

SEPM LAB REPORT

Submitted by

Meenakshi Gayathri S [RA2111029010009]

Under the Guidance of

Dr R Radhika

Assistant Professor, Networking and Communications

In partial satisfaction of the requirements for the degree of

**BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE ENGINEERING**

with specialization in Computer Networking



SCHOOL OF COMPUTING

**COLLEGE OF ENGINEERING AND TECHNOLOGY
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY**

KATTANKULATHUR - 603203

MAY 2023

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KATTANKULATHUR - 603203

MAY 2023

TABLE OF CONTENTS

S.NO	TOPICS	PAGE NUMBER
1	To identify the software project, create business case, arrive at a problem statement	1
2	Identification of process methodology and stakeholder description	5
3	System, functional and non-functional requirements of the project	11
4	Prepare project plan based on scope, calculate project effort based on resources and job roles and responsibilities	14
5	Prepare work breakdown structure, timeline chart, risk identification table	18
6	Design a system architecture, use case and class diagrams	22
7	Design an Entity relationship diagram	26
8	Develop a dataflow diagram (process up to level 1)	32
9	Design a sequence and collaboration diagram	36
1-	Develop a testing framework/user interface	39
11	Test cases	46
12	Manual test case reporting	49
13	Provide the details of architecture design/framework/implementation	52

TABLE OF FIGURES

1. Figure:2.1:Waterfall Model – Phases.....	Page.no-6
2. Figure:5.1:Timeline - Gantt Chart.....	Page.no-21
3. Figure:5.2:Risk Analysis SWOT & RWWW.....	Page.no-21
4. Figure:6.1:System Architecture.....	Page.no-24
5. Figure:6.2:Use case diagram.....	Page.no-25
6. Figure:6.3:Class diagram.....	Page.no-26
7. Figure:7.1:Symbols used in ER Diagram.....	Page.no-29
8. Figure:7.2:ER diagram for Audio Detection System.....	Page.no-30
9. Figure:8.1:DFD Diagram for level 0.....	Page.no-35
10.Figure:8.2:DFD Diagram for level 1.....	Page.no-35
11.Figure:9.1:Sequence Diagram.....	Page.no-38
12.Figure:9.2:Collaboration Diagram.....	Page.no-39
13.Figure:10.1:User interface and Code snippet.....	Page.no-46
14.Figure:13.1:Architectural Design.....	Page.no-54
15.Figure:13.2:Framework.....	Page.no-56
16.Figure:13.3:Implementation.....	Page.no-58

ABSTRACT

Proctoring in remote online examinations has come a long way with implementations of video and audio detections in establishing whether any forms of malpractice are taking place from the test takers' side. However, certain aspects are not taken into account in these detections. One such condition is the detection of any kind of audio being considered as malpractice right away, without determining whether the sound indicates indulgence in malpractice or not, while it may have very well been some external noise caused outside of the test takers' control. This immediately prevents them from taking up/continuing to take an examination, which may hamper good talent from being employed into the institution of one's dreams, thereby negatively impacting both the test taker and the institution conducting the assessment. In this regard, the main objective that this project aims to solve is improving audio detection in AI proctored online examination portals, by determining whether the audio detected indicates malpractice or not. This is carried out by the software system through recording the audio, cross-checking it with text from questions provided in the exam, identifying whispering or mumbling, and even alerting exam administrators of possible cheating. The system places its focus on ensuring fairness and maintaining the credibility of taking up an examination by preventing cheating, thus allowing for accurate evaluations of one's skills and knowledge.



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SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	1
Title of Experiment	To identify the Software Project, Create Business Case, Arrive at a Problem Statement
Name of the candidate	MEENAKSHI GAYATHRI S
Team Members	ANJANA G, GAYATHRI R
Register Number	RA2111029010009
Date of Experiment	23/01/2023

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
Total		10	7

Staff Signature with date

Aim

To Frame a project team, analyze and identify a Software project. To create a business case and Arrive at a Problem Statement for the Audio Detection System

Team Members:

S. No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Lead/Rep
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

Project Title: Audio Detection System

Project Description:

An online examination portal is a platform that enables students to take tests remotely, and in the convenience of staying in their own homes or any other appropriate location. In order to ensure the integrity of the test takers, AI systems have been developed and implemented to further detect any forms of malpractice in place of human proctors, or in detecting acts of dishonesty that a human proctor might miss. The main tasks carried out by AI systems in these portals include detection of visual cues, and audios that indicate suspicious activity.

However, in general, audio detection in these systems works on the principle that any sound picked up by the mic over a continuous period of time will be considered malpractice. This has proven to be disadvantageous to many test takers who are thus prevented from continuing their tests, despite noises from their side resulting from external disturbances such as fans, vehicle noises from the outside, and so on, which are not under their control.

Thus, this project will be aimed at increasing the efficiency of the AI in proctored online examinations, mainly targeting the detection and distinction of the audios picked up while a student takes an examination.

ONE PAGE BUSINESS CASE TEMPLATE

DATE	
SUBMITTED BY	(Make a copy of this doc and change your name here)
TITLE / ROLE	Member

THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

- This project has the main focus of enhancing the identification of different audio types by a software, and thereby its ability to distinguish between them.
- The main application for this project would be of relevance in online examinations that are monitored through AI proctoring.
- In this case, the purpose of the AI can be strengthened with the provision of more data, in terms of the sounds being detected.
- The impact of the absence of a human proctor behind the screen is lessened.

THE HISTORY

In bullet points, describe the current situation.

- Online AI Proctoring systems consider all audio detections to be malpractice.
- These considerations are mostly a result of how loud the noises are, and/or the duration of the noises.
- Some of these audios might be external noises caused due to surroundings, which are not under the test takers' control.
- This kind of a potentially false assumption leads to inaccurate results.

LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

The software will be provided with a range of audios that we believe are most common noises that occur in and around the household of online test takers.

Whispering or husky sounds might not be picked up for text to speech conversion. A combination of noises might also lead to masking of audios, and therefore, potentially inaccurate identifications.

Furthermore, a lot of memory would be required if the whole exam session is to be recorded, which could be inefficient. Thus, for systems that work based on detection followed by distinction, sounds that are not picked up would be ignored.

APPROACH

List what is needed to complete the project.

- Microphone for picking up sounds.
- Audio samples.
- A device to display detections - a laptop or a desktop.
- Connection with a speech to text converter.

BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

- **Smoother experience:** Test takers will not have to panic about being disrupted by malpractice detection messages on their screens, being booked, or kicked out of the exam sessions due to external noises that are not of suspicion.
- **Improved efficiency:** Better detection of different types of audios can strengthen the AI, and make it smarter for future testing of various such applications.
- **Role of human proctors goes down:** When the AI gets stronger in detections of audios and in effectively distinguishing between them to provide accurate results, the need for a human proctor to verify the results lessens.
- **Overall benefit:** Genuine students with good results would not be rejected due to random noise detections, thereby enabling their admissions into institutions hosting the online examinations, hence benefiting both the test takers and the institutions.
- **Further applications:** This project can also be extended for testing in applications such as security related issues, such as audios obtained from CCTV recordings, or even in medical scenarios, where certain sounds made by patients might indicate acute health issues, and so on.

Result

Thus, the project team was formed, the project was described, the business case was prepared and the problem statement was arrived at.



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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	2
Title of Experiment	Identification of Process Methodology and Stakeholder Description
Name of the candidate	MEENAKSHI GAYATHRI.S
Team Members	ANJANA.G, GAYATHRI.R
Register Number	RA2111029010009
Date of Experiment	31/01/2023

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
Total		10	7

Wini 31.1.23

Staff Signature with date

Aim

To identify the appropriate Process Model for the project and prepare Stakeholder and User Description.

Team Members:

Sl No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep/Member
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

Project Title: Audio detection system

Selection of Methodology

- When the needs are clearly stated and reasonably steady, the Waterfall Model, also known as the Linear sequential lifecycle model is chosen to manage a software project. This is due to its step-by-step approach in efficiently managing the phases of the project.
- The different stages of the waterfall model are as illustrated below, starting from the requirement analysis and specification phase:

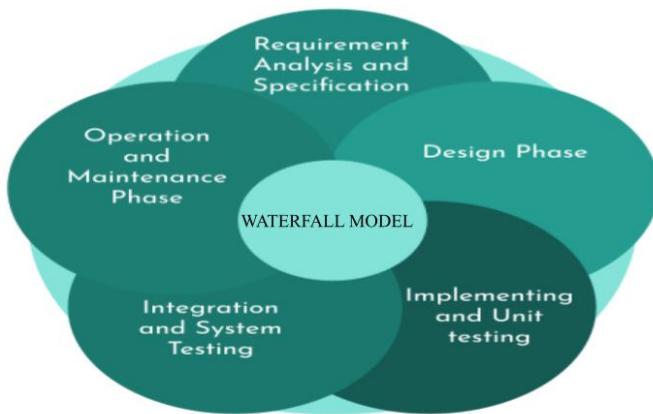


Figure 2.1 : Waterfall Model - Phases

- These steps proceed sequentially; that is, the initiation of successive steps depends on the completion of the steps before them. For instance, the project development team moves on from, say, the design phase, to the next phases of testing only when the steps that precede the current step are completed successfully.
- This software model is suitable for this project, since it enables departmentalization, management and scheduling of each development step in accordance with the due date, which would be fitting for the short-termed nature of the work involved. It would also be effective in adhering to rigorous guidelines, through the necessitation of the completion of each phase's deliverables before moving onto the next.

Application of Waterfall Model according to the needs of the projects:

- Requirement Analysis:

The resources that are required for our project are analyzed in this stage. (Classifying them as primary, secondary and tertiary resources which are listed below):

Primary - Devices including PC/Laptop, audio detecting and distinguishing software

Secondary - Audio detection supporting hardware

Tertiary - Simulation background for testing the outcome of the software

- Design Phase:

This phase is concerned with the developing and designing of the framework/criteria for the detection & distinction of noises and voices (in terms of potential malpractice) during an examination. The quality of the detection is the main concern to be dealt with in this stage.

- Implementing and Unit testing:

Combining all the pre-defined parts of the software and testing the software thus obtained under different circumstances, fetching different sounds and comparing the user's audio with the audio samples stored in the database.

- Maintenance:

Frequent checks are to be done by the admin, and the program of the software should be consistently checked for any necessary updates or alterations that may be required.

