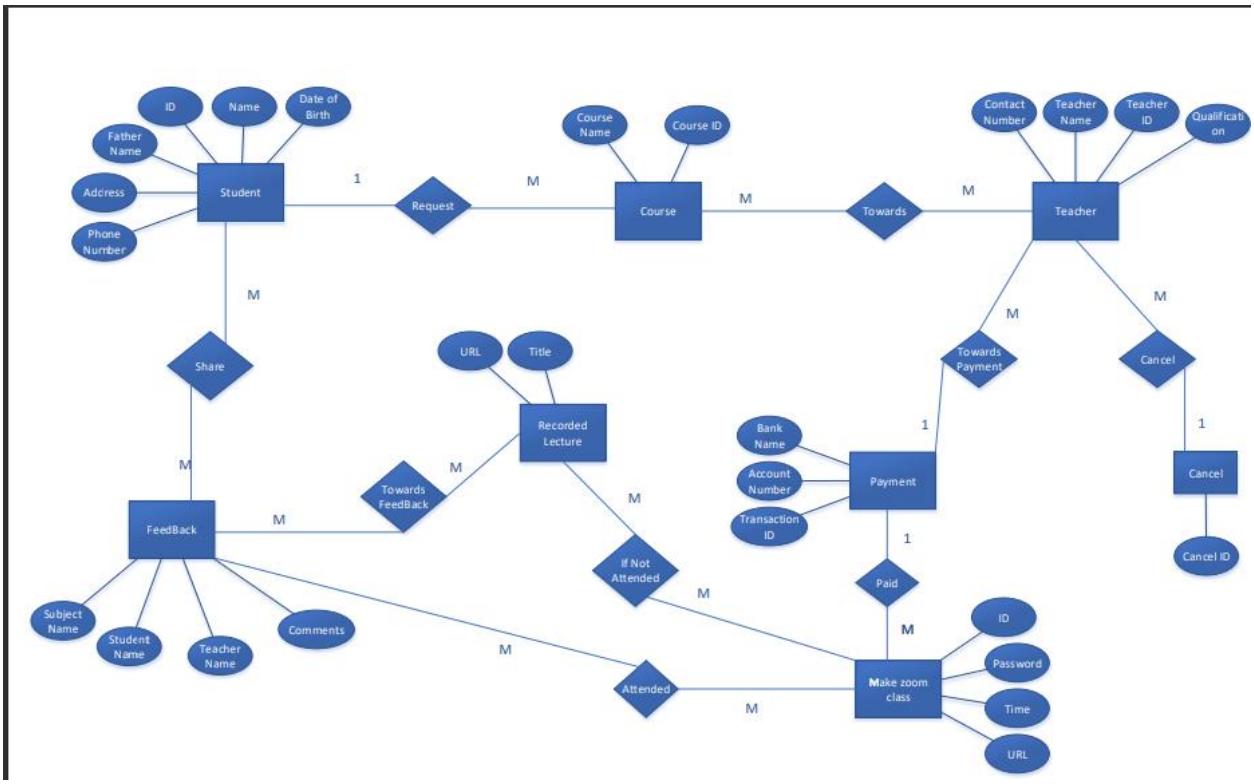
4.1. Architecture Diagram



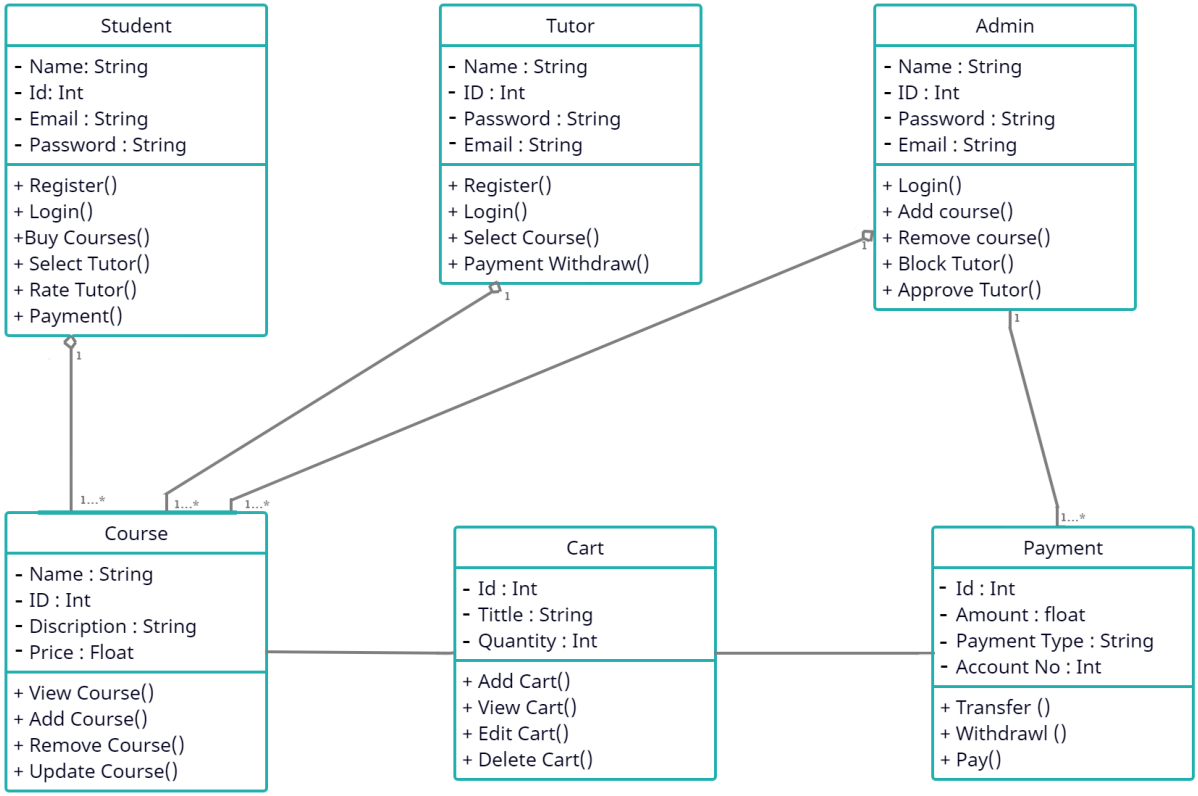
4.2. Domain Model



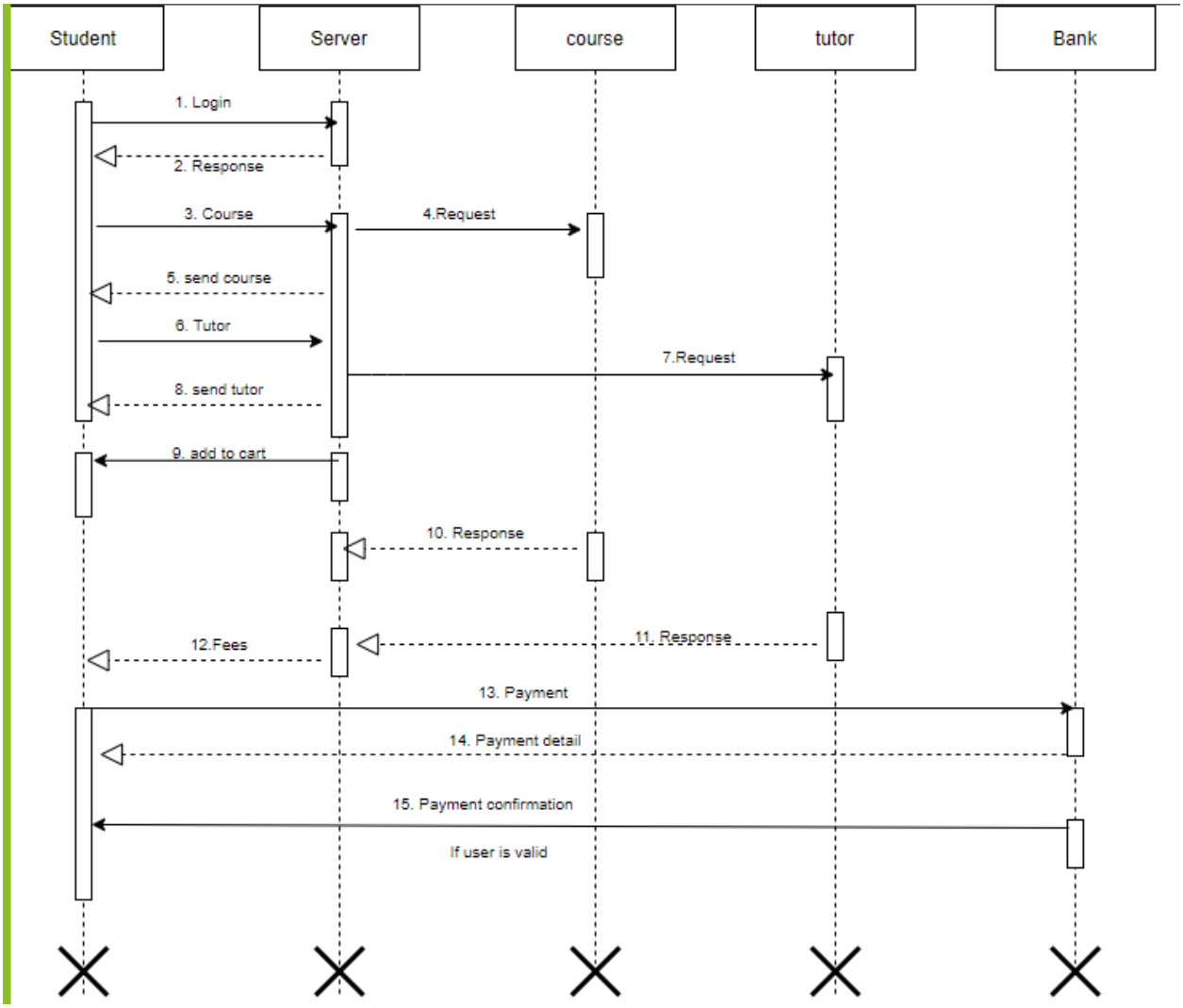
4.3. Entity Relationship Diagram with data dictionary

