

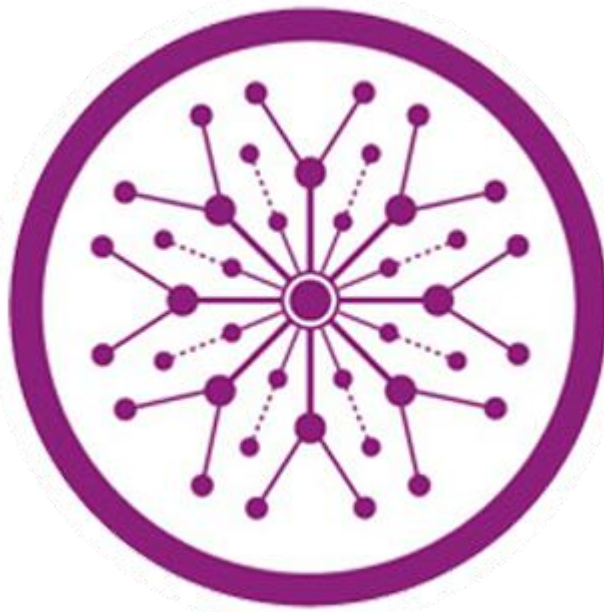
Image Text Translator with voice recognition using Artificial Intelligence

Final Year Project

Session 2019-2023

A project submitted in partial fulfillment of the degree of

BS in Computer Science



Department of Software Engineering

Faculty of Computer Science & Information Technology

The Superior University, Lahore

Spring 2023

Type (Nature of project)	[<input checked="" type="checkbox"/>] Development [<input type="checkbox"/>] Research [<input type="checkbox"/>] R&D			
Area of specialization	Mobile Application			
FYP ID	FYP-BCSM-F22-021			
Project Group Members				
Sr.#	Reg. #	Student Name	Email ID	*Signature
(i)	Bcsm-f19-314	Ali Raza	Bcsm-f19-314@superior.edu.pk	
(ii)	Bcsm-f19-354	Shams Mehmood	Bcsm-f19-354@superior.edu.pk	
(iii)				

*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 Ali Raza Son of ijaz Ahmad, group leader of FYP under registration no **FYP-BCSM-F22-021** at Software Engineering Department, The Superior College, Lahore. I declare that my FYP report is checked by my supervisor.

Date: _____ Name of Group Leader: Ali Raza Signature: _____

Name of Supervisor: Arshia Naeem
Designation: Lecturer Signature: _____

HoD: Dr. Irfan Ud Din
Signature: _____

Project Report

[Image Text Translator with voice recognition using Artificial Intelligence]

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
Ali Raza, Shams Mehmood	1.0	Sep 10,2022	Project Proposal	
Shams Mehmood	1.1	Oct 15,2022	Chapter 1, 2, 3	
Ali Raza, Shams Mehmood	1.2	Nov 12,2022	Review	
Ali Raza, Shams Mehmood	2.0	Feb 11,2023	Prototype	
Ali Raza, Shams Mehmood	2.1	April 10, 2023	Chapter 1-7	
Ali Raza, Shams Mehmood	2.2	June 07,2023	Presentation	

APPROVAL

PROJECT SUPERVISOR

Comments: _____

Name: _____

Date: _____ Signature: _____

PROJECT MANAGER

Comments: _____

Date: _____ Signature: _____

HEAD OF THE DEPARTMENT

Comments: _____

Date: _____ Signature: _____

Dedication

We dedicated this work to all the people who are not understand the English language . This work is dedicated to our supervisor, department, and fyp project head, because this is the best way of responding to all the hard work, our teachers had done on us. We feel, it's a time, that besides lifting our career portfolio through fyp project, it is also important for us to acknowledge all the hard work done by our teacher' guidance, which is why we are here today. We are really thankful for all the precious guidance, facility and support being provided.

Acknowledgements

We are really thankful to our supervisor who has guided us really well since the start of our fyp. We faced a lot of difficulties and challenges initially while choosing title and while filling the proposals, but our supervisor provided us with timely solutions to help deal with all challenges and problems. Today, we are firmly going through all the barriers coming into our fyp, just because our supervisor is behind our back.

Executive Summary

Many Translator Apps Exist in world like Microsoft translator app. Microsoft Translator App offers just limited features for different Languages translations. The accuracy generated by these app is not efficient. The program only offers support for 50 languages. While they may cover the common tongues around the world, they ignore a lot of them that do not have many speakers but are common nonetheless translations. Programs like Microsoft's may offer a few benefits to businesses but they fail spectacularly to help when the documents they have to interpret have nothing to do with companies. None of the machine related translators have a hundred percent accuracy and Microsoft's app is no different.

This App is developed with the help of some AI features to reduce real life problem like our Pakistani student face difficulties when the move to any kind of countries in world where people doesn't even understand English this App will only help in communicating with them in their language.

Table of Contents

Dedication.....	5
Acknowledgements.....	6
Executive Summary.....	7
Table of Contents.....	8
List of Figures.....	Error! Bookmark not defined.
List of Tables.....	Error! Bookmark not defined.
Chapter 1.....	13
Introduction.....	13
1.1. Background.....	Error! Bookmark not defined.
1.2. Motivations and Challenges.....	Error! Bookmark not defined.
1.3. Goals and Objectives.....	Error! Bookmark not defined.
1.4. Literature Review/Existing Solutions.....	Error! Bookmark not defined.
1.5. Gap Analysis.....	Error! Bookmark not defined.
1.6. Proposed Solution.....	Error! Bookmark not defined.
1.7. Project Plan.....	Error! Bookmark not defined.
1.7.1. Work Breakdown Structure.....	Error! Bookmark not defined.
1.7.2. Roles & Responsibility Matrix.....	Error! Bookmark not defined.
1.7.3. Gantt Chart.....	Error! Bookmark not defined.
1.8. Report Outline.....	Error! Bookmark not defined.
Chapter 2.....	Error! Bookmark not defined.
Software Requirement Specifications.....	Error! Bookmark not defined.
2.1. Introduction.....	Error! Bookmark not defined.
2.1.1. Purpose.....	Error! Bookmark not defined.
2.1.2. Document Conventions.....	Error! Bookmark not defined.
2.1.3. Intended Audience and Reading Suggestions.....	Error! Bookmark not defined.
2.1.4. Product Scope.....	Error! Bookmark not defined.
2.1.5. References.....	Error! Bookmark not defined.
2.2. Overall Description.....	Error! Bookmark not defined.
2.2.1. Product Perspective.....	Error! Bookmark not defined.
2.2.2. Product Functions.....	Error! Bookmark not defined.
2.2.3. User Classes and Characteristics.....	Error! Bookmark not defined.
2.2.4. Operating Environment.....	Error! Bookmark not defined.
2.2.5. Design and Implementation Constraints.....	Error! Bookmark not defined.
2.2.6. User Documentation.....	Error! Bookmark not defined.
2.2.7. Assumptions and Dependencies.....	Error! Bookmark not defined.
2.3. External Interface Requirements.....	Error! Bookmark not defined.
2.3.1. User Interfaces.....	Error! Bookmark not defined.
2.3.2. Hardware Interfaces.....	Error! Bookmark not defined.
2.3.3. Software Interfaces.....	Error! Bookmark not defined.
2.3.4. Communications Interfaces.....	Error! Bookmark not defined.

2.4. System Features.....	Error! Bookmark not defined.
2.4.1. System Feature 1.....	Error! Bookmark not defined.
2.4.1.1. Description and Priority	Error! Bookmark not defined.
2.4.1.2. Stimulus/Response Sequences	Error! Bookmark not defined.
2.4.1.3. Functional Requirements	Error! Bookmark not defined.
2.4.2. System Feature 2.....	Error! Bookmark not defined.
2.4.2.1. Description and Priority	Error! Bookmark not defined.
2.4.2.2. Stimulus/Response Sequences	Error! Bookmark not defined.
2.4.2.3. Functional Requirements	Error! Bookmark not defined.
2.4.3. System Feature 3 (and so on)	Error! Bookmark not defined.
2.5. Other Nonfunctional Requirements	Error! Bookmark not defined.
2.5.1. Performance Requirements.....	Error! Bookmark not defined.
2.5.2. Safety Requirements	Error! Bookmark not defined.
2.5.3. Security Requirements	Error! Bookmark not defined.
2.5.4. Software Quality Attributes	Error! Bookmark not defined.
2.5.5. Business Rules	Error! Bookmark not defined.
2.6. Other Requirements	Error! Bookmark not defined.
Chapter 3	Error! Bookmark not defined.
Use Case Analysis	Error! Bookmark not defined.
3.1. Use Case Model	Error! Bookmark not defined.
3.2. Use Case Descriptions	Error! Bookmark not defined.
Chapter 4	Error! Bookmark not defined.
System Design.....	Error! Bookmark not defined.
4.1. Architecture Diagram	Error! Bookmark not defined.
4.2. Domain Model	Error! Bookmark not defined.
4.3. Entity Relationship Diagram with data dictionary	Error! Bookmark not defined.
4.4. Class Diagram.....	Error! Bookmark not defined.
4.5. Sequence / Collaboration Diagram	Error! Bookmark not defined.
4.6. Operation contracts	Error! Bookmark not defined.
4.7. Activity Diagram.....	Error! Bookmark not defined.
4.8. State Transition Diagram.....	Error! Bookmark not defined.
4.9. Component Diagram	Error! Bookmark not defined.
4.10. Deployment Diagram.....	Error! Bookmark not defined.
4.11. Data Flow diagram [only if structured approach is used - Level 0 and 1]	Error! Bookmark not defined.
Bookmark not defined.	
Chapter 5	Error! Bookmark not defined.
Implementation	Error! Bookmark not defined.
5.1. Important Flow Control/Pseudo codes	Error! Bookmark not defined.
5.2. Components, Libraries, Web Services and stubs.....	Error! Bookmark not defined.
5.3. Deployment Environment	Error! Bookmark not defined.
5.4. Tools and Techniques.....	Error! Bookmark not defined.
5.5. Best Practices / Coding Standards	Error! Bookmark not defined.
5.6. Version Control	Error! Bookmark not defined.
Chapter 6	48