Table 2.1: Stakeholders of the project

Stakeholder Name	Activity/ Area /Phase	Interest	Influence	Priority (High/ Medium/ Low)
Owners	Improving the product and income efficiency of the company.	High	High	1
Sponsors	Deal with finance related needs of the organization, and assess the situation before making decisions.	Medium	Medium	3
Team members	Complete tasks assigned to them, and produce results effectively and efficiently.	High	High	1
Project manager	Manages the project in terms of completion of production of required deliverables.	High	Low	4
Developers	Responsible for implementing the whole project.	High	High	1
Investors	Provide for the financial needs of the project.	Low	Low	6
Customers	Clarify the requirements that need to be satisfied by the project.	Medium	Medium	5
End users	Provide feedback on aspects of the final product.	Medium	Medium	2

Table 2.2: Stakeholders of the project (in detail)

Stakeholders	Interests	Estimated project impact	Estimated priority
Owners	Own the business and implement its functioning and profits through business plans(how to create an effective audio detection system), mission and vision of the company(i.e to enhance the company's ideology of implementing error free audio detection), and working upon goals set by them(using the detection system with clear distinction of noises).	High	1
Sponsors	Deal with project funding negotiations with the owner. (cost of the audio devices and other devices like PCs,laptops etc and the salary for the working sector of the project) Project needs will be reviewed according to circumstances of the environment that is prevalent in the company.	Medium	3
Team members	The team leader assigns the members with work. Team members complete their tasks by following company policies, and cooperating with others. Produce results through optimal use of resources that favor the main objectives of the organization.	High	1
Project manager	Responsible for the management of the whole project, by planning, organizing, and directing the completion of tasks in the projects being worked on based on the idea obtained from the waterfall model. Play the main role of documentation of what happens in different stages of the project.	Low	4
Developers	Manages operations in a project,	High	1

	including the aspects of design and analyses, implementation of the code, testing the work, and its maintenance, by conduction of research and drafting of plans that will ensure the smooth progress of the project.		
Investors	If any other previous successful projects exist, the profits thus obtained are invested into the current project. This is done in order to gain supplementary revenue. Main goal of investing is the expectation of returns that result from the capital put down for the project at hand.	Low	6
Customers	They are responsible for defining the needs of the project, and are to be present from start to finish. (what is the requirement of the customers with respect to the problems they face in the detection of noises especially when they take up an examination)	Medium	5
End users	The target audience for the project. They are the “to be” day to day users of the final product. They provide feedback to the developers, which ensures that there are no issues with the products, and that people are actually using them.	Medium	2

Result

Thus the Project Methodology was identified and the stakeholders were described.



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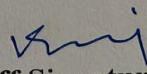
Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	3
Title of Experiment	System, Functional and Non-Functional Requirements of the Project
Name of the candidate	MEENAKSHI GAYATHRI.S
Team Members	ANJANA.G, GAYATHRI.R
Register Number	RA&111029010009
Date of Experiment	07/02/2023

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
	Total	10	7


Staff Signature with date

Aim

To identify the system, functional and non-functional requirements for the project.

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep/Member
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

Project Title: Audio Detection System

System Requirements

The system requirements of a software project refer to those requirements that enable the effective functioning of the software being developed. The system requirements of this project are listed below :

- A desktop or a laptop
- A microphone (either built into the device or connected externally)

Functional Requirements

The functional requirements of a software project include the services that the final product offers the end users/customers. The functional requirements of this project are as follows:

- The user can select the option to start recording/permit audio detection
- A page will be provided for the user to draft any complaints regarding the detections/messages displayed
- The user will be given the option to open up the script from the speech to text conversion.

Non-Functional Requirements

The Non- Functional Requirements of a software project concentrate on the software's quality attribute. This type of requirement is further divided into:

- **Execution Qualities:** (Run time quality of a software is determined)

1. Usability - Audio detection
- **Evolution Qualities:** (Qualities that embody the static structure of the software)
 1. Performance - The audio must be detected and processed within 5 seconds, after which messages must be displayed as and when appropriate.
 2. Scalability - The audio must be detected from all the users of portal simultaneously

Result

Thus the requirements were identified and accordingly described.



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Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	4
Title of Experiment	Prepare Project Plan based on scope, Calculate Project effort based on resources and Job roles and responsibilities
Name of the candidate	MEENAKSHI GAYATHRI.S
Team Members	ANJANA.G, GAYATHRI.R
Register Number	RA2111029010009
Date of Experiment	14/02/2023

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
Total		10	7

14.2.23

Staff Signature with date

Aim

To Prepare Project Plan based on scope, Calculate Project effort based on resources, Find Job roles and responsibilities

Team Members:

Sl No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Lead
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

Project Management Plan

Key issues driving the project.

Focus Area	Details
Schedule Management	<ul style="list-style-type: none">- Defining milestones in different stages of the project, such as in the development of the software for audio recognition: (i) verifying recordings, (ii) ensuring accurate distinctions, and (iii) checking the successful display of messages after comparisons with audio samples.- Establishing schedule control by making sure that milestones as mentioned above are completed within the deadlines set for them.
Cost Management	<ul style="list-style-type: none">- Estimating Effort: Division of work among team members as specified in the tables below.- Budget Control: Ensuring that the right costs are being accounted for as per the appropriate conditions, such as prevention of extra costs that may be encountered due to failure of codes through constant testing and checks.
Quality Management	<ul style="list-style-type: none">- Quality Assurance and Quality Control: The tools being worked with: IDE - VScode, Programming language: Python. Techniques used in implementation: Waterfall model. Reporting back on efficiency of work outcomes, and making changes as and when necessary.
Resource Management	<ul style="list-style-type: none">- People & Skill Requirements are satisfied for this project by ensuring that team members effectively understand and account

	<p>for every need that the final product should satisfy as communicated to them by customers as per their needs, and ensure optimal use of time and resources as well.</p> <p>- Finance: Budget Requirements will be as mentioned in tables below, and team members would do their best to stick to making the most profit, and thereby incurring least/no losses.</p>
Stakeholder	Identifying, Analyzing, and Engaging in activities that ensure the customer's satisfaction of every aspect of the project by establishing consistent communication between end users and producers/developers.
Risk Management	Identifying, analyzing, and prioritizing project risks that may arise, including but not limited to coding faults, reassignment/redesign of work due to inability to complete assigned tasks.