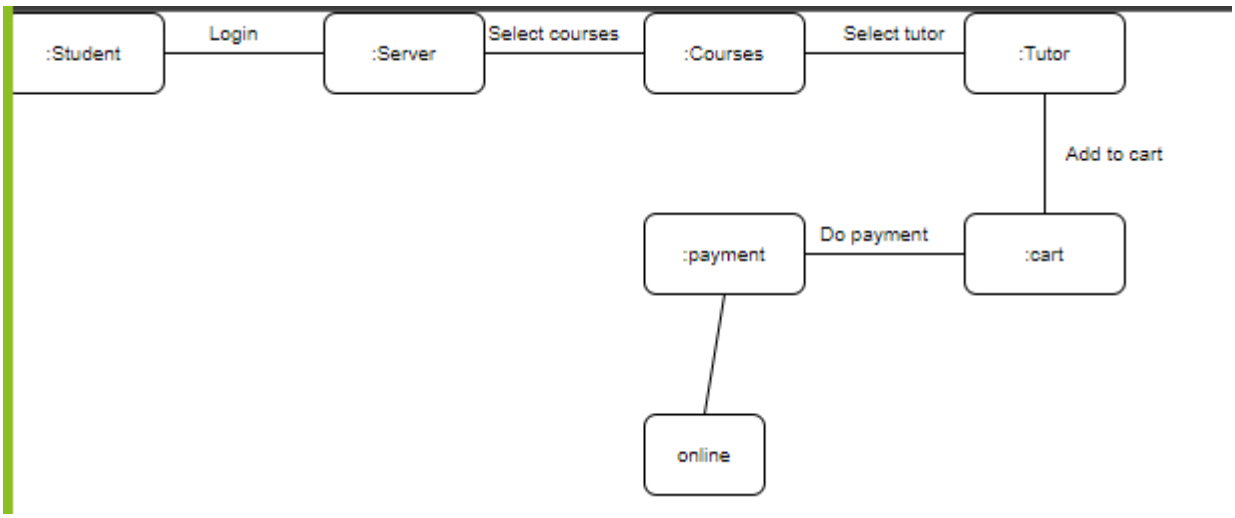


4.4. Class Diagram



4.5. Sequence / Collaboration Diagram

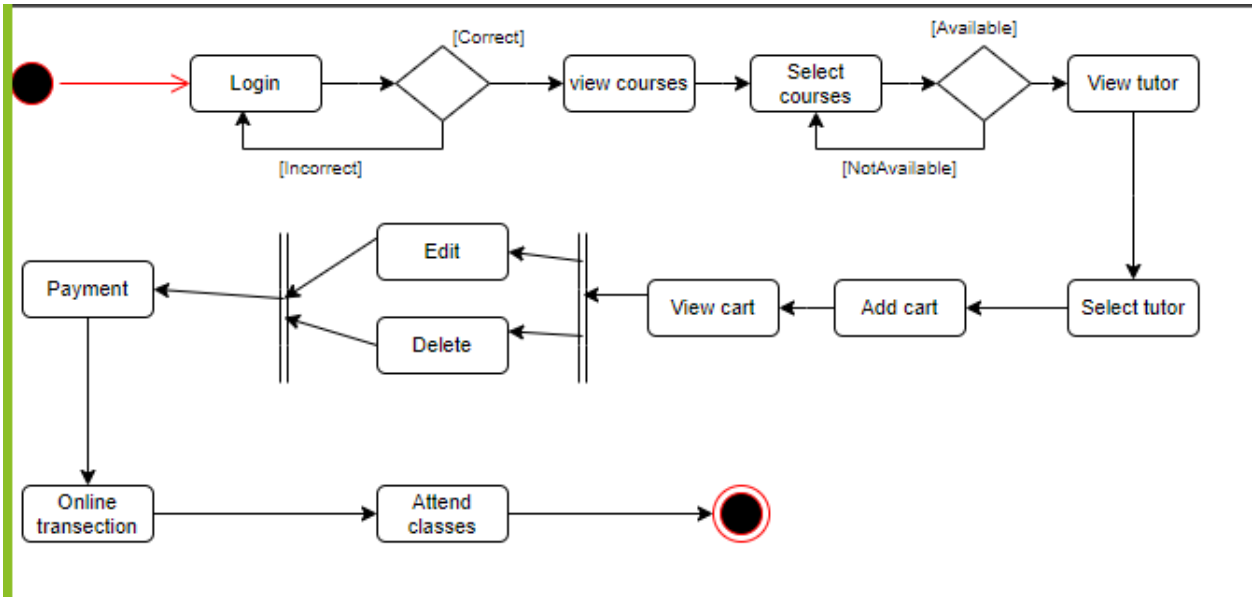




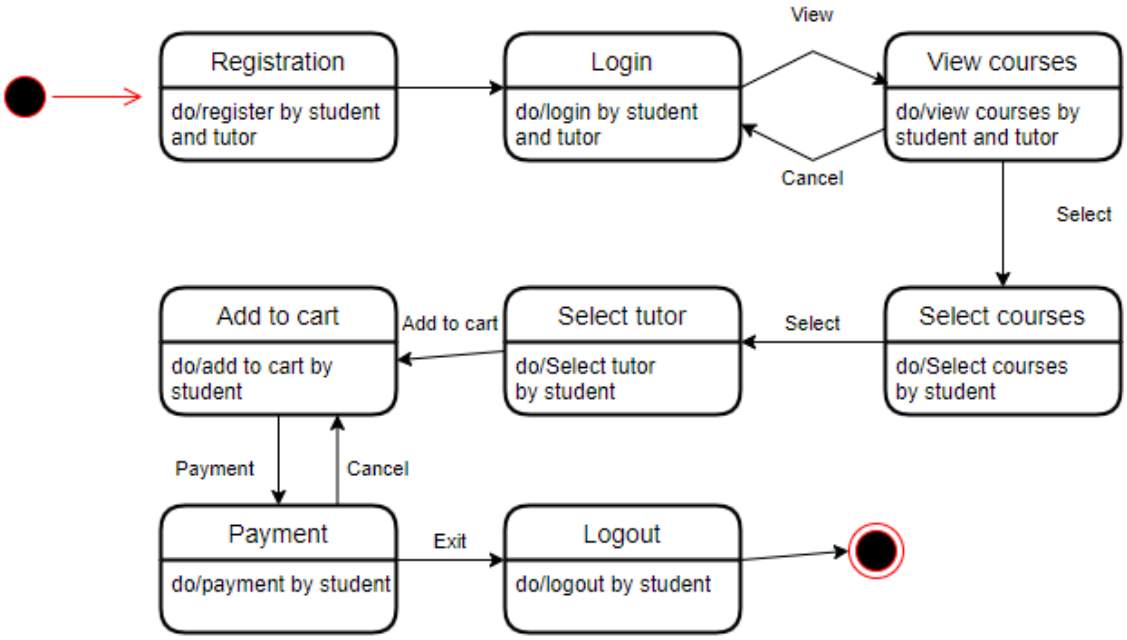
4.6. Operation contracts

- **Name:** user Login.
- **Responsibilities:** user should register.
- **Cross References: Use Case:** Login.
- **Exceptions:** user Should Have Username and Password**.**
- **Preconditions:** The user must Register First.
- **Post-conditions:** Successfully Login.