Testing and Evaluation	48
6.1. Use Case Testing	49
6.2. Equivalence partitioning	49
6.3. Boundary value analysis	49
6.4. Data flow testing	50
6.5. Unit testing	50
6.6. Integration testing	50
6.7. Performance testing	50
6.8. Stress Testing	51
Chapter 7	52
Summary, Conclusion and Future Enhancements	52
7.1. Project Summary	53
7.2. Achievements and Improvements	53
7.3. Critical Review	53
7.4. Lessons Learnt	54
7.5. Future Enhancements/Recommendations	54
Appendices	Error! Bookmark not defined.
Appendix A: User Manual	Error! Bookmark not defined.
Appendix B: Administrator Manual	Error! Bookmark not defined.
Appendix C: Information / Promotional Material	Error! Bookmark not defined.
Reference and Bibliography	55
Index	Error! Bookmark not defined.

List of Figures

1.1	Caption of first figure of first chapter	6
1.2	Caption of second figure of first chapter	7
2.1	Caption of first figure of second chapter	14
2.2	Caption of second figure of second chapter	22
2.3	Caption of third figure of second chapter	26
5.1	Caption of first figure of fifth chapter	49
5.2	Caption of second figure of fifth chapter	49

List of Tables

1.1	label of first table of first chapter	6
1.2	label of second table of first chapter	7
2.1	label of first table of second chapter	14
2.2	label of second table of second chapter	22
2.3	label of third table of second chapter	26
5.1	label of first table of fifth chapter	49
5.2	label of second table of fifth chapter	49

Chapter 1

Introduction

Chapter 1: Introduction

Many Translator Apps Exist in world like Microsoft translator app. Microsoft Translator App offers just limited features for different Languages translations. The accuracy generated by these app is not efficient. The program only offers support for 50 languages. While they may cover the common tongues around the world, they ignore a lot of them that do not have many speakers but are common nonetheless translations. Programs like Microsoft's may offer a few benefits to businesses but they fail spectacularly to help when the documents they have to interpret have nothing to do with companies. None of the machine related translators have a hundred percent accuracy and Microsoft's app is no different.

This App is developed with the help of some AI features to reduce real life problem like our Pakistani student face difficulties when the move to any kind of countries in world where people doesn't even understand English this App will only help in communicating with them in their language.

1.1. Background

A Lots of people to visit world and don't understand the other countries languages or very difficulty

So, we design a language translator application we established project in android studio they covered in more than 100 languages in this project.

1.2. Motivations and Challenges

The majority of the people who wants to visit a lot of countries I will help us to easy understand languages and visit country easily language translator project premium and unique project in market and easy to understand determine typing and listening. If challenge project being unique in market.

1.3. Goals and Objectives

Language translator project future lies quality project in market because major goals provides to major solution in using the app and effortless they can easily understand their version Any person can change the language according the user.

1.4. Literature Review/Existing Solutions

1. Proposed Solution

We are proposing application that is specifically designed for World hundred languages all schema translators for facilitating the local community that don't even have basic idea of reading and writing.

This App will help in communicating with them in their language because it will extract audio from text and will translate into worlds hundred languages. So that's how people from any field can go to markets and buy things without knowing their language.

App will be efficient enough to convert data from voice to text, text to voice and voice to voice

1.5. Gap Analysis

1.6. Proposed Solution

We are proposing application that is specifically designed for World hundred languages all schema translators for facilitating the local community that don't even have basic idea of reading and writing.

This App will help in communicating with them in their language because it will extract audio from text and will translate into worlds hundred languages. So that's how people from any field can go to markets and buy things without knowing their language.

App will be efficient enough to convert data from voice to text, text to voice and voice to voice

1.7. Project Plan

Elapsed time in (days or weeks or month or quarter) since start of the project	Milestone	Deliverable
1-3 Week	Project Information Gathering	Project Proposal with all related information
4-8 Week	Business Analysis	Business Plan of Project
9-12 Week	Project Simulation and Designing	Project Prototype and Project Simulation
13-20 Week	Project Implementation	Designed Project with proper functionalities
21-24 Week	Project Marketing Plans	Design Marketing Strategy

1.7.1. Work Breakdown Structure

Project Unit Manager (Ali raza):

A business unit manager is a task manager of sorts. Their job is to make sure goals are being met and contribute to the company's success in the long term.

Some of their responsibilities include:

- Initiating the project
- Providing a clear project/product vision and strategic plan
- Signing off-key milestones

UI/UX Developer (Ali Raza):

Developers make up the bare meat of the development team.

Given that developers' performance has a critical impact on product development and deployment, their time is spent wisely doing the following:

- Developing and deploying features.
- Updating the technical lead and project manager with project reports.

These designers will be thoroughly involved from start to finish. To be clear, user experience (UX) designers work on the behavior of a product while user interface (UI) designers handle the graphic design or layout of the product.

They are responsible for:

- Cooperating with the product manager to create a viable user experience that meets requirements
- Supporting the software development team throughout the build process.

Marketing Head:

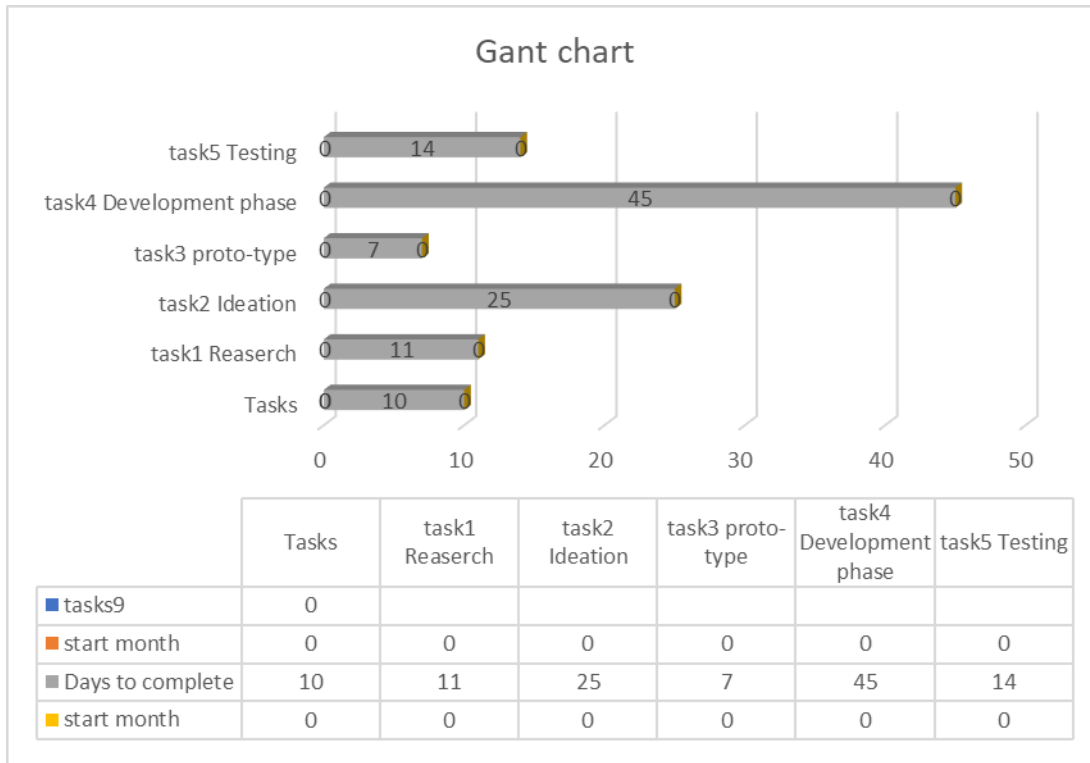
- Head of Marketing responsibilities include:
- Crafting strategies for all Marketing teams, including Digital, Advertising, Communications and Creative
- Preparing and managing monthly, quarterly and annual budgets for the Marketing department
- Setting, monitoring, and reporting on team goals

1.7.2. Roles & Responsibility Matrix

2. The purpose of roles & responsibility matrix is to identify who will do what.

WBS #	WBS Deliverable	Activity #	Activity Complete to the Deliverable	Duration (# of Days)	Responsible Team Member(s) & Role(s)
1	Research	1		10	Ali Raza
2	Ideation	2		11	Whole team
3	Proto-Type	3		20	Ali Raza
4	Modeling	4		07	Whole team
5	Development phase	5		45	Whole team
6	Reviews	6		03	Whole team
7	Debugging	7		14	Shams
8	Testing	8		03	Whole team
9	Completion	9		15	Whole team

2.1.1. Gantt Chart



2.2. Report Outline

Chapter 1 is a complete and defined introduction of our final year project including every aspect like background, motivational aspects and proposed solution to the problem

Chapter 2 is a complete and detailed SRS chapter what Tech Mart will do and how it will be expected to perform.