Estimation

Effort and Cost Estimation

Activity Description	Sub-Task	Sub-Task Description	Effort (in hours)	Cost in INR
Design the user screen (Speech to text recognition and display)	Designing	Analyzing the basic design and requirements of the audio testing equipment and its software.	10	5000
	Coding	Using logical analytical techniques to design the audio testing software using various tools.	10	3000
Creating a database to store the audio samples for comparison	Database Management (Coding)	Storing audio samples for comparison with users' recorded audios.	5	10000

Effort (hr)	Cost (INR)
1	500

Infrastructure/Resource Cost

Infrastructure Requirement	Qty	Cost per qty	Cost per item
Desktop/PC	1	40,000	40,000
Laptop	1	45,000	45,000
Database Servers	2	54,000	1,08,000
Audio detection device	5 (for backup)	13,000	65,000
			Total Cost: 10,23,850

Maintenance and Support Cost

Category	Details	Qty	Cost per qty per annum	Cost per item
People	Network, System, Middleware and DB admin Developer , Support Consultant	3	2,00,000	600,000
License	Operating System Database Middleware IDE	10	10000	100,000
Infrastructures	Server, Storage and Network	20	20000	400,000

Project Team Formation

Identification Team members

Name	Role	Responsibilities
Gayathri.R	Key Business User (Product Owner)	Provide clear business and user requirements
Anjana.G	Project Manager	Manage the project
Meenakshi Gayathri.S	Business Analyst	Discuss and Document Requirements
Gayathri.R	Technical Lead	Design the end-to-end architecture
Anjana.G	UX Designer	Design the user experience
Meenakshi Gayathri.S	Frontend Developer	Develop user interface
Gayathri.R	Backend Developer	Design, Develop and Unit Test Services/API/DB
Anjana.G	Cloud Architect	Design the cost effective, highly available and scalable architecture

Meenakshi Gayathri.S	Cloud Operations	Provision required Services
Meenakshi Gayathri.S	Tester	Define Test Cases and Perform Testing

Responsibility Assignment Matrix

RACI Matrix		Team Members		
Activity		Meenakshi Gayathri.S (BA)	Gayathri.R (Developer)	Anjana.G (Project Manager)
User Requirement Documentation	A	C/I	I	R
Frontend	C	A	I	A
Backend	C	R	I	A
Maintenance	R	I	R	R
Database Management	C	A	C	A

A	Accountable
R	Responsible
C	Consult
I	Inform

Result:

Thus, the Project Plan was documented successfully.



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Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	5
Title of Experiment	Prepare Work breakdown structure, Timeline chart, Risk identification table
Name of the candidate	MEENAKSHI GAYATHRI.S
Team Members	ANJANA.G, GAYATHRI.R
Register Number	RA2111029010009
Date of Experiment	20/02/2023

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
Total		10	7

20.2.23

Staff Signature with date

Aim

To Prepare Work breakdown structure, Timeline chart and Risk identification table

Team Members:

SI No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

WBS CHART

Audio detection software

1. Initial Phase

- 1.1 Understanding goals
- 1.2 Requirements gathering

2. Methodology identification

- 2.1 Selection of methodology
- 2.2 Identifying stakeholders

3. Identification of requirements

- 3.1 Functional Requirements
- 3.2 Nonfunctional Requirements
- 3.3 System Requirements

4. Project metrics and management

- 4.1 Choosing model
- 4.2 Cost and effort estimation
- 4.3 Risk analysis

5. Coding

- 5.1 Front End Development
Graphics and Interface
- 5.2 Back End Development

6. Testing and Production

- 6.1 Unit Testing
- 6.2 Integration Testing
- 6.3 System Testing
- 6.4 Acceptance Testing