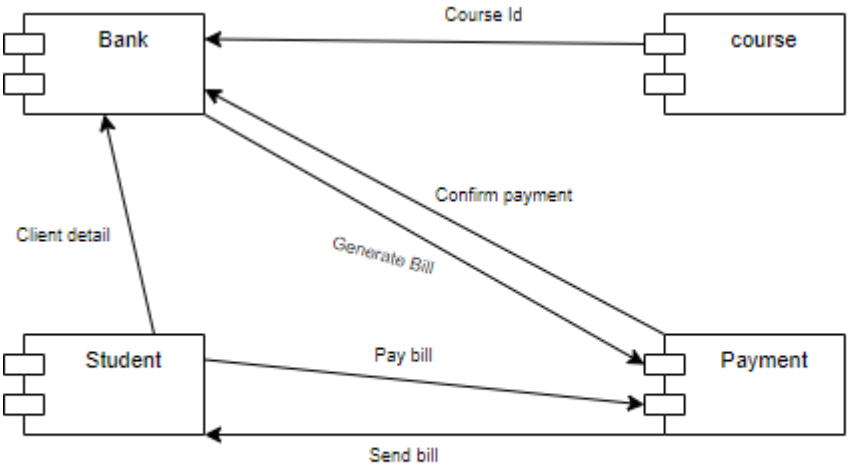
4.7. Activity Diagram



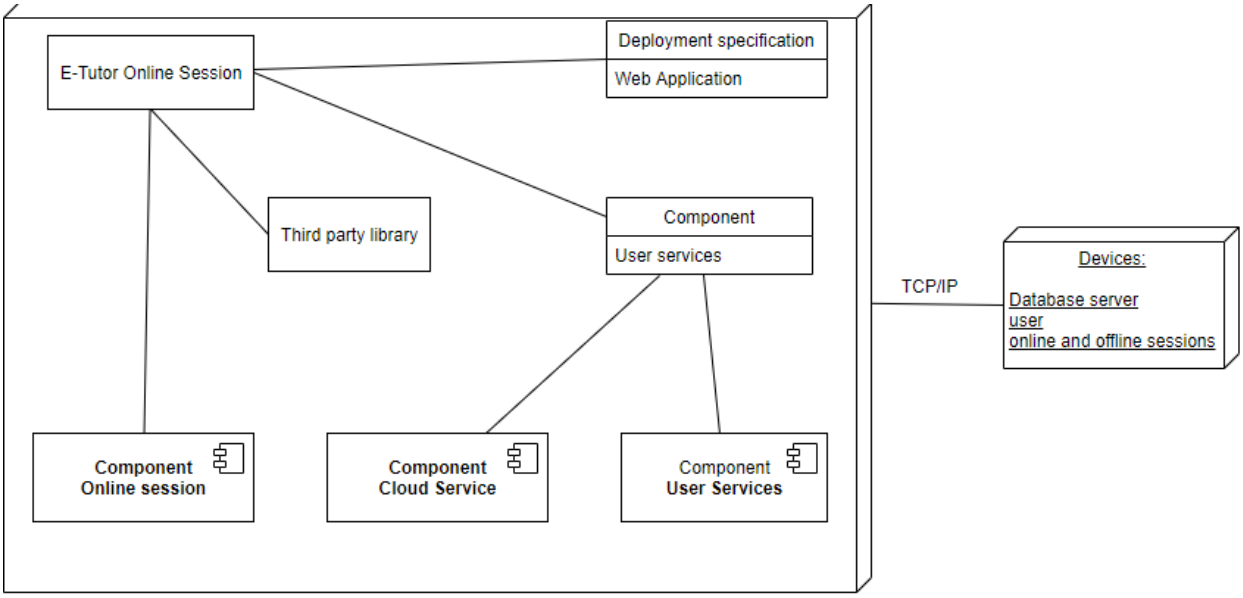
4.8. State Transition Diagram



4.9. Component Diagram

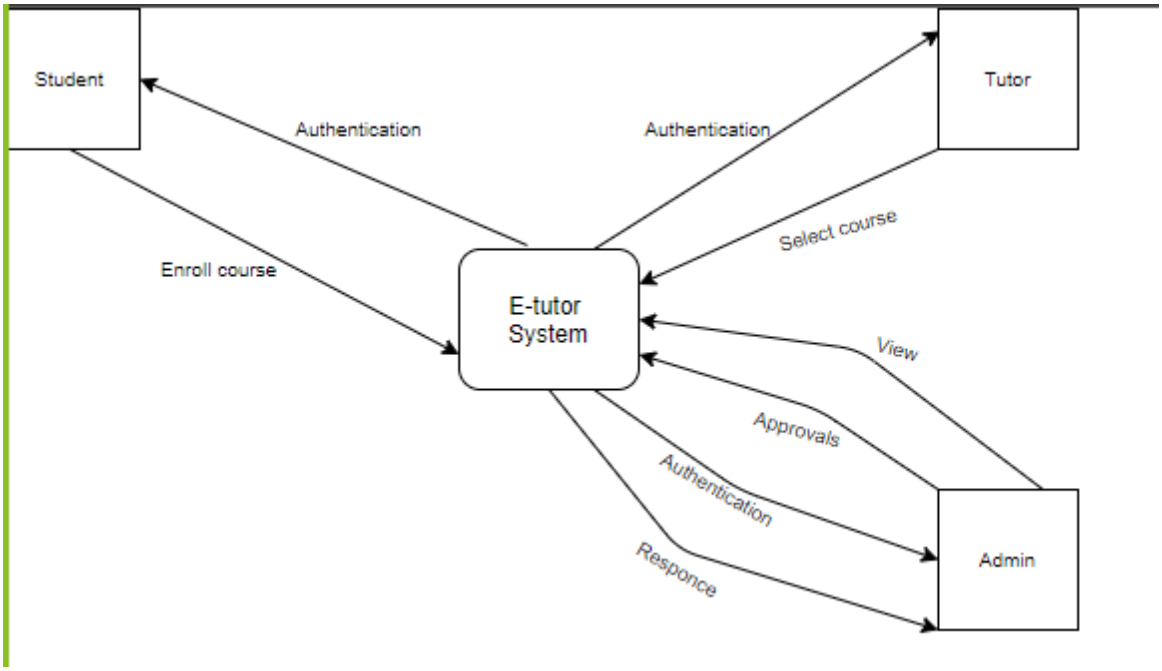


4.10. Deployment Diagram

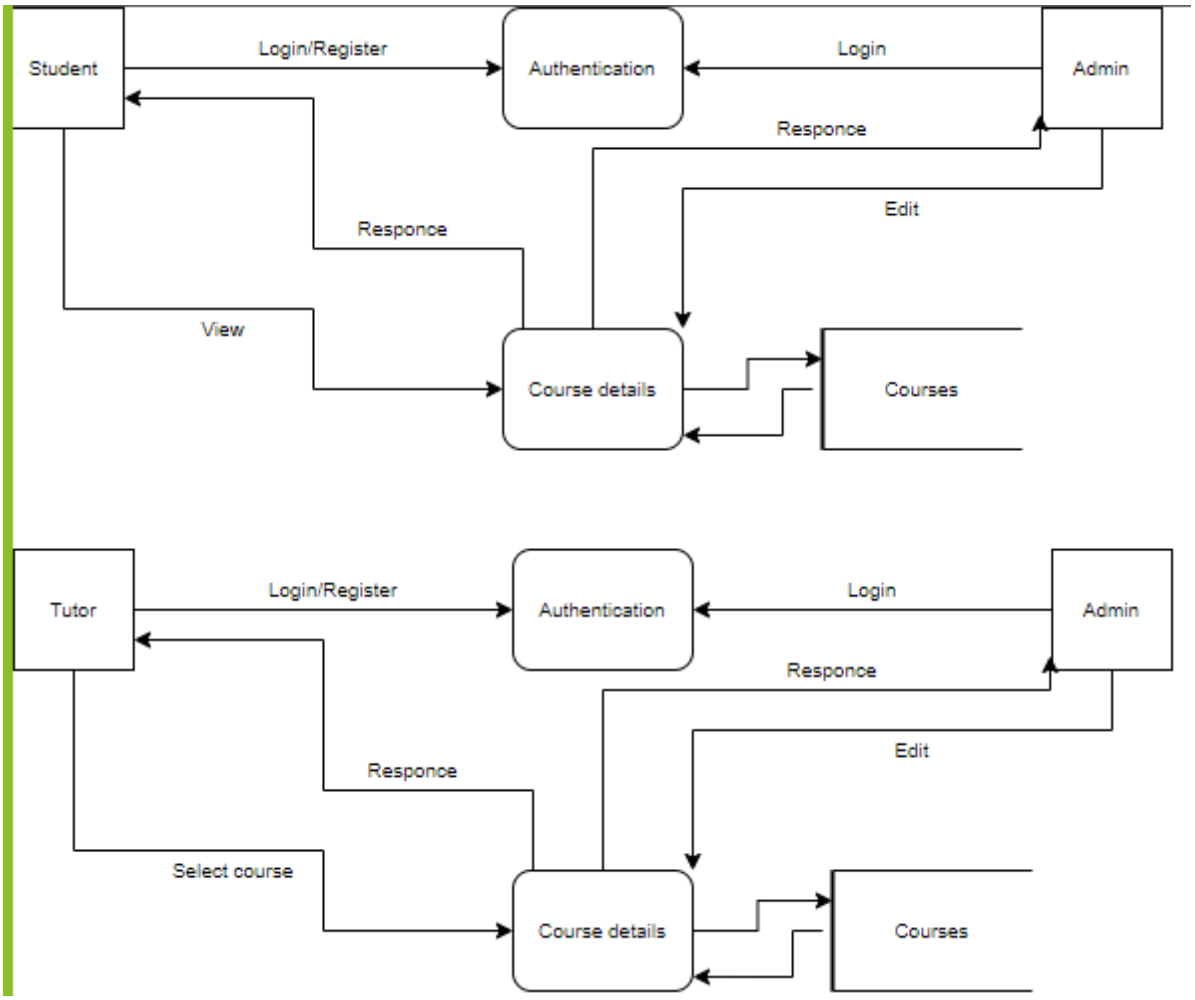


4.11. Data Flow diagram [*only if structured approach is used - Level 0 and 1*]

Level 0:



Level 1:

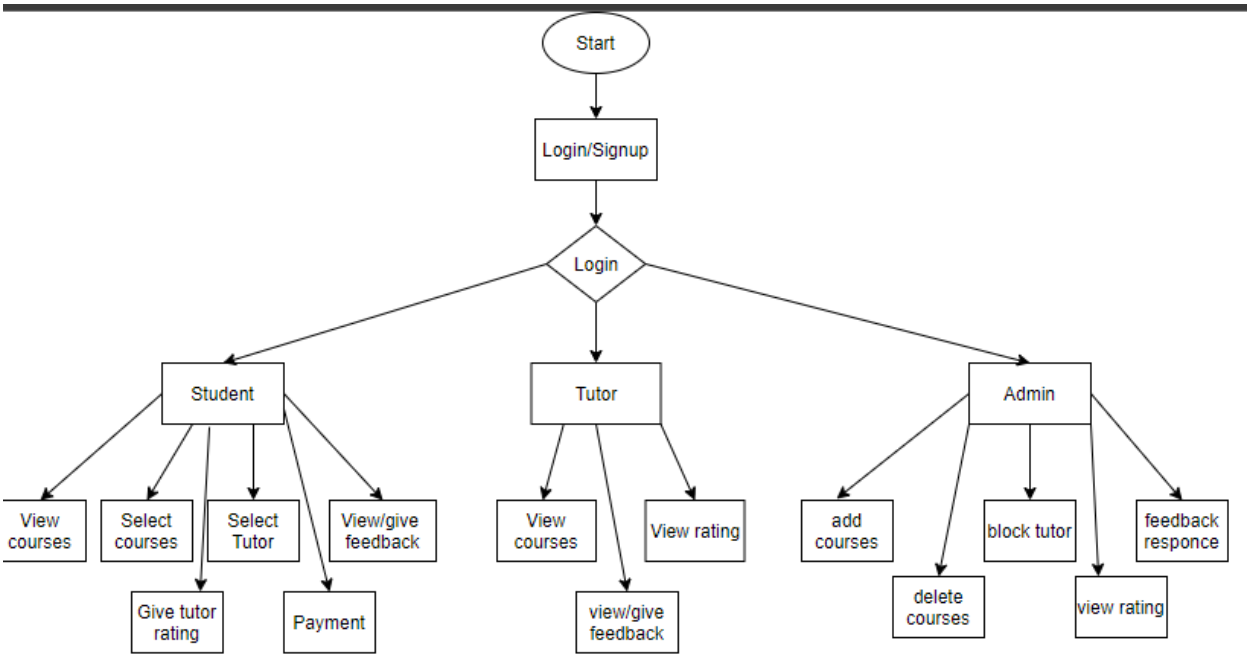

Student
Login/Register
Authentication
Login
Admin
Responce
Edit
Responce
View
Course details
Courses
Tutor
Login/Register
Authentication
Login
Admin
Responce
Edit
Responce
Select course
Course details
Courses

Chapter 5
Implementation

Chapter 5: Implementation

In this chapter, we show you how to implement system pseudo codes, libraries deployment environment, how we implement this system, how team work hard for this project and describe tools which are we used for developing this project.

5.1. Important Flow Control/Pseudo codes



5.2. Components, Libraries, Web Services and stubs

- Proper Uploading of projects
- Framework
- Fair method of ranking projects
- We use agile SDL'S model that is change oriented at any stage of development
- Wants versus Needs
- We especially focused on user's satisfaction we are should fulfill we our project is designed for current requirements.

Updates/Notification

In our application, we can share information with users using client service with SOAP protocols.

5.3. Deployment Environment

Basically, in deployment environment the development team is supposed to deploy the code for testing purpose. After the system is developed, integrated and tested, it is ready to be deployed on site. System deployment may take several months to complete depending on the complexity of the system and the number of toll collection sites. A deployment plan is often required to ensure a smooth transition to operations. The plan needs to address staffing training, scheduling, testing, contractor coordination, con-figuration management and any required phasing.

The deployment environments have two types and following its types are described:

- **Lower-level environment**

Developers can use this environment to test their code (this environment will be an exact replica of higher environment where Internal and External testing will happen). We use SVN and checking the code.