Chapter 3 illustrates the use case and fully dressed use case and deals with the system analysis of our website.

Chapter 4 shows the diagrammatical representation of the system. Chapter 5 is all about how the system will be implemented practically.

2.3. Empathy Map

Says:

I want something reliable and More easy to understand.

I am already working on a system that I am used to with.

Think:

1.I think this approach is really annoying.

2.I think this is not good for me as I am not so easy to work with this platform

3.I think I should stick with my old system and not jump into anything new.

Does:

1. He will find for more options available in the market before choosing us.

2. He will compare our Application with other application.

3. He will go thoroughly through our Application before giving us a shot.

Feel:

I feel this application will help everyone to difficult understand the any languages

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

3.1. Introduction

3.1.1. Purpose

We are proposing application that is specifically designed for World hundred languages all schema translators for facilitating the local community that don't even have basic idea of reading and writing.

This App will help in communicating with them in their language because it will extract audio from text and will translate into worlds hundred languages. So that's how people from any field can go to markets and buy things without knowing their language.

App will be efficient enough to convert data from voice to text, text to voice and voice to voice

3.1.2. Document Conventions

Defined terms are highlighted with bolding. Requirements will come with priority to indicate in which order they will be implemented. Versions might be released with only some of the total list of requirements implemented.

3.1.3. Intended Audience and Reading Suggestions

This document is written Web Developers (users and testers), university project superior and software developer to clarify the function and look of the software. Here is a list of collaborators to this document. The draft will be forwarded to list of these university officials for feedback and suggestions

Sir Jawad Ahmad

Mam Arshia Naeem

3.1.4. Product Scope

Translate texts, voice and photos in over 100 langauages . Translator & Dictionary

It is a language translator app for text, voice, conversations, and camera photos. You can easily translate into over 100 languages by using our translator app.

It enables travelers, students, business professionals, employers, and medical staff to read, write and speak in the desired languages and translate anywhere in the world.

- **Future work:**

In future we can make this App more reliable by adding few more features like can add speaking function of languages other than English.

3.1.5. References

<https://g.co/kgs/6gxUwt>

3.2. Overall Description

3.2.1. Product Perspective

This is a replacement of certain existing Mobile Application, although it does possess existing system functionalities, that are picked up from competitor Mobile Application. Moreover, we will also embed additional features like a recommendation system

3.2.2. User Classes and Characteristics

The top qualities of a good translator are being able to fluently speak the languages you are translating, being able to translate between different languages fluently, having a strong understanding of the topic of what you are translating, and being able to translate without changing the meaning of what is being said.

3.2.3. Operating Environment

Language translators include compilers, interpreters, and assemblers. Compiler, interpreter, and assembler are different in that the compiler converts entire high-level language programs to machine language at once. In contrast, an interpreter converts high-level language to machine language line by line.

3.2.4. Design and Implementation Constraints

<Describe any items or issues that will limit the options available to the developers. These might include: corporate or regulatory policies; hardware limitations (timing requirements, memory requirements); interfaces to other applications; specific technologies, tools, and databases to be used; parallel operations; language requirements; communications protocols; security considerations; design conventions or programming standards (for example, if the customer's organization will be responsible for maintaining the delivered software).>

3.2.5. Assumptions and Dependencies

<List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the project has on external factors, such as software components that you intend to reuse from another project, unless they are already documented elsewhere (for example, in the vision and scope document or the project plan).>

3.3. External Interface Requirements

3.3.1. User Interfaces

User interface (UI) translation is translating your application from one language to another. Software user interfaces are the means by which a person controls a software application. The UI may be in text, audio, graphic and so on. UI is designed in such a way as to provide the user insight of the software.

3.3.2. Hardware Interfaces

This is a replacement of certain existing Mobile Application, although it does possess existing system functionalities, that are picked up from competitor Mobile Application. Moreover, we will also embed additional features like a recommendation system

3.3.3. Software Interfaces

Language translators. A subset of the commercially available software that deserves special attention is language translators. These software applications allow users to write and develop custom software. Language translators allow computer programmers to write sets of instructions in specific programming languages.

3.3.4. Communications Interfaces

In the communication process translation is used to express "in different languages the same text content" (Ulrich 1997: 255). To distinguish the text content as such, modern translation is based on the distinction made by three levels or types of linguistic content.

3.4. System Features

- Accuracy.
- Clarity.
- Authenticity.
- Appropriate tone and style.
- Cultural appropriateness.
- Consistency.
- Contemporary language.

3.4.1.1. Description and Priority

4. This feature helps navigate the user to his desired position on the Application, by acting as a guide. And it is a high priority feature because it is the requirement of modern days Application features.

5.

5.1.1.1. Stimulus/Response Sequences

In language studies, poverty of the stimulus is the argument that the linguistic input received by young children is in itself insufficient to explain their detailed knowledge of their first language, so people must be born with an innate ability to learn a language.

1.1.1.1. Functional Requirements

System Admin: Installs translations in the application.

Translator: Updates translations that can then be used in the application.

Developer: Creates windows and customisations that use a translation framework to enable a language specific version of the customisation.

User: Works with the functionality in the application and specifies the language they would like to view the user interface in. Chooses a language from those that are active within the application.

1.2. Nonfunctional Requirements

1.2.1. Performance Requirements

2. **Performance:** We have designed a user-friendly Application that is responsive and highly efficient.
3. **Maintainability:** It takes less time for our Application to recover after a potential system failure.
4. **Usability:** We have developed a user-friendly Application with an attractive and easy layout.

4.1.1. Safety Requirements

We want to keep our Application safe from all sorts of cyber-attacks. Therefore, we are embedding state of the art security system that will prevent all sorts of attacks and hacking attempts. This keeps both user and admin data, safe and secure. Our security system would comprise of encrypted connection, installation of firewalls and security plugins, use a secure host, keep Application updated and regularly backup the Application.

4.1.2. Security Requirements

<Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements. Refer to any external policies or regulations containing security issues that affect the product. Define any security or privacy certifications that must be satisfied.>

4.1.3. Usability Requirements

5. The features like portability, robustness, usability, flexibility, adaptability, and availability are associated with our project. After all, ease of use is what matters most, as the end result.

If something is being unavailable due to user being not subscribed, it should show a popup message.

5.1.1. Reliability Requirements

In case one or any of our system component fails due to any technical reason, there must be ways to carry out process and handle those situations so our system continues to work and doesn't collapse.

- Review system provides a base reliability as user trusts other users in best way

5.1.2. Maintainability/Supportability Requirements

For supportability:

- System should be using language and features supported by most of devices

- Code shouldn't be simple and compact so devices with small resources don't face issue in using your application

For maintainability:

- Your system's code must be simple enough that it is easier to understand for future use and fixing bugs.
- Use descriptive names.
- Use empty lines to create a readable code
- Use comments
- Use proper spacing

5.1.3. Portability Requirements

A top-notch project is one which can be easily launched in various environment. It must not lose any of its feature and work flawlessly irrespective of the environment it is in. Following point ensure portability of our project.

- Our project will be launched as responsive application irrespective of our user's browser
- The features and services of our application won't be affected by any device

5.1.4. Efficiency Requirements

Providing better useability of application to its users is necessity of any developer. In order to achieve the efficiency requirements, there are some features in our project in which we cannot compromise some of them are given below:

Database of every user have their own designs, by which they can easily access those designs later.

5.2. Domain Requirements

The other requirements for this SRS are as follows:

- The ".com" as it doesn't limit you to any country
- Keep it Short
- Should be easy to remember
- Should be perfect match with site niche
- Easy to Spell
- Use Keywords
- Avoid Awkward Spelling Mistakes.