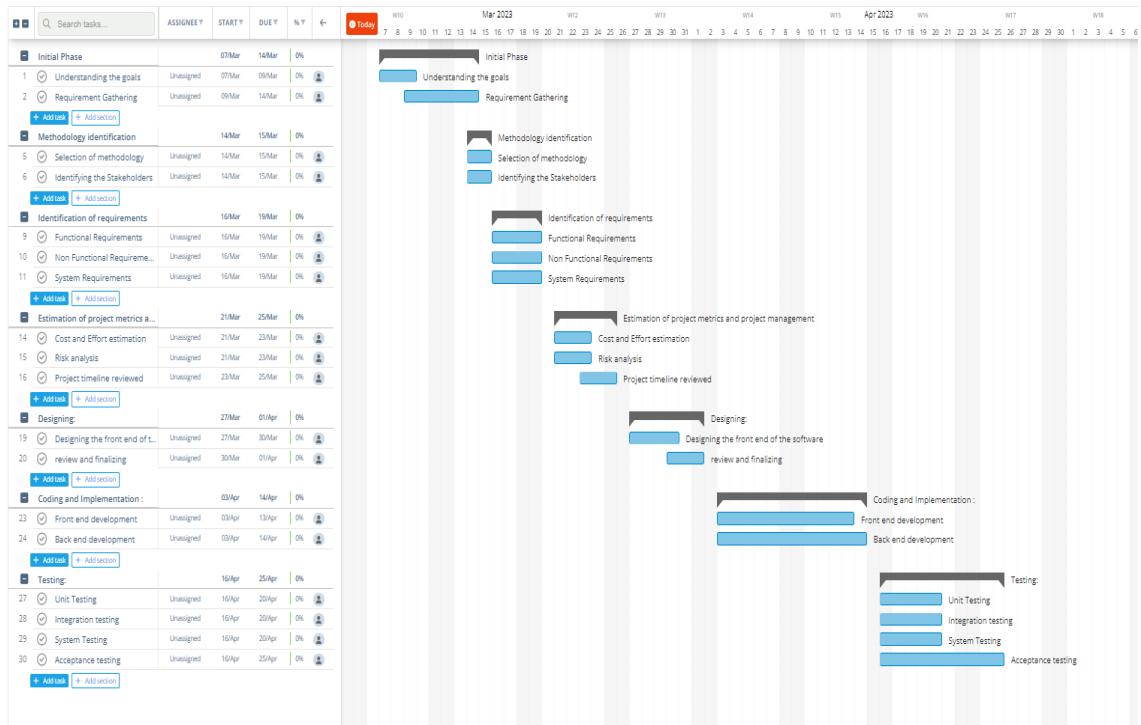


Figure 5.1 : Timeline-Gantt Chart

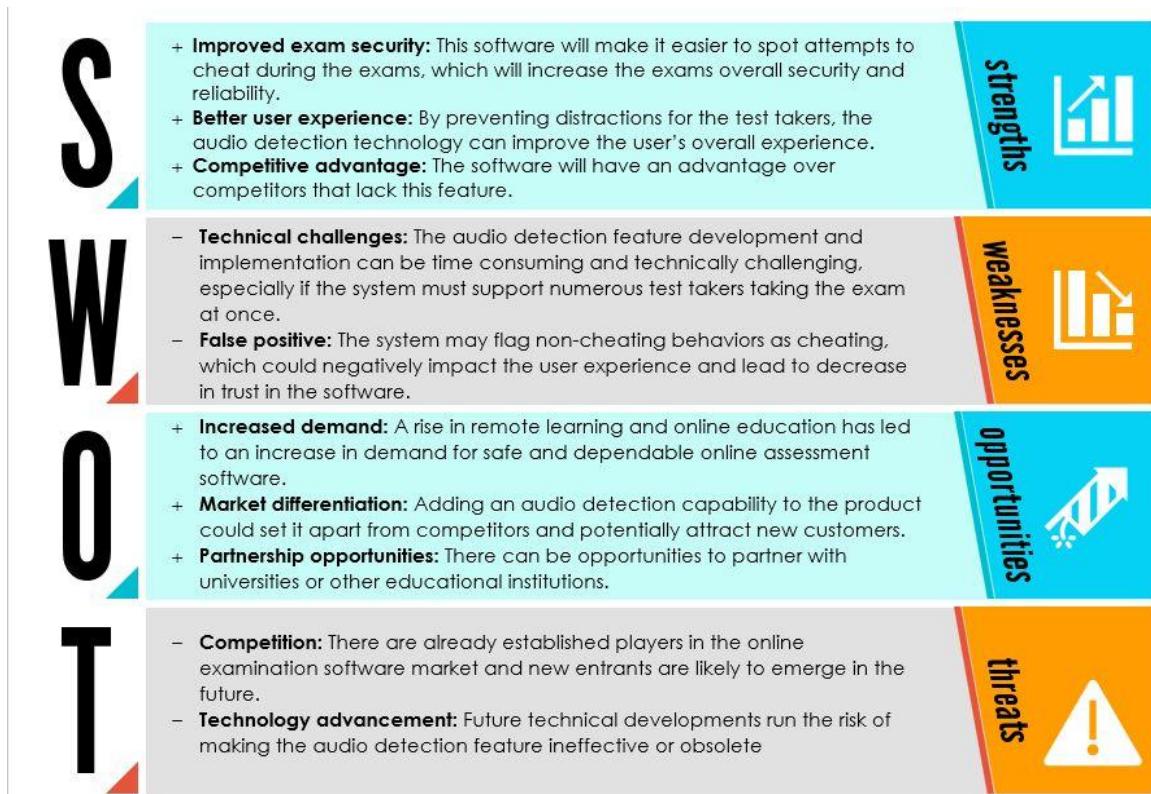


Figure 5.2 : Risk-Analysis SWOT & RWWW

Risk Management Framework-Risk and Mitigation

RESPONSE	STRATEGY	EXAMPLES
AVOID	Risk avoidance is a method in which steps are taken to protect the project and eliminate hazards that pose a threat to it.	<ul style="list-style-type: none"> · changing plan and execution strategy · redundancy · schedule extending
TRANSFER	Transferring the risk, threat, and impact to a third party is known as "risk transference." Instead, transfer ownership and responsibilities.	<ul style="list-style-type: none"> · Insurances · subscriptions model · legal notices
MITIGATE	The project team uses risk mitigation as a method to lower the likelihood that the risk will materialize. This reduces the likelihood of it occurring rather than increasing the risk or potential harm.	<ul style="list-style-type: none"> · continuous testing of the product having stable · suppliers reducing · process complexities
ACCEPT	The team accepts the risk and considers its potential effects, but they decide against taking any preventative measures; instead, they will deal with the danger only if it materializes.	<ul style="list-style-type: none"> · fixing bugs · maintaining budget · event contingency

Result:

Thus, the work breakdown structure with timeline chart and risk table were formulated successfully.



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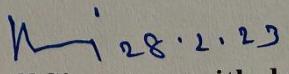
Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	6
Title of Experiment	Design a System Architecture, Use Case and Class Diagram
Name of the candidate	MEENAKSHI GAYATHRI.S
Team Members	ANJANA.G, GAYATHRI.R
Register Number	RA2111029010009
Date of Experiment	28/02/2023

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
	Total	10	7


28.2.23
Staff Signature with date

Aim

To Design a System Architecture, Use case and Class Diagram

Team Members:

Sl No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

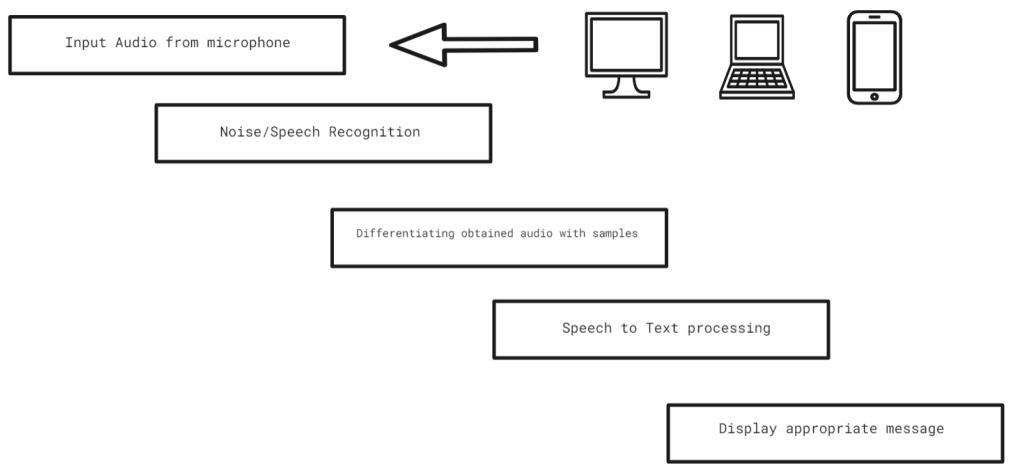


Figure 6.1 : System Architecture

- System architecture refers to the conceptual model that defines the structure, behavior and the views of the system in various aspects.
- As in the case of this project the main motive is to design an audio recognition system which differentiates between the noises that are generated by and around the user while an online examination takes place.
- Audio from the microphone of any device(laptop, PC, mobile phones etc) would be fetched by the audio recognition system where audio pre-processing and text processing takes place. As it is an AI proctored test/examination there is no involvement of human proctors so specific algorithms are used to make the system differentiate the noises according to the samples that the coding engineer has fetched it.
- If any defect occurs in the system the admins who are responsible for the device's architecture look after it based on requirements.

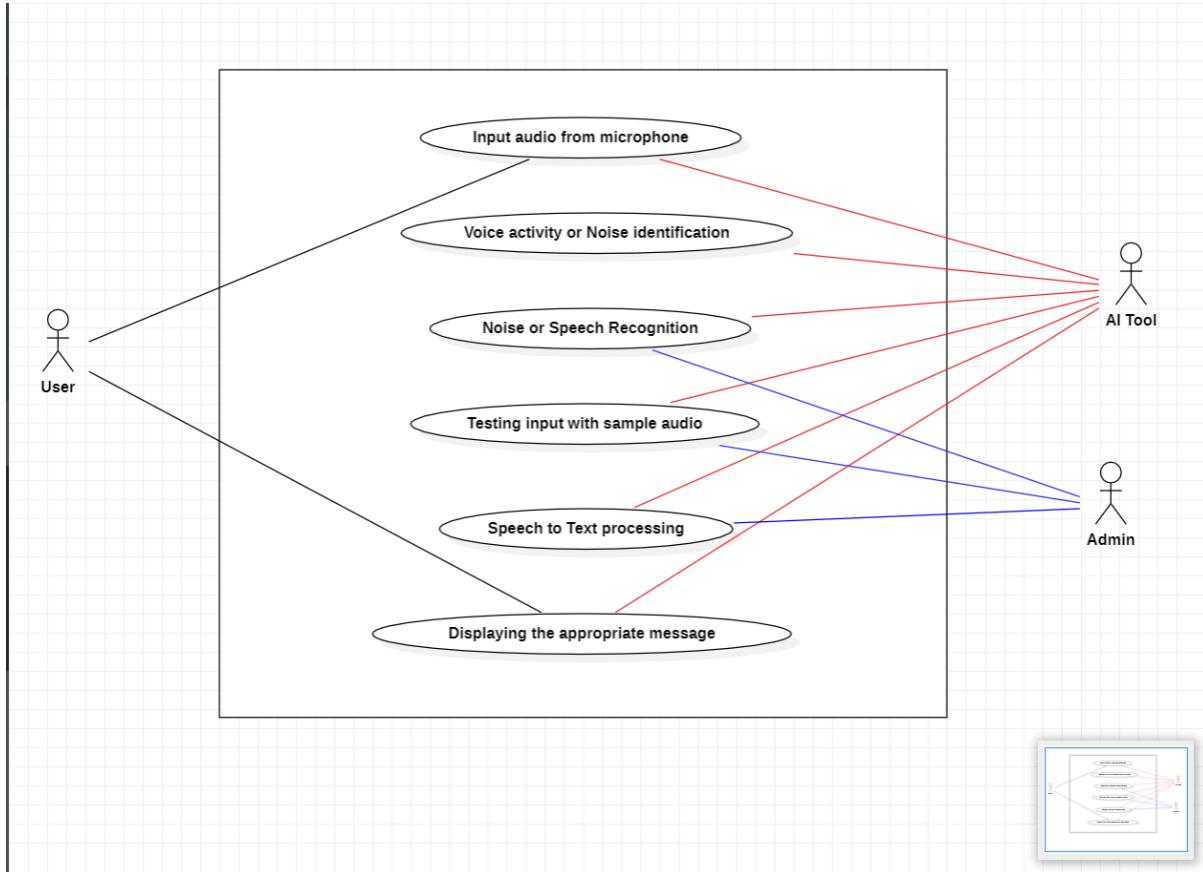


Figure 6.2 : Use case diagram

- A use case diagram summarizes the details of the actors and their interactions with the software and the hardware component. According to the project the actors involved here are User, AI tool & Admin.
- The user provides the required input to the AI tool and the tool in turn detects, distinguishes, determines and displays the required result to the user and the admin.
- The admin checks whether there is any fault in the recognition system and corrects it if necessary.