- **Higher-level environment**

Where multiple testing team can test which from my experience seems stable environment. to test on. But we have lot of environments....and time to time support has to give on different environment. But I see multiple environments where testing happens with no apparent concrete reason. My question is whose responsibility to support multiple environments? I find it difficult for development team to work on supporting multiple environments apart from regular dev activities, Unit test case preparation, get clarification from the design or business on User story.

5.4. Tools and Techniques

Tools

Development Tools

- ✓ VS Code

Development Language

- ✓ HTML
- ✓ CSS

- ✓ Bootstrap
- ✓ Laravel

Database Tools

- ✓ MySQL

Documentation Tools

- ✓ MS Office

Server (Web Hosting)

- ✓ Localhost.
- ✓ Xampp.

Techniques

- **Responsive Web Design Strategy**

  The basic premise is that: We use media queries to design responsive websites that adapt in layout according to browser width, and you constantly resize your browser to see how the website performs, but every time a query kicks in, there's a harsh jump between the first style and the second.

- **Maintaining Consistency**

  We can keep elements such as color, layout or font consistent in our site. Our site should have a smooth flow from one page to another. This means that our font, color, and layout structure should be the same throughout site to maintain consistency. It is important to keep the elements across all pages constant so that the viewers do not feel lost.

- **Design a Great Navigation System**

  The best way to engage visitors in our site is by developing a solid and impressive navigation system that would effectively support all search preferences. The most vital factor in web design is the ease with which one can find information. The navigation system should be intuitive and self-explanatory.

- **Make Site Accessible**

  Due to aspiring of an overwhelming traffic then we make our site compatible and attuned to multiple devices and browsers. We must ensure that the authorized user can access our website and visit it no matter what application or browser they are using.