Chapter 3

Use Case Analysis

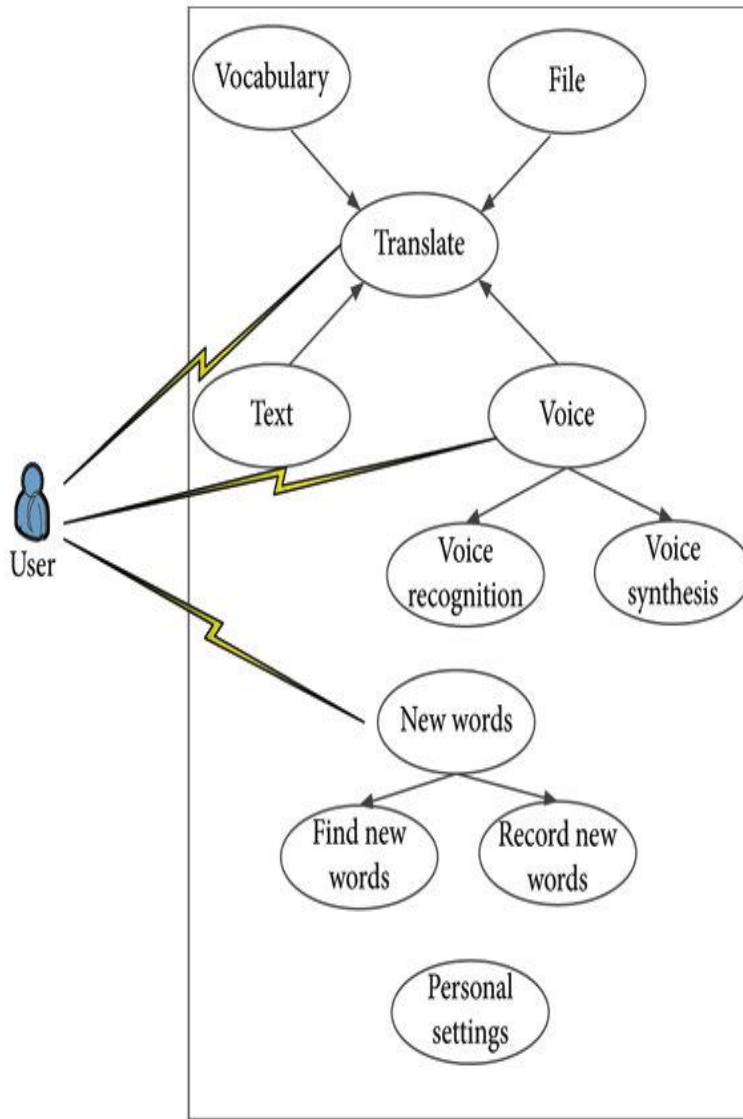
Chapter 3: Use Case Analysis

We can say that use cases are nothing but the system functionalities written in an organized manner. The second thing which is relevant to use cases are the actors. Actors can be defined as something that interacts with the system Actors can be a human user, some internal applications, or may be some external applications. When we are planning to draw a use case diagram, we should have the following items identified.

- Functionalities to be represented as use case •
- Relationships

among the use cases and actors.

3.1. Use Case Model



3.2. Use Cases Description

Our Application revolves around 1 perspective:

1. Normal User

Normal user:

- Select Language
- Select

Chapter 4

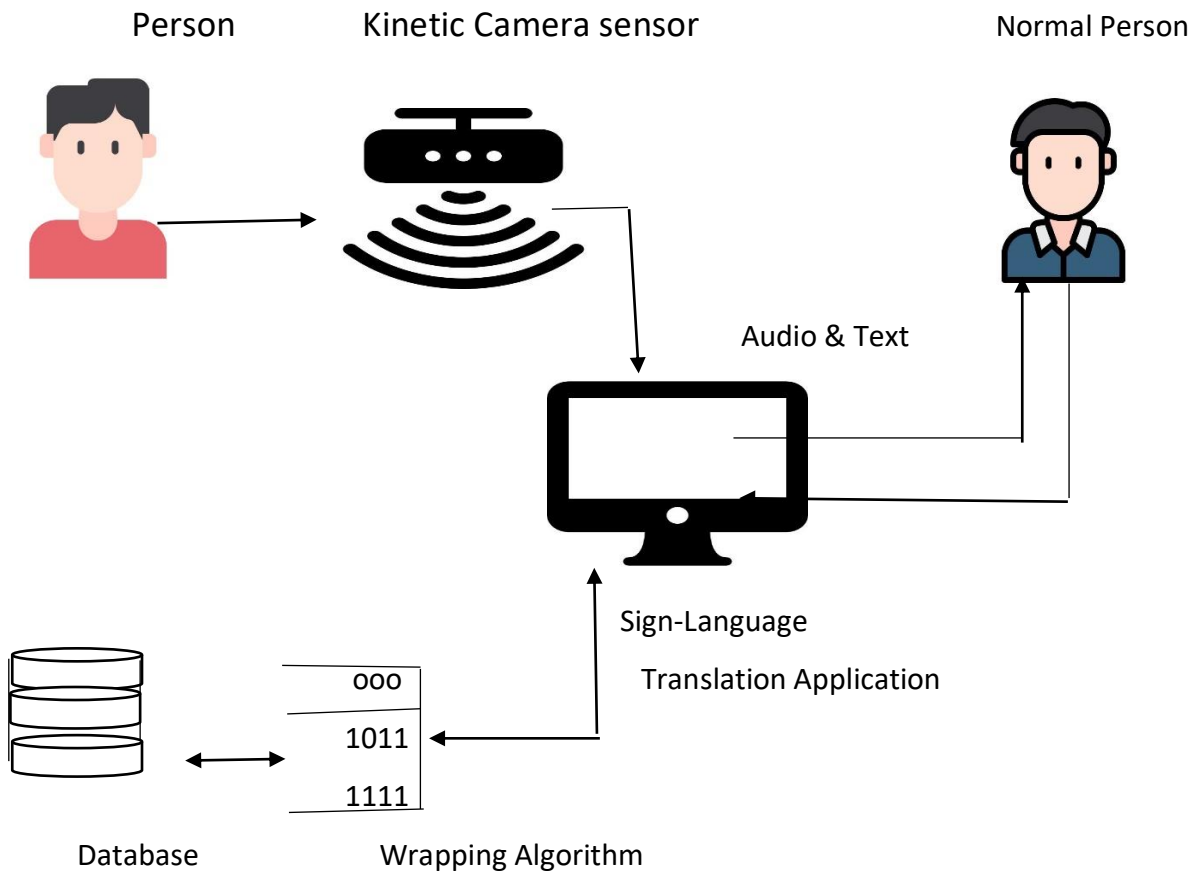
System Design

Chapter 4: System Design

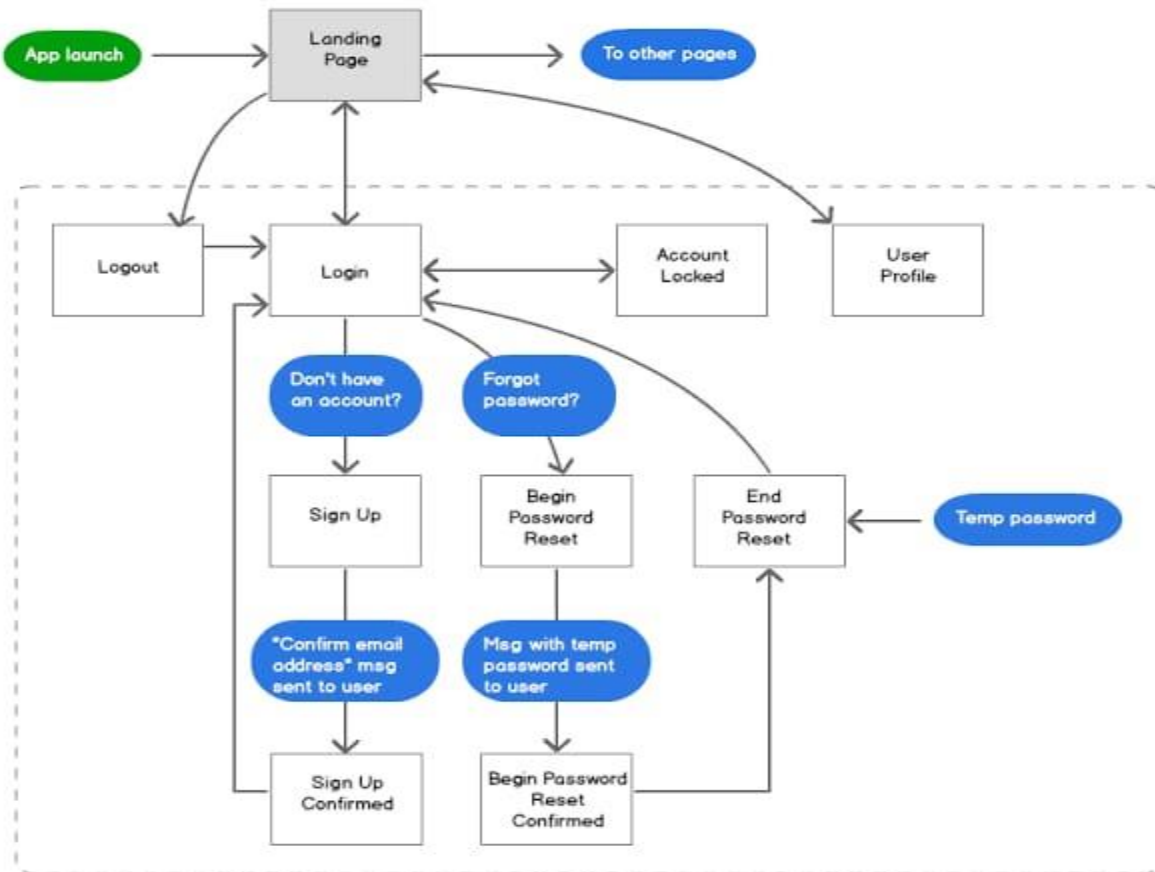
It is always helpful to built architecture before building the whole project. With the architecture I technically means the pictorial way of describing different components and eventually the whole project. It is also helpful to make sure our project is error free before putting in a lot of effort and money. For this purpose the whole chapter shows the diagrammatical representation of the system.