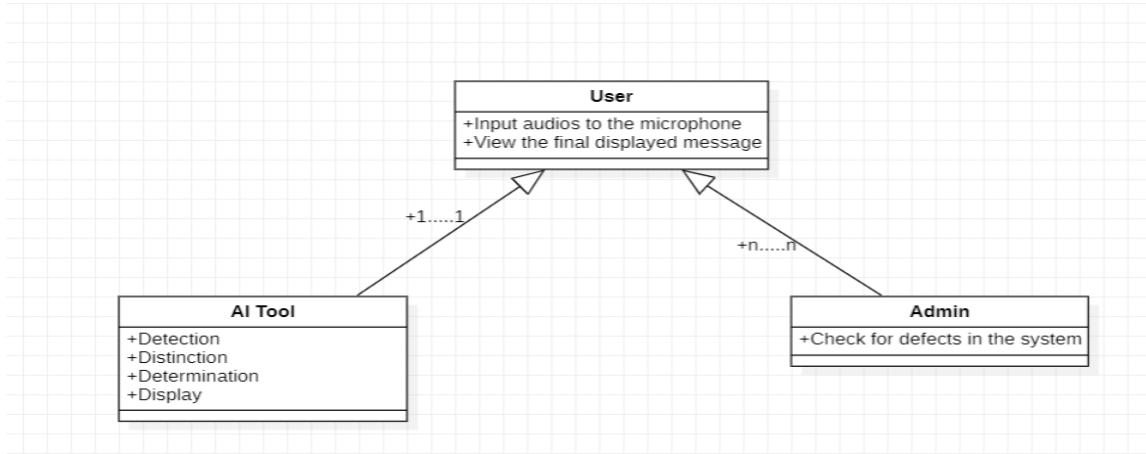


Figure 6.3 : Class Diagram

- Class diagrams are specifically used for mentioning the programming concepts of a project.
- Here the main classes are User, AI tool & Admin and under them their properties are mentioned according to their respective functions.

Result:

Thus, the system architecture, use case and class diagram created successfully.



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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	7
Title of Experiment	Design a Entity relationship diagram
Name of the candidate	MEENAKSHI GAYATHRI S
Team Members	ANJANA G, GAYATHRI R
Register Number	RA2111029010009
Date of Experiment	07/03/2023

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
Total		10	7

7/3/23

Staff Signature with date

Aim

To create the Entity Relationship Diagram

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Lead
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

ER Diagram, Notation and Example

What is an ER Diagram?

- ER Diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.
- ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships.
- At first look, an ER diagram looks very similar to the flowchart. However, ER Diagram includes many specialized symbols, and its meanings make this model unique. The purpose of ER Diagram is to represent the entity framework infrastructure.

What is the ER Model?

- ER Model stands for Entity Relationship Model is a high-level conceptual data model diagram. ER model helps to systematically analyze data requirements to produce a well-designed database. (systematic analysis of data for designing a suitable database)
- ER Model represents real-world entities and the relationships between them. Creating an ER Model in DBMS is considered as a best practice before implementing your database.
- ER Modeling helps you to analyze data requirements systematically to produce a well-designed database. So, it is considered a best practice to complete ER modeling before implementing your database.

Why use ER Diagrams?

Here, are prime reasons for using the ER Diagram

- Helps you to define terms related to entity relationship modeling
- Provide a preview of how all your tables should connect, what fields are going to be on each table
- Helps to describe entities, attributes, relationships
- ER diagrams are translatable into relational tables which allows you to build databases quickly
- ER diagrams can be used by database designers as a blueprint for implementing data in specific software applications

- The database designer gains a better understanding of the information to be contained in the database with the help of ERP diagram
- ERD Diagram allows you to communicate with the logical structure of the database to users

Components of the ER Diagram

This model is based on three basic concepts: Entities, Attributes, Relationships

ER Diagram – Notations

- Rectangles represent entity sets.
- Diamonds represent relationship sets.
- Lines link attributes to entity sets and entity sets to relationship sets.
- Ellipses (Oval) represent attributes
- Double ellipses (Double Oval) represent multivalued attributes.
- Dashed ellipses (Dashed Oval) denote derived attributes.
- Underline indicates primary key attributes