- **Usability**

It is important to the success of a site depends on its usability because its existence is meaningless if users cannot use it and not in its visual design. It is best to use a user-centric design. It is necessary to let the user view all the available functions clearly. Feature exposure contributes to a good user interface design. The visitors should be able to interact with the system comfortably.

5.5. Best Practices / Coding Standards

Introduction

Superior coding techniques and programming practices are hallmarks of a professional programmer. The bulk of programming consists of making a large number of small choices while attempting to solve a larger set of problems. How wisely those choices are made depends largely upon the programmer's skill and expertise.

File and Folder Organization

One of the best approaches is to either use a framework or design their folder structure.

Commenting & Documentation

Commenting code more useful than ever. Following certain standards in comments allows IDE's and other tools to utilize them in different ways.

Consistent Naming Scheme

Names should have word boundaries. There are two popular options:

CamelCase: First letter of each word capitalized, except the first word.

Underscores: Underscores between words.

Programming Practices

- To conserve resources, be selective in the choice of the data type to ensure the size of a variable is not excessively large.
- Keep the lifetime of variables as short as possible when the variables represent a finite resource for which there may be contention, such as a database connection.
- Keep the scope of variables as small as possible to avoid confusion and to ensure maintainability. In addition, when maintaining legacy source code, the potential for

inadvertently breaking other parts of the code can minimize if the variable scope is limited.

- Use variables and routines for one and only one purpose. In addition, avoid creating multipurpose routines that perform a variety of unrelated functions.

When writing classes, avoid the use of public variables. Instead, use procedures to provide a layer of encapsulation and to allow an opportunity to validate value changes.

5.6. Version Control

Version control systems are a category of software tools that help a software team manage changes to source code over time. **Version control software** keeps track of every modification to the code in a special kind of database.

Team Foundation Server:

Is an integrated server suite of developer tools designed for professional teams to share code, track and monitor workflows, and ship software? Its version control solution offers unlimited private repositories for storage and collaboration on the code. You also have the option to choose between a Team Foundation version control (TFVC) for centralized version control or Git for distributed version control.

At its core, Team Foundation Server is a collaborative software development tool. It empowers cross-functional teams to effectively work on software projects of any size using this solution that integrates with your existing IDE or code editor. In addition to its code repositories, it has a bug and task tracking, agile planning tools, and continuous integration.

The tool works on any language such as HTML, CSS, SUBLIME, JavaScript, C#, Java and Python. Meanwhile, Team Foundation Server offers TFS Express for a small team of five members to start with for free. As the team grows, they can easily scale with the system.

Chapter 6

Testing and Evaluation

Chapter 6: Testing and Evaluation

Test & Evaluation is the process by which a system or components are compared against requirements and specifications through testing. The results are evaluated to assess progress of design, performance, supportability, etc. Developmental test and evaluation is an engineering tool used to reduce risk throughout the acquisition cycle.

Testing is a mechanism to assure quality of a product, system, or capability (e.g., right product, built right). To be effective, testing cannot occur only at the end of a development. It must be addressed continuously throughout the entire life cycle.

6.1. Use Case Testing

Use case testing is a technique that helps us identify test cases that exercise the whole system on a transaction-by-transaction basis from start to finish.

Use Case Test 1

Use Case Name		**Select Course**
Use Case Description		Student must select a course or courses
Actors		Student, admin, Teacher
Pre-Condition		**1.** Student must open the website
Post-Condition		Student can register itself
Main Scenario	**Serial Number**	**Steps**
Actor **System**	**1**	Student can select maximum six courses and 1 course minimum
	2	System Validate all the conditions
	3	Courses selected successfully
Extension	**2a**	If Student selects more than six courses OR select no course then Student will not proceed forward

Table 1.6.1.1 Use Case Test

Use Case Test 2

Use Case Name		**Register**
Use Case Description		Student registration required for payment
Actors		Student, Admin, Teacher
Pre-Condition		**1.** Student must select a course
Post-Condition		Student register with system after registration successfully.
Main Scenario	**Serial Number**	**Steps**
Actor **System**	**1**	Student should be register itself via First-name, last-name, password, Confirm password, Email address
	2	System Validate all input fields.
	3	Registered.
Extension	**2a**	If any input field was invalid except first name and last name then system generates error.

Table 2.6.1.2 Use Case Test 2

Use Case Test 3:

Use Case Name		**Payment**
Use Case Description		Payment is compulsory for the next steps, Student can take zoom classes after payment
Actors		Student, Admin
Pre-Condition		**1.** Student must be select course and login in system **2.** Student must give card details for payments
Post-Condition		**1.** Student can get zoom links **2.** Student can get class date and time
Main Scenario	**Serial Number**	**Steps**
Actor **System**	**1**	Student must select course and login successfully for payment.
	2	Valid input fields
	3	System can access the admin to send notification
Extension	**2a**	Invalid input fields of payment System show error message

Table 3.6.1.3 Use Case Test 3

Use Case Test 4:

Use Case Name		**Zoom links & Date**
Use Case Description		Student can get zoom links and date of classes.
Actors		Student, Teacher, Admin
Pre-Condition		**1.** Student must be select a course and registration **2.** Student must do payment
Post-Condition		**1.** Student will get URL of recording lecture folder.
Main Scenario	**Serial Number**	**Steps**
Actor **System**	**1**	Student & Admin must do payment successfully in order to get zoom links and schedule of lecture
	2	Valid payment
	3	System can access the admin to zoom links and schedule
Extension	**2a**	Invalid internet connection System show error message

Table 4.6.1.4 Use Case Test 4

Use Case Test 5:

Use Case Name		**Recorded lecture**
Use Case Description		Student can get URL of recorded lecture folder
Actors		Admin, Student
Pre-Condition		**1.** Student must did payment and got zoom links
Post-Condition		**1.** System responsibilities will be done
Main Scenario	**Serial Number**	**Steps**
Actor **System**	**1**	Student must did payments and got zoom URL's
	2	System can access the admin for URL of recorded lecture folder

Table 5.6.1.5 Use Case Test 5

6.2. Equivalence partitioning

Test Case 1:

Test Case Suite	**TS001**
Test Case id	**TC001**
Test Case summary	To verify the selection of courses
Related Requirement	User should select the course, also search the course
Test Procedure	1. Enter course title or select course from the list 2. Add courses
Test Data	Added Course Details
Expected Result	System should add courses if user add courses System should generate error if limit of courses exceed
Actual Result	System selects the courses if user selects it System generate error if limit of courses exceed
Status	Valid
Remarks	This is an course selection process test case
Created By	M. Umar
Date of Creation	30s/05/2021

Table 6.6.2.1 Taste Case1

Test Case 2:

Test Case Suite	**TS002**
Test Case id	**TC002**
Test Case summary	To verify the registration
Related Requirement	User should be register himself/herself via Username, First name, Last Name, Password, Address, Phone, Title
Test Procedure	1. Enter username in username field 2. Enter first name in first name field 3. Enter last name in last name field 4. Enter password in password field 5. Enter address in address field 6. Enter Title in title field
Test Data	User Name First Name Last Name Password Address Title
Actual Result	System entered the user if user enter valid fields System generate error if all the inputs are not valid
Status	Valid
Remarks	This is an registration process test case
Created By	M. Umar
Date of Creation	30s/05/2021

Test Environment	OS: Windows 8 Google Chrome

Table 7.6.2.2 Taste Case 2

Test Case 3:

Test Case Suite	**TS003**
Test Case id	**TC003**
Test Case summary	To verify that login
Related Requirement	User should be able to login to user name and password
Test Procedure	1. Enter user name in user name field 2. Enter password in password field
Test Data	User Name: HamzaKhan Password: User Identified
Expected Result	1. System should login user if user entered valid fields System should generate error in case of entering invalid field
Actual Result	If we entered valid User Name and password system can login successfully if we entered invalid Username and password system generate error Pop-Up message
Status	Valid
Remarks	This is an login procedure test case
Created By	M.Umar
Date of Creation	30s/05/2021
Test Environment	OS: Windows 8 Google Chrome

Table 8.6.2.3. Taste Case 3

Test Case Suite	**TS004**
Test Case id	**TC004**
Test Case summary	To verify Payment method
Related Requirement	User should be enter card number, CVV, expiry date, and title
Test Procedure	1. Select Couse 2. Login 3. Enter card number, title, CVV, expiry date of card
Test Data	Card number Title CVV Expiry date of card
Expected Result	System should store data System should retrieve data System should generate error Pop-up message against invalid data enter
Actual Result	1.System should store data 2.System should retrieve data 3.System should generate error Pop-Up message against invalid data enter
Status	Valid
Remarks	It's an payment procedure test case
Created By	M.Umar
Date of Creation	30s/05/2021
Test Environment	OS: Windows 8 Google Chrome

Test Case 4:

Test Case Suite	**TS005**
Test Case id	**TC00**
Test Case summary	To verify Zoom links and recorded lecture folder links
Related Requirement	Select course, login, and payment
Test Procedure	1. Select Couse 2. Login 3. Payment 4. System automatically gives Zoom links and recorded lecture folder link.
Test Data	1. Select Couse 2. Login 3. Payment
Expected Result	1. System should give all links (Zoom lecture & recorded lecture folder). 2. System should generate error Pop-Up message against error.
Actual Result	System gave us a proper links
Status	Valid
Remarks	Links generation test case
Created By	M.Umar
Date of Creation	30s/05/2021
Test Environment	OS: Windows 8 Google Chrome

Table 9.6.2.4 Taste Case 4

6.3. Boundary value analysis

Boundary testing is the process of testing between extreme ends or boundaries between partitions of the input values.