4.1. Architecture Diagram

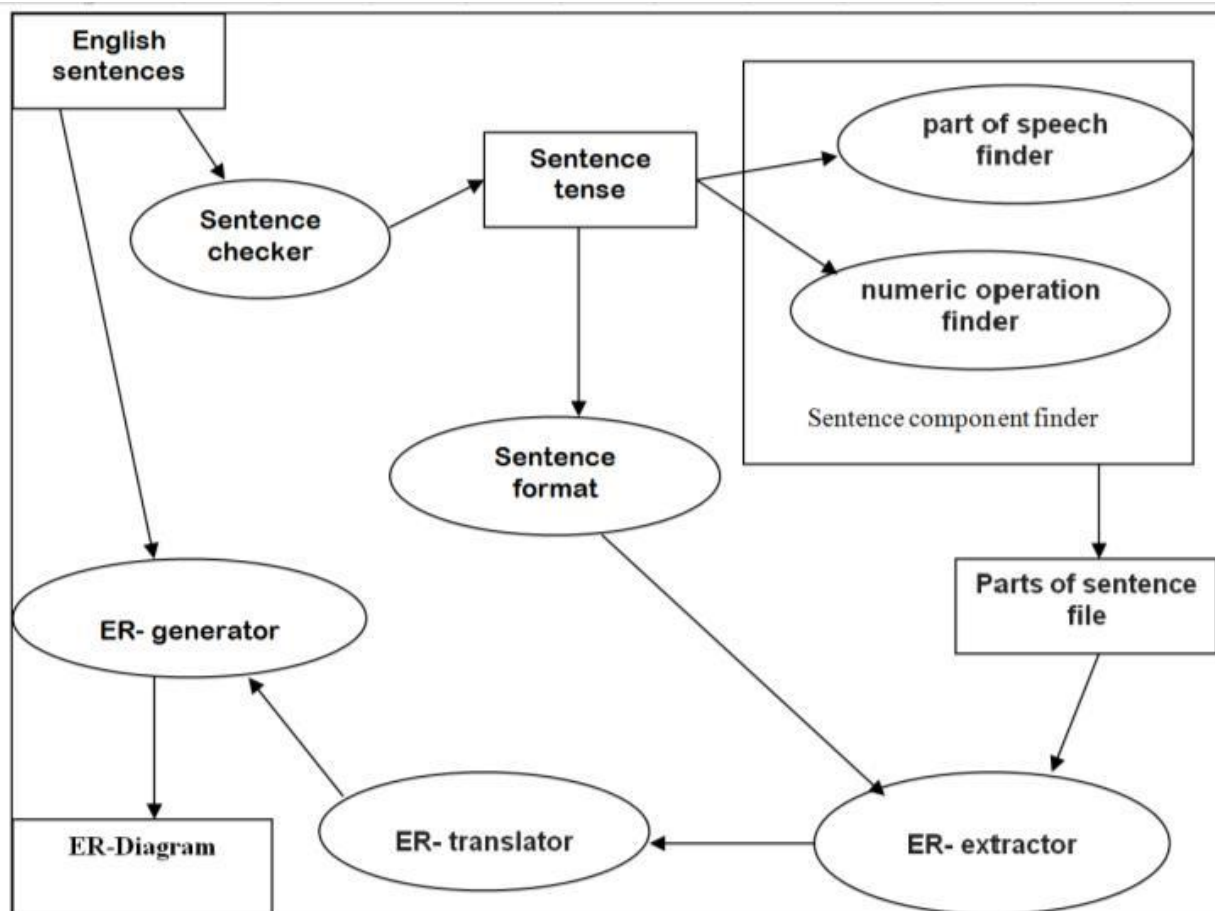
4. Hearing-Impaired



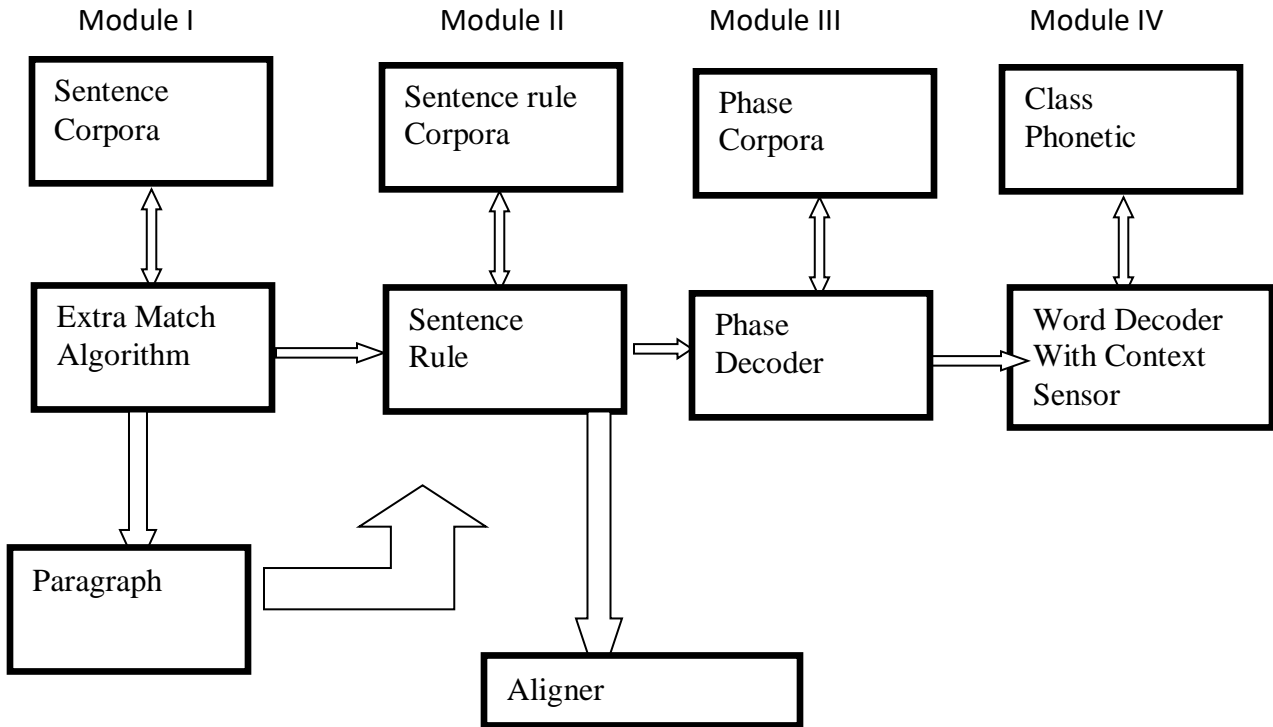
4.1. Domain Model



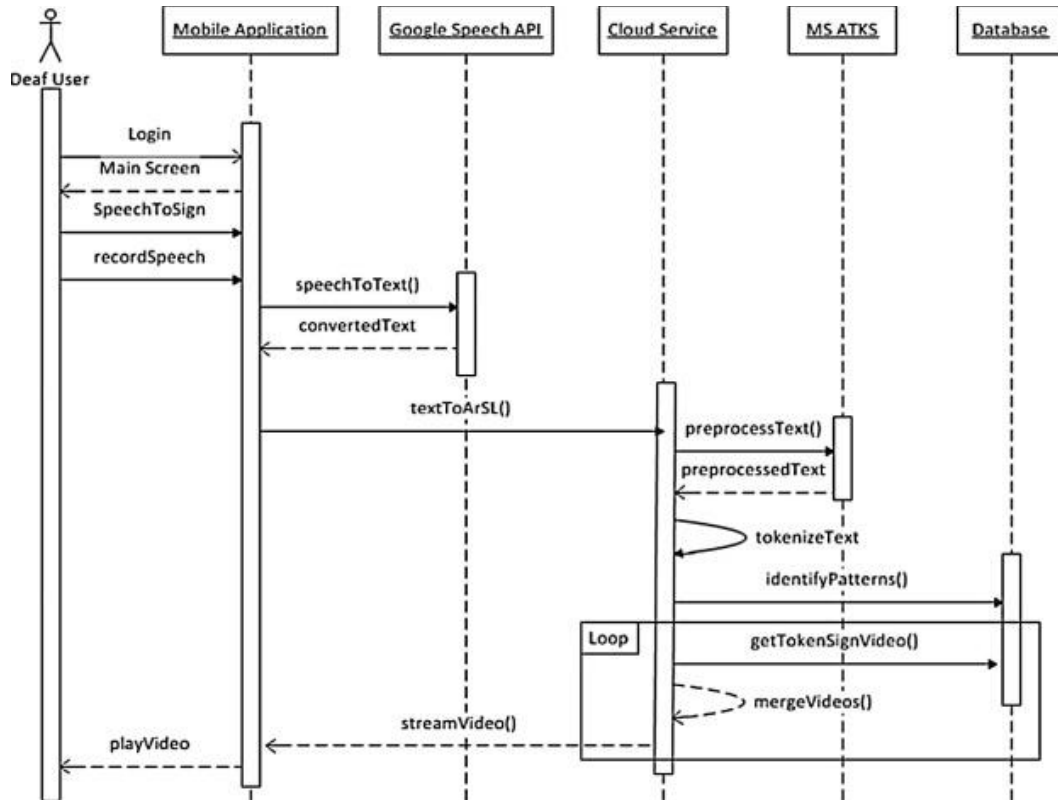
4.2. Entity Relationship Diagram with data dictionary



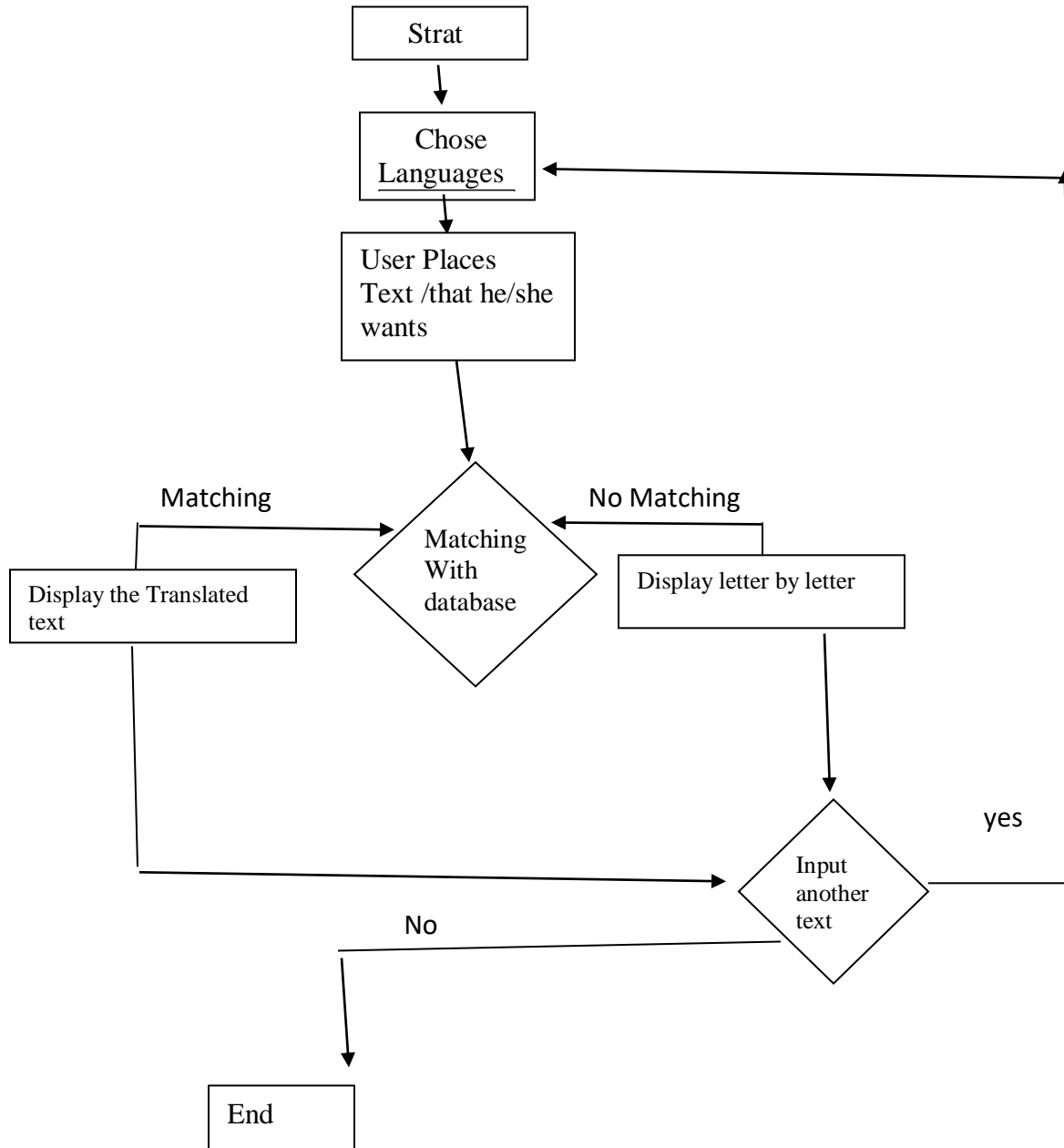
4.3. Class Diagram



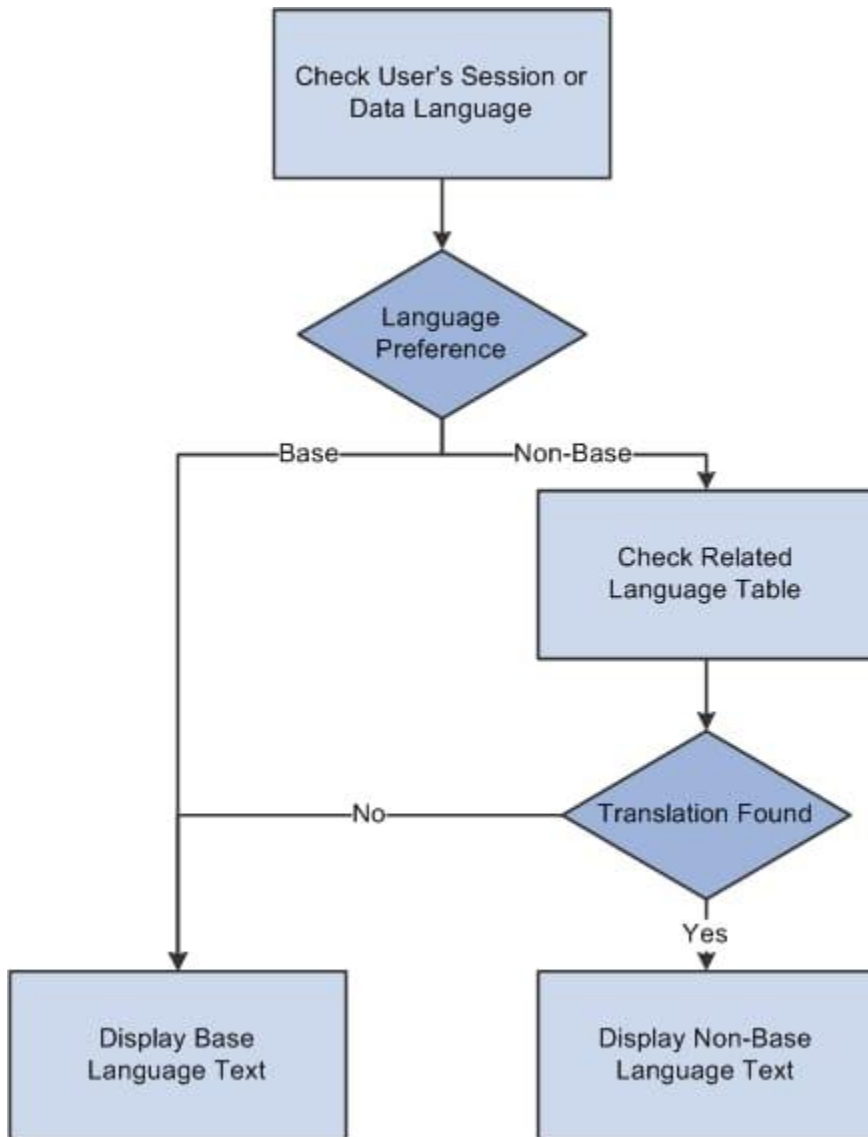
4.4. Sequence / Collaboration Diagram



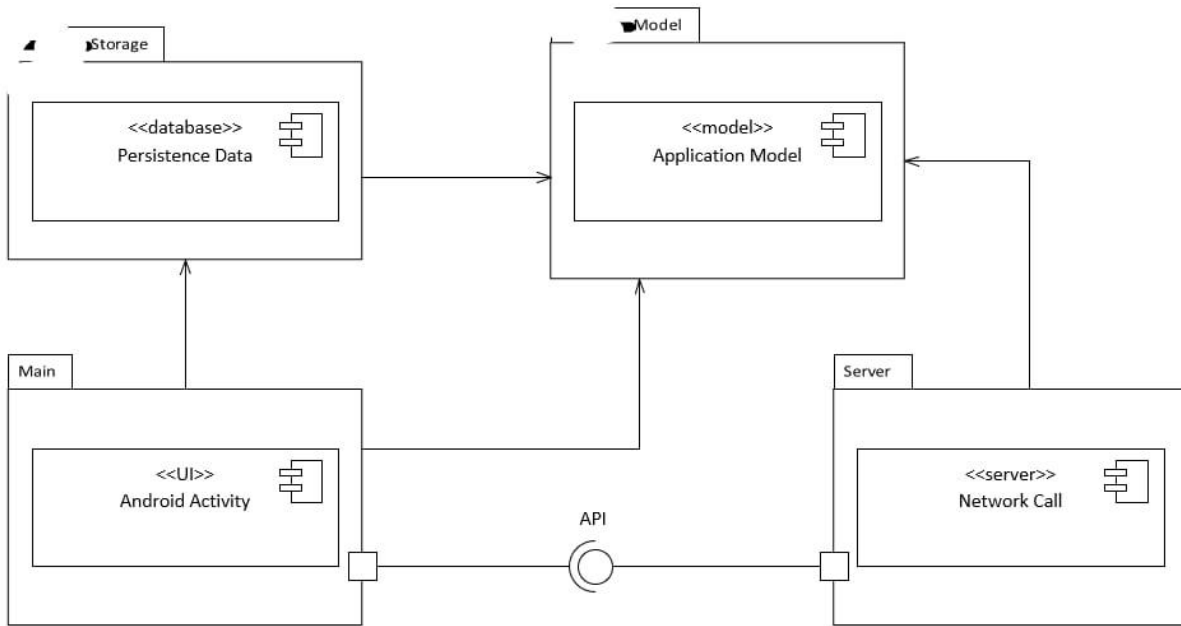
4.5. Activity Diagram



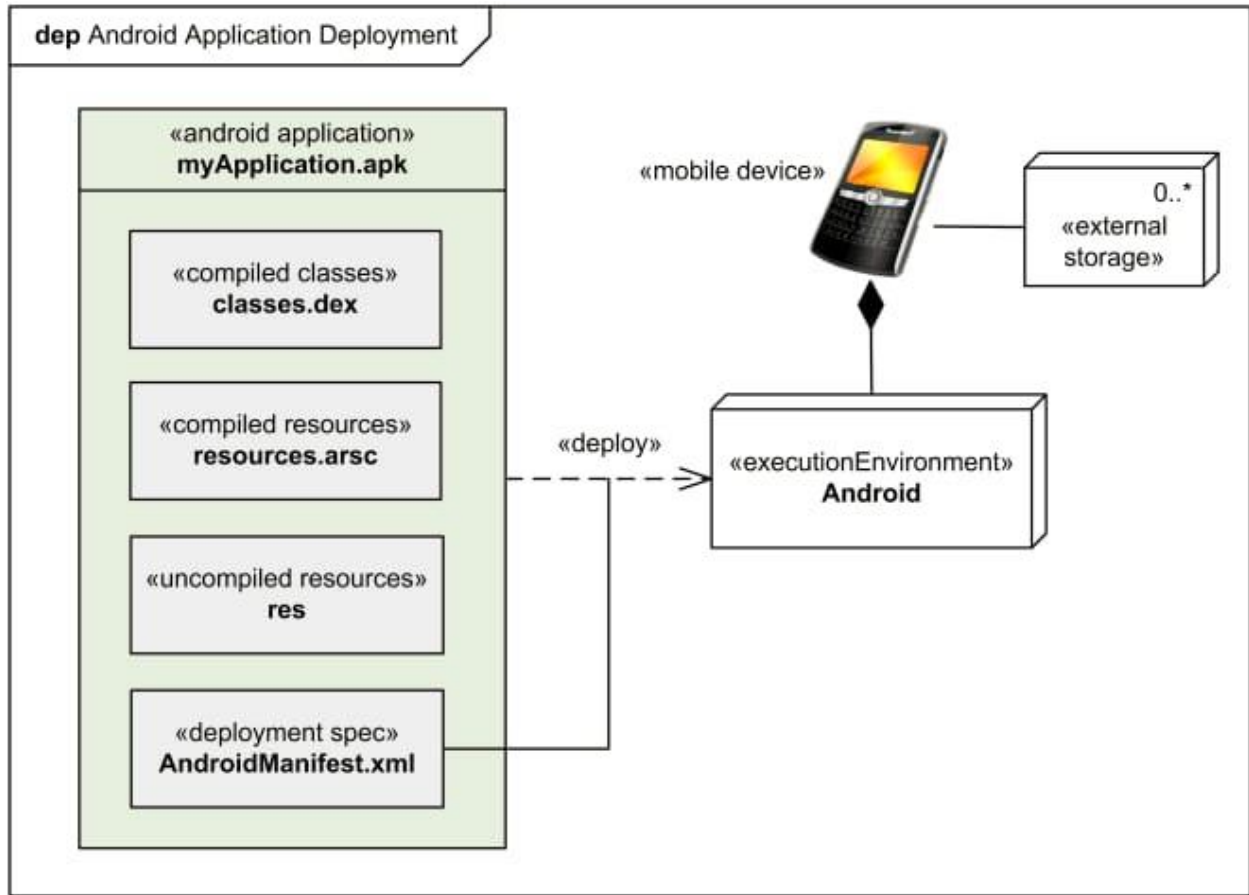
4.6. State Transition Diagram



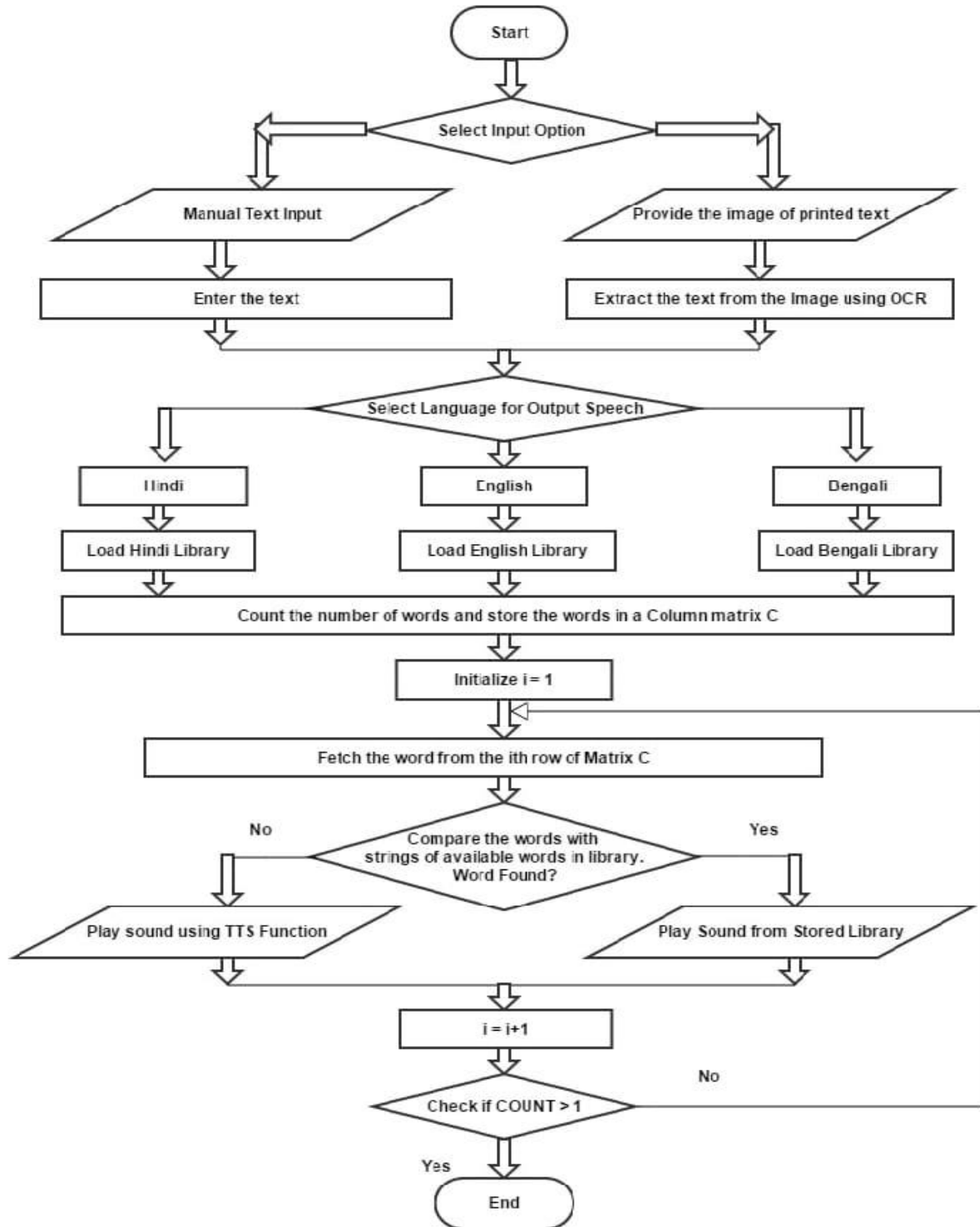
4.7. Component Diagram



4.8. Deployment Diagram



4.9. Data Flow diagram



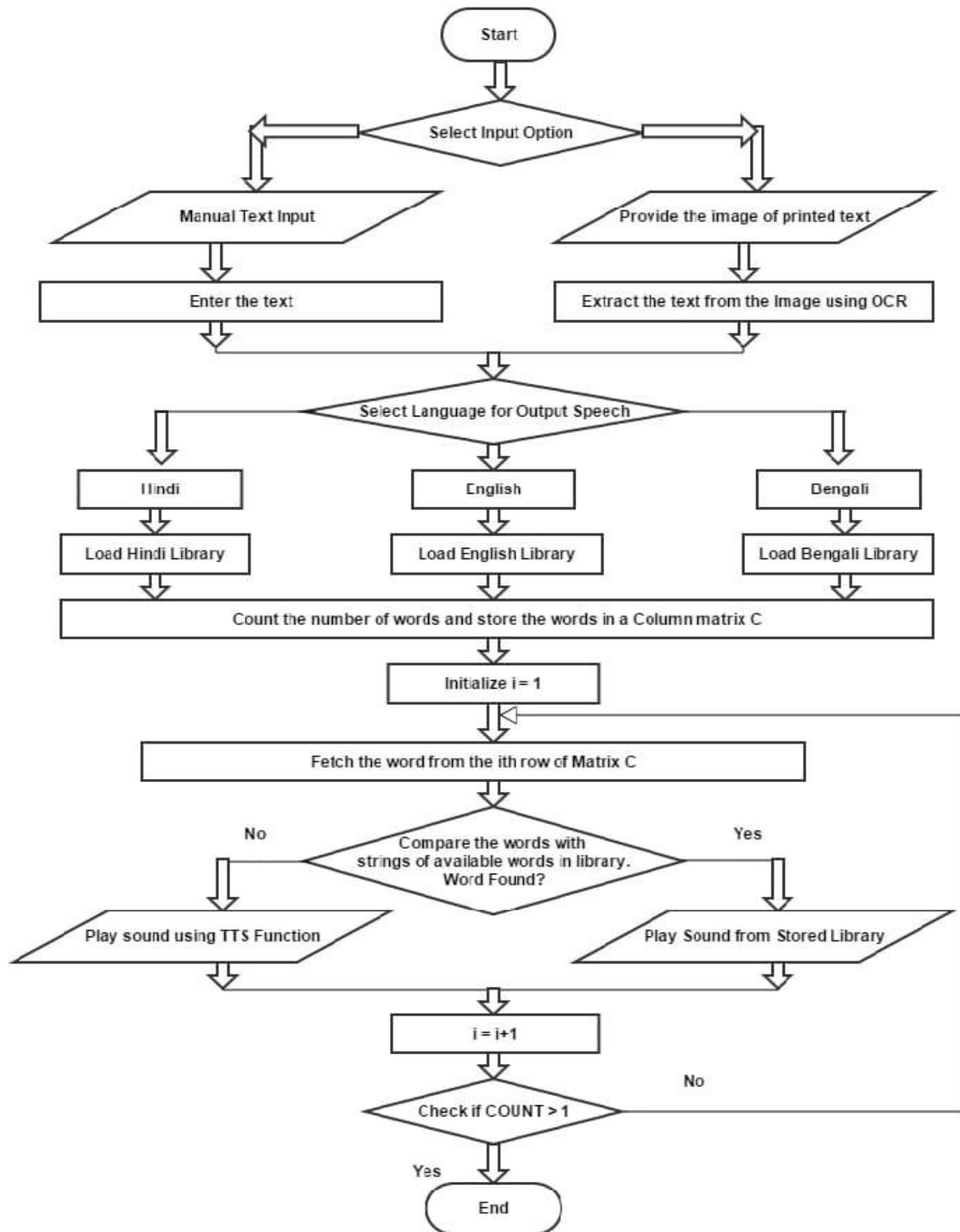
Chapter 5

Implementation

: Implementation

The tools we'll use to develop our Application will be discussed in this chapter. It also covers the flow chat and pseudo code for the development of our application. It also talks about the tools and technique used and the environment these tools and techniques will be used in.

5.1. Important Flow Control/Pseudo codes



5.2. Components, Libraries, Web Services and stubs

Language Translator Keys

Api's

5.3. Deployment Environment

The range would keep on increasing as we get to keep on seeing new environments, we can deploy our project in: Browsers:

1. Safari
2. Chrome
3. Firefox
4. Brave

Server

It highly depends on the hosting provider; we are buying our domain and hosting from.

5.4. Tools and Techniques

4. Android Studio
5. Adobe XD
6. Java
7. XML
8. Firebase Database

5.1. Best Practices / Coding Standards

- No coding repetitions
- Function and classes are always commented showing expected input and output

5.2. Version Control

We're going to use GIT version control where we can easily handle the speed and efficiency of our project. What's important is, we can easily manage and share code within our team members through the GIT.

Chapter 6

Testing and Evaluation

Chapter 6: Testing and Evaluation

Evaluation is a process where components or system is compared against the specifications and requirements, through the testing phase. Furthermore, the results are evaluated in order to assess the progress of performance, design, supportability, maintainability, etc.

6.1. Use Case Testing

Google Cloud Translation offers a range of translation products that can be used for different use cases. For example, Google Cloud Translation API can be used to translate text from one language to another in real-time. It supports more than 100 languages and can be integrated into websites and mobile applications. Google Cloud AutoML Translation is another product that can be used to train custom models for domain-specific translation needs. It supports uploading translated language pairs for your use case and will train a custom model to meet your domain-specific translation needs².

6.2. Equivalence partitioning

Equivalence Partitioning Method is also known as Equivalence class partitioning (ECP). It is a software testing technique that divides input domain into classes of data, and with the help of these classes of data, test cases can be derived. An ideal test case identifies class of error that might require many arbitrary test cases to be executed before general error is observed.

6.3. Boundary value analysis

It is a software testing technique that we used in our Application testing phase. Basically, as the definition suggests, we designed tests including representatives of the boundary values in a particular range. Henceforth, this idea would come from the boundary. As we have a set of test