- So these extreme ends like Start- End, Lower- Upper, Maximum-Minimum, Just Inside-Just Outside values are called boundary values and the testing is called "boundary testing".
- The basic idea in boundary value testing is to select input variable values at their:
    1. Minimum
    2. Just above the minimum
    3. A nominal value
    4. Just below the maximum
    5. Maximum

i. Register/Login

Email

Invalid (min-1)	**Valid (min, +max, -min ,max)**	**Invalid (max+1)**
3	3 to 50	50

Password

Invalid (min-1)	**Valid (min, +max ,-min ,max)**	**Invalid (max+1)**
8	8 to 25	25

Table 10.6.3.1 Email and Password

6.4. Data flow testing

This complexity makes a program full of risk. So testing these variable data flow makes sense and Dataflow testing concept can be used to test all the variables from the program

Levels of Dataflow Testing:

Static data flow testing

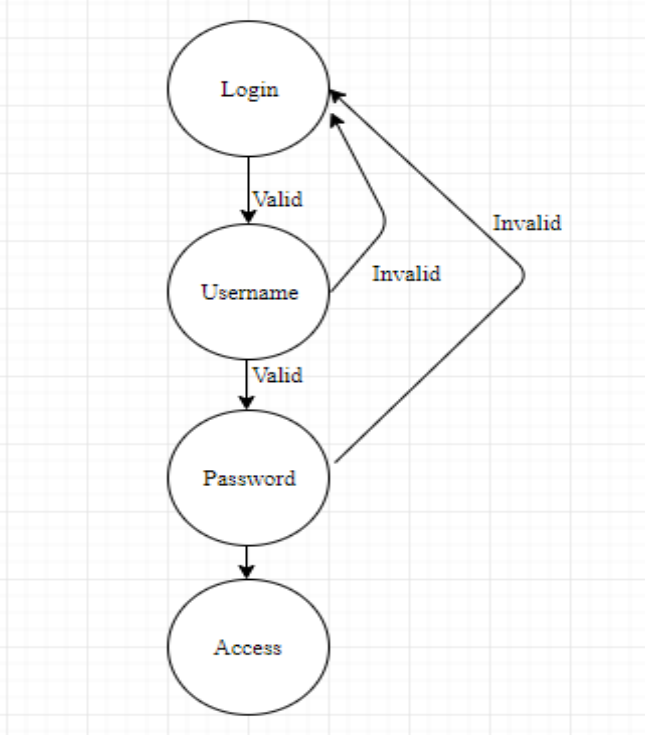
- Identifying Potential Defects within the program.
- Analyzing code for defects
- The code will not be executed

Dynamic data flow testing

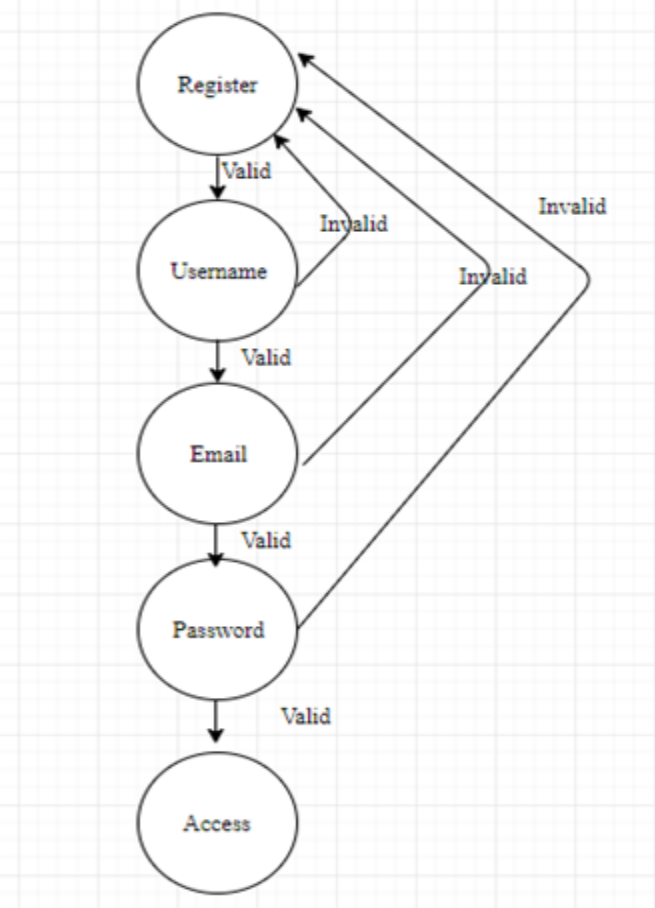
- We will execute the program
- Looks like a control flow testing
- List out the path need test.

Important flow control of system:

Login:


Login
Valid
Invalid
Username
Invalid
Valid
Password
Access

Register:


Register
Valid
Invalid
Invalid
Username
Invalid
Valid
Email
Valid
Password
Valid
Access

6.5. Unit testing

Unit testing is a white-box testing technique. The main consideration in this test is verification of all modules of the software system. Each module is unit tested, as follows:

- Unit testing for the module login is tested by valid or invalid email address.
- Unit testing for the module select course.
- Unit testing for the module of payment checking that the requirements for Payment procedure is valid or not.
- Unit testing for the module zoom links and date is valid or not.
- Unit testing for the module recorded lecture link is valid or not.

6.5.1 UNIT TESTING

Test cases for unit testing of modules:

Test Case No	Test item	Input Specifications	Output Specifications	Pass / Fail	Description
1	Login	Email, Password	Error message, Welcome Message	Pass	To verify login mechanism and user authentication
2	Registration	Name, Password, Email,	Validation Error, Successful Registration Message	Pass	To Register a New User
3	Select course	Course name ,ID	Validation Error, that course selected or not	Pass	To add a course
4	Payment	First name, last name, bank name, account no	Validation Error, the requirements is not correct.	Pass	To do payment for the study of course
5	Zoom link and date	Zoom link of same date in which lecture have	Validation of zoom link of same date.	Pass	To take lecture by zoom link.
6	Recorded lecture	Same link and date recorded lecture	Validation of recorded link is valid of same	Pass	To listen lecture again when any issue

			date or not.		occurred while taking lecture online.
7	Logout	Must login	Validation Person	Pass	Logout

Test cases for black box testing of documentation / text:

Test Case No	Test item	Input Specifications	Output Specifications	Pass / Fail	Description
1	Syntax Grammatical Correctness Of the Content	Text written on each page of the system	Grammatically correct content or error	Pass	To check the content for grammatical & syntactical correctness
2	Semantics	Text written on each page of the system	Semantics correctness or Bugs / errors in text	Pass	To check the text for the use of improper phrases terminologies and semantic correctness
3	Validity of contact information	All contact information provided in Contact Us or other pages of the system	Correct / incorrect information	Pass	To check all the contact information for validity
4	Text in title bar	Text in browser's title bar in each page	Bugs / errors in text	Pass	To check the text in title bar of each page for relevance & correctness

Table 11.6.5.2 Black Box Testing of Documentation

Test cases for black box testing of hyperlinks:

Test Case No	Test item	Input Specifications	Output Specifications	Pass / Fail	Description
1	Hyperlinks connectivity	All text and requirements hyperlinks and their sub-links on each page	Working Broken Incorrect Links	Pass	To check all the links

Test cases for black box testing of graphics

Test Case No	Test item	Input Specifications	Output Specifications	Pass / Fail	Description
1	Load & Display	All graphics on each page	Displayed properly/bugs, errors or delay in loading	Pass	To check that all the graphics display and load properly
2	Balance	All graphics on each page	All images placed properly/ bugs errors	Pass	To check that all the graphics for their size and placement

Test cases for black box testing of forms:

Test Case No	Test item	Input Specifications	Output Specifications	Pass / Fail	Description
1	Text Boxes	Text and numeric inputs in all text fields	Validation checks applied / no bug found	Pass	To check that all the fields store only correct input data

2	Drop down lists	Input test data according to the field	-do-	Pass	-do-
3	Buttons	Click, double click	-do-	Pass	-do-

Table 12.6.5.3 Black Box Testing of Hyperlink, Graph etc

6.5.2 USABILITY TESTING

Test cases:

Test Case No	Feature to be Tested	Expected Result	Actual Result	Pass / Fail	Description
1	Aesthetic Appropriate tenses	All graphics must present a consistent and good design	Ok	Pass	To check the color scheme, balance emphasis and consistency in all graphical elements of the site
2	Outdated information	Content provided must be up to date	-do-	Pass	To check the content specially news for outdated information
3	Overly long download time	Pages must load instantaneously and properly	-do-	Pass	To check the loading time of all the web pages

Table 13.6.6.1 Taste Case

6.5.3 COMPATIBILITY TESTING

Test cases:

Test Case No	Browser Software &version	Display & Load Properly	Different text sizes supported Yes/No	Downloading of web pages Supported/ Not supported

1	Internet explorer	Yes	Yes	Supported
2	Mozilla Firefox	Yes	Yes	Supported
3	Google Chrome	Yes	Yes	Supported
4	Safari	Yes	Yes	Supported

Table 14.6.6,2 Taste Case

6.6. Integration testing

Integration testing is the technique for testing the interfaces of software components. Each software components in unit tested, and all the components are integrated to perform together. The tests are conducted to ensure that the components are working properly after interfacing.

All modules are integrated by an incremental approach, and integration testing of the system is performed as follows:

- Integrate login module and test that the software is properly connected to the database.
- Integrate all modules and test by inserting updating, and deleting records.

6.6.1 SYSTEM TESTING

System testing involves the set of tests that ensures that the entire system performs according to specifications.

6.6.2 SECURITY TESTING

Security testing is protection testing that test security methods in the system to avoid invalid instructions. Several security checks have been included in the system. The system requires a logon ID and password to initiate. For allowing only authenticated users to log-in.

6.7. Performance testing

Performance testing uses criteria to check that the system functions according to the specifications. All unit modules have been tested successfully. The integration of these unit modules produces reports in the required format.

6.8. Stress Testing

Performance testing should be carried out after the implementation of the product. We shall test the speed, accuracy, and effectiveness of functions as well as quantitative test e.g. response time of any function. We have tested the performance of our system by checking the working of every complex operation, repeatedly, multiple times. We have followed the following steps.

- List of all complex functions especially database related function.
- Assess response time and accuracy of core functions.
- Risk assessment of error or exception code (if any).

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

E-TUTOR is a best platform where any educated person can teach the course in which they have expertise. It is a best platform where students of universities can also earn money by teaching students. Our website is user friendly any one can visit our website easily and he or she can understand it. First when student want to learn any course he or she have to select course which he have to study then he or she have to select teacher from which teacher he or she have to study then they have to add a payment method for the enrolment of their courses. We are introducing a unique thing in our website we are using zoom api's where student can easily take the lecture and we are giving them a recorded lecture link where all the lecture will be recorded and will be save there so that if they have any issue of internet or any issue they can listen all the lecture again. It is also beneficial for the students that they can teach any type of course by sitting at home. So we are introducing best website for the help of students and teacher to earn money.

7.2. Achievements and Improvements

The unforgettable achievement is that we learned and applied many techniques and skills through this project. The courses which we have learned in four years of graduation has helped us a lot in this project and made us sure to do the learning practically.

Learnt to work in a team.

Learnt time management skills.

We'll try to improve and take care of our project, we will try to make it more reliable, secure, and we'll maintain its availability. And we'll also integrate many more payment methods in this project.

7.3. Critical Review

In this system, the major and critical point is to get the 100% result. Which is more difficult but not impossible. User can select any course and they would not be able to attend lecture

because of internet. In this case what can they do? So we've entered a functionality of recorded lectures. Where focus on these are points and developed a system which gives the maximum accurate result to the end user.

7.4. Lessons Learnt

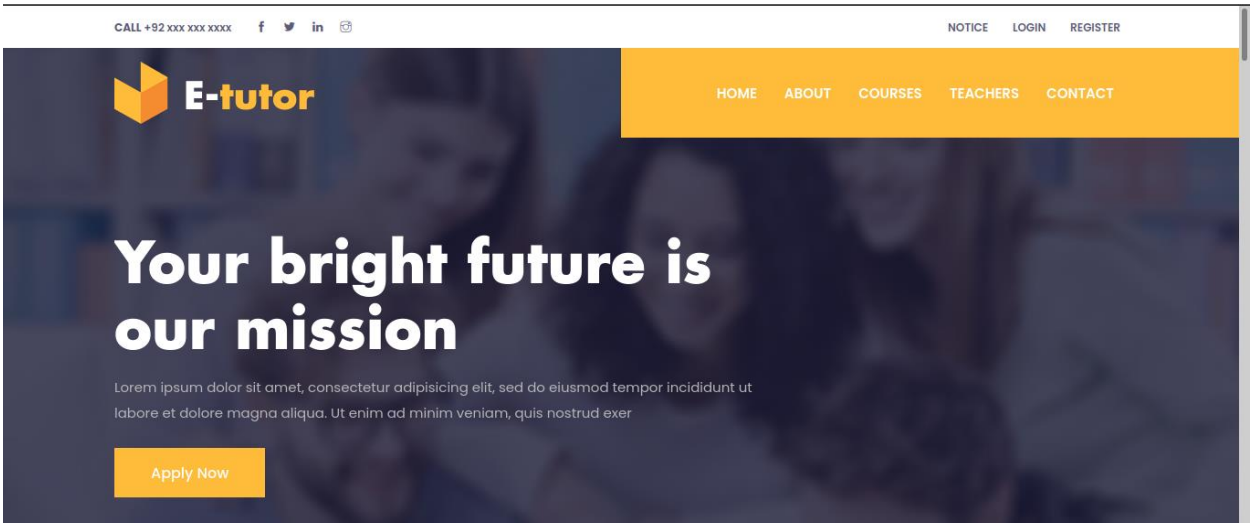
We are developing a system which helps the user to study any type of course by zoom link API's and giving them a recorded lecture but result accuracy is not 100%. But we are trying to get the maximum good result. This system is big challenge for us to gets the goals and objectives of projects.

7.5. Future Enhancements/Recommendations

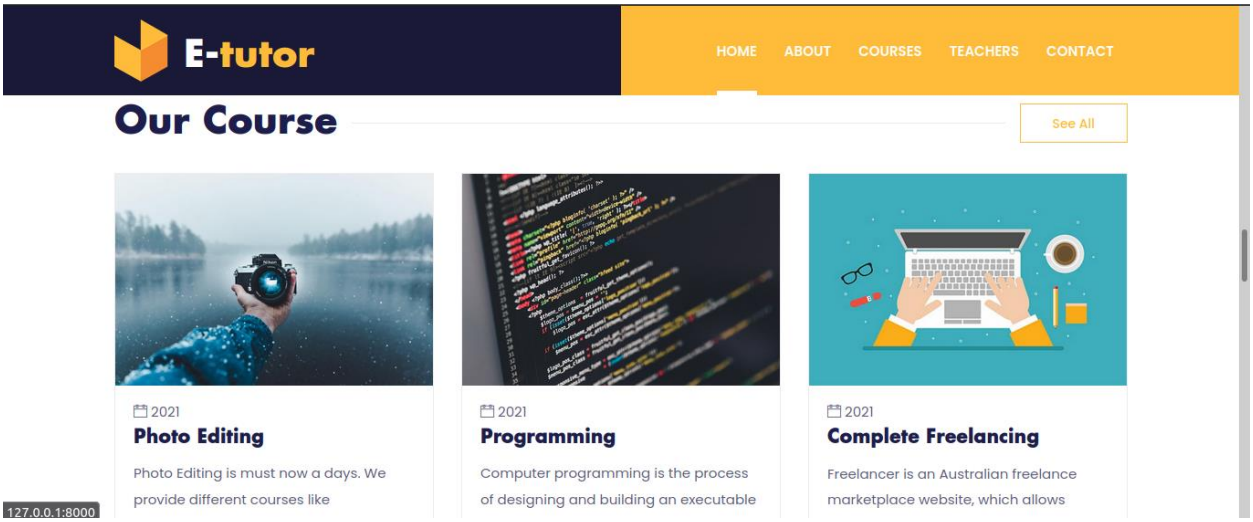
In the future, we are trying to get the good result as well as 100%. And we will take this system as a big solution for the Students and teacher to earn money and teach student easily. In future will work on zoom API's and recorder lecture SAPI's which will be more efficient for the students and which will increase the result.