vectors in order to test our system Application, therefore a topology could be defined on that particular set.

6.4. Data flow testing

This testing is a type of structural testing that is used to find test paths in the Application we are developing, according to uses of variables or locations of definitions.

6.5. Unit testing

It is basically a software development process where small testable parts known as units of Application, are tested to get proper functioning and operation. In our Application, we highly focused on unit testing phase, where we individually and independently scrutinized the whole process for this testing. This type of testing was executed side by side by us while we were developing the Application.

6.6. Integration testing

Also known as I&T, the integration testing is a phase in a Application testing where different modules are combined and tested as a group. In this case, we tested different modules of our Application. Basically, the integration testing is executed in order to evaluate the compliance of component or system, that is specified with functional requirements.

6.7. Performance testing

Performance Testing is a software testing process used for testing the speed, response time, stability, reliability, scalability, and resource usage of a software application under a particular workload. The main purpose of performance testing is to identify and eliminate the performance bottlenecks in the software application. It is a subset of performance engineering and is also known as *“Perf Testing”*.

The focus of Performance Testing is checking a software program's

- **Speed** – Determines whether the application responds quickly
- **Scalability** – Determines the maximum user load the software application can handle.
- **Stability** – Determines if the application is stable under varying loads

6.8. Stress Testing

Stress testing in software is like seeing how much weight your backpack can hold or how many people you can fit in a car before it doesn't go anymore. It's used to check Application and apps to ensure they don't crash when many people use them simultaneously. We use stress tests to determine what parts of the Application need improvement to run better when there are many users. Stress tests are also used for gaming applications and other software that needs to stay consistent even under extreme conditions.

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

4. Many Translator Apps Exist in world like Microsoft translator app. Microsoft Translator App offers just limited features for different Languages translations. The accuracy generated by these app is not efficient. The program only offers support for 50 languages. While they may cover the common tongues around the world, they ignore a lot of them that do not have many speakers but are common nonetheless translations. Programs like Microsoft's may offer a few benefits to businesses but they fail spectacularly to help when the documents they have to interpret have nothing to do with companies. None of the machine related translators have a hundred percent accuracy and Microsoft's app is no different.
5. This App is developed with the help of some AI features to reduce real life problem like our Pakistani student face difficulties when the move to any kind of countries in world where people doesn't even understand English this App will only help in communicating with them in their language.