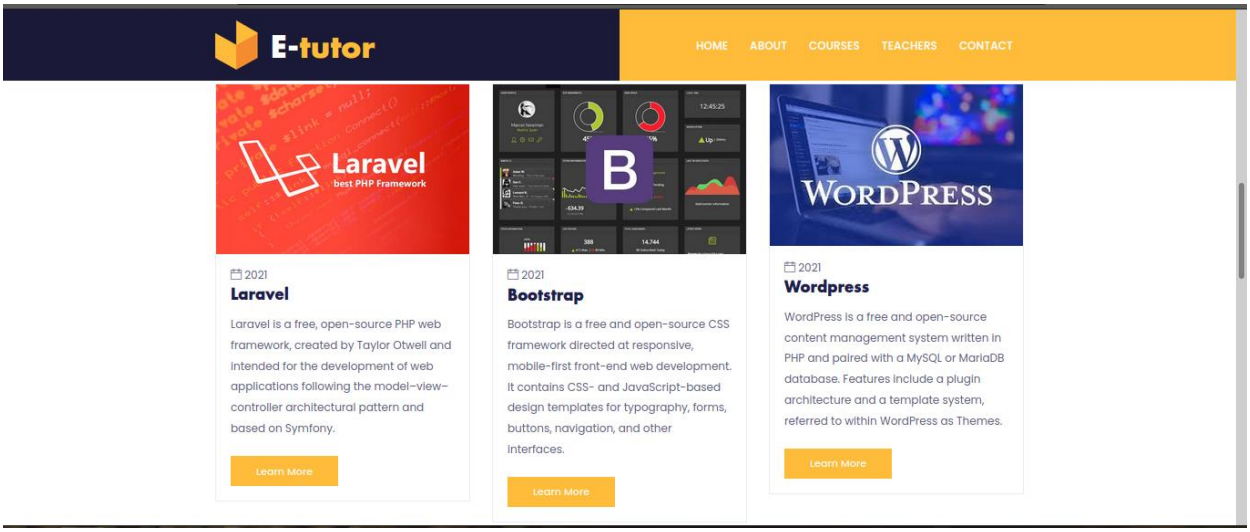
Appendices

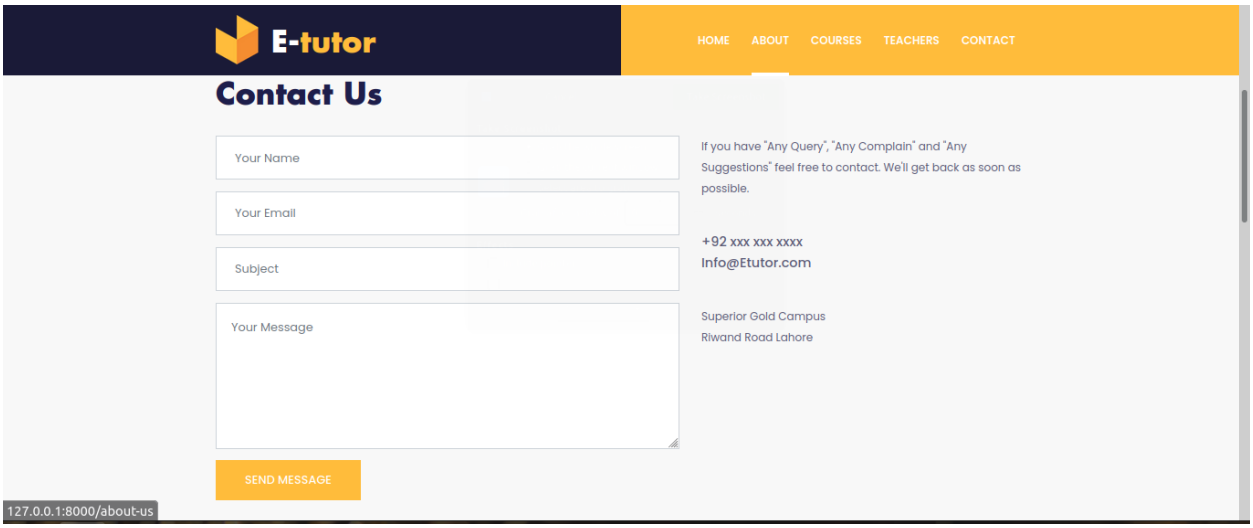
Appendix A: User Manual



Courses:




E-tutor
HOME
ABOUT
COURSES
TEACHERS
CONTACT
Laravel
best PHP Framework
2021
Laravel
Laravel is a free, open-source PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model–view–controller architectural pattern and based on Symfony.
Learn More
2021
Bootstrap
Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains CSS- and JavaScript-based design templates for typography, forms, buttons, navigation, and other interfaces.
Learn More
WordPress
2021
Wordpress
WordPress is a free and open-source content management system written in PHP and paired with a MySQL or MariaDB database. Features include a plugin architecture and a template system, referred to within WordPress as Themes.
Learn More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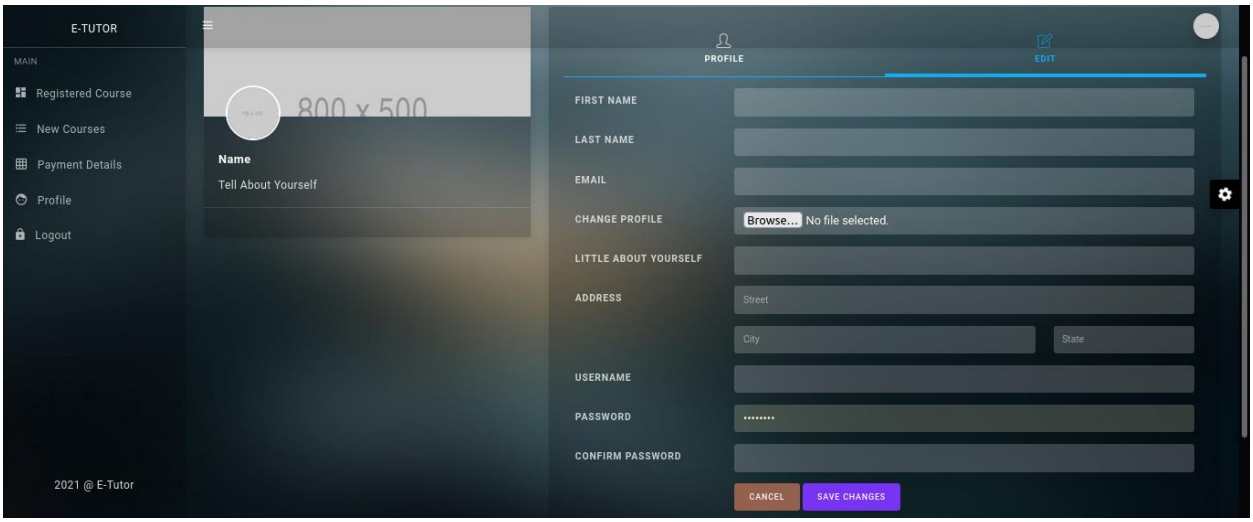
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Appendix C: Information / Promotional Material

C.1. Standee

Reference and Bibliography

Reference and Bibliography

These websites are user friendly, have attractive interface. These are American websites.

1. https://www.etutorworld.com/
2. https://clubztutoring.com/
3. Department of Electronics & Communication Engineering, Amity School of Engineering & Technology, Amity University Lucknow, India **"Applications of Machine Learning in Improving Learning Environment.**