- 6.

7.1. Achievements and Improvements

This fyp project has had a huge impact on our achievements and improvements in our future prospect in development. we have also improved our coding skills during development. .We have come to know the dealings in the market and gathered much more experience.

7.2. Critical Review

A language translator project is a mobile application that can be utilised for translating from English to any other dialect, and vice versa. The problem of language difference has hindered effective information communication over the years. There have been difficulties in information communication amid countries over the years. In modern times, language interpreters must understand and speak both the language been translated to and verse-visa.

7.3. Lessons Learnt

While developing the Mobile Application, we encountered a number of errors in the execution of the project. There was also a time we got frustrated while solving the errors. We used to consult seniors, take help from the internet and books but still, a reasonable and conclusive solution was not being discovered by us to solve the errors. But we didn't lose hope or lose determination. We kept sticking to the project, kept ourselves busy in finding solutions and finally we were able to succeed in our goals. This is a story of the whole fyp, where in the development phase we were stuck in unlimited errors. But as a famous quote for a software developer says "an individual is not a software developer if he/she cannot overcome the challenge of errors and its solutions". Well, this is the area we always thrive off.

So, the lesson we learned is, do not lose your focus on achieving goals and objectives of life. Yes, you will encounter various challenges but keep facing them and you will ultimately find a valuable solution.

7.4. Future Enhancements/Recommendations

Right now, we are developing the Mobile application for this business and it is the language translator. In future, we will also add more languages in our mobile application like Pakistani local languages sindhi, Punjabi, blochi etc. Moreover, the majority of the population in Pakistan cannot read English and other languages so our Application would help them to understand each and everything on the Application. Since, we are targeting every individual residing in Pakistan, so our target market is everyone.

Reference and Biography

Reference and Bibliography

- [1] Pramudita, Y. D., Putro, S. S., Wahyudi, R. N., Suzanti, I. O., & Solihin, F. (2020). RESTful Web Service for Madurese and Indonesian Language Translator Applications on Android Devices. 2020 6th Information Technology International Seminar (ITIS). doi:10.1109/itis50118.2020.9320992

- [2] Priya, L., Sathya, A., & Raja, S. K. S. (2020). Indian and English Language to Sign Language Translator- an Automated Portable Two Way Communicator for Bridging Normal and Deprived Ones. 2020 International Conference on Power, Energy, Control and Transmission Systems (ICPECTS). doi:10.1109/icpects49113.2020.93

- [3] Fong, Sim Liew; Elfaki, Abdelrahman Osman; bin Md Johar, Md Gapar; Aik, Kevin Loo Teow (2017). [IEEE 2011 5th Malaysian Conference in Software Engineering (MySEC) - Johor Bahru, Malaysia (2011.12.13-2011.12.14)] 2011 Malaysian Conference in Software Engineering - Mobile language translator. , (), 495–500. doi:10.1109/MySEC.2011.6140723