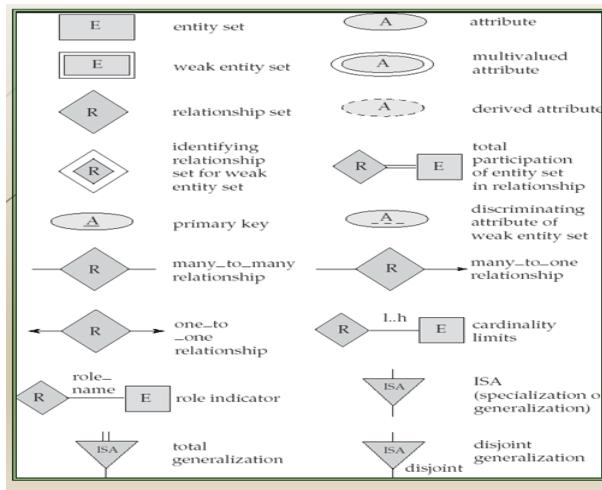


Figure 7.1 : Symbols used in ER Diagram

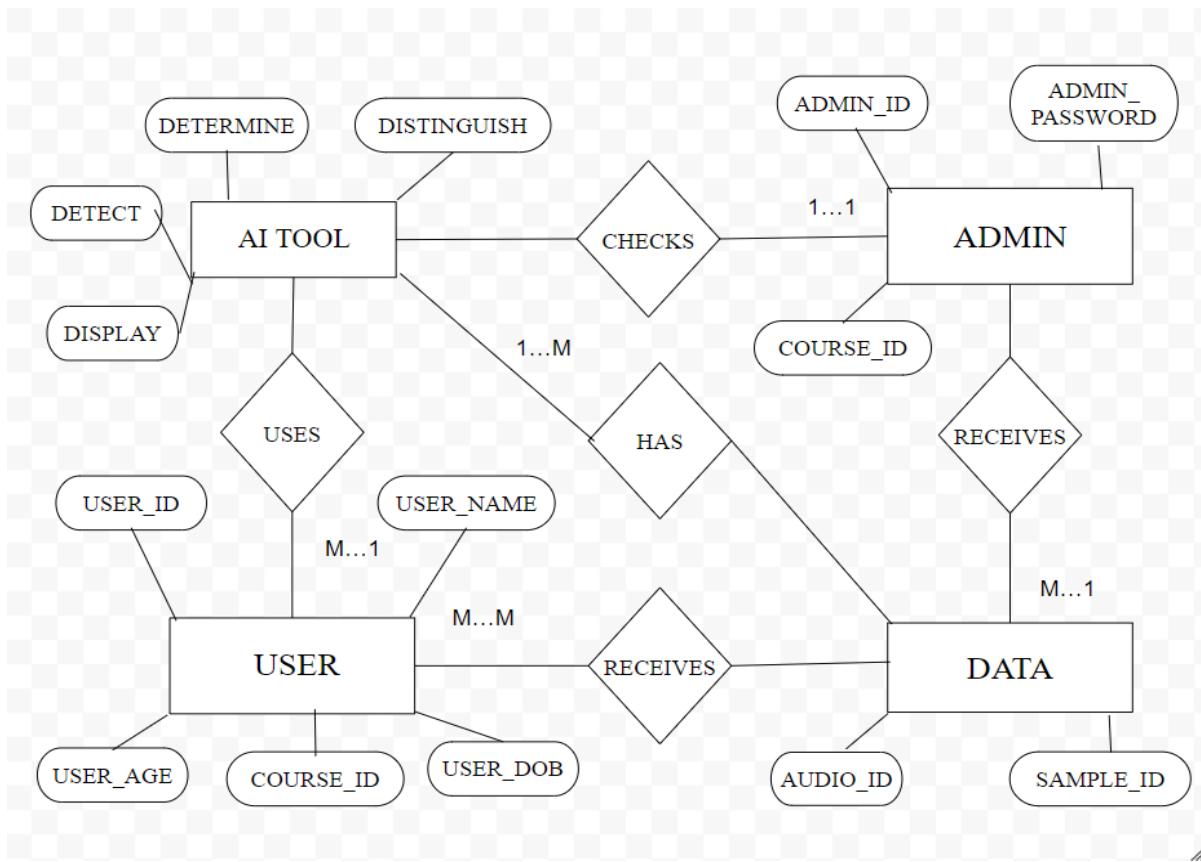


Figure 7.2 : ER diagram for Audio Detection System

- The ER diagram above represents the relationship between different entities and their corresponding attributes in our project. The four main entities are the user, admin, the AI tool and the database. Each of these entities have attributes (which are represented by the ovals connected to them). The relationship between these entities with each other is represented by the use of diamonds. For instance, the user uses the AI tool, the AI tool receives/has data from the database (that is, the DATA entity).
- The numeric relations of 1 to many, many to many, and many to 1 are also illustrated in the ER diagram of our project.

ADDITIONAL NOTES

- A database can be modeled as a collection of entities, relationship among entities.

- An entity is an object that exists and is distinguishable from other objects.

Example: specific person, company, event, plant

- Entities have attributes.

Example: people have names and addresses

- An entity set is a set of entities of the same type that share the same properties.

Example: set of all persons, companies, trees, holidays

- Express the number of entities to which another entity can be associated via a relationship set.

- Most useful in describing binary relationship sets.

- We express cardinality constraints by drawing either a directed line (->), signifying “one,” or an undirected line (—), signifying “many,” between the relationship set and the entity set.

- An entity is represented by a set of attributes, that is descriptive properties possessed by all members of an entity set.

Example: customer = (customer-id, customer-name, customer-street, customer-city)

loan = (loan-number, amount)

- Domain – the set of permitted values for each attribute

- Attribute types:

1. Simple and composite attributes.
2. Single-valued and multi-valued attributes

E.g. multivalued attribute: phone-numbers

3. Derived attributes-Can be computed from other attributes

E.g. age, given date of birth

Cardinality

- For a binary relationship set the mapping cardinality must be one of the following types:

1. One to one

A customer is associated with at most one loan via the relationship borrower. A loan is associated with at most one customer via borrower

2. One to many

A loan is associated with at most one customer via borrower, a customer is associated with several (including 0) loans via borrower

3. Many to one

A loan is associated with several (including 0) customers via borrower, a customer is associated with at most one loan via borrower

4. Many to many

A loan is associated with several (including 0) customers via borrower, a customer is associated with several loans (including 0) via borrower

Weak Entity Set

- An entity set that does not have a primary key is referred to as a weak entity set and represented by a double outlined box in E-R diagram.

Example : Consider the entity set payment which has three attributes : payment_number, payment_date and payment_amount. Payment numbers are sequential starting from 1 generally separately for each loan. Although each payment entity is distinct, payments for different loans may share the same payment number. Thus this entity set does not have a primary key.

Discriminator

- The discriminator (or partial key) of a weak entity set is the set of attributes that distinguishes among all the entities of a weak entity set

Example: discriminator of weak entity set payment is the attribute payment_number since for each loan a payment number uniquely identifies one single payment for that loan.

Specialization-Generalization-ISA

- E-R model provides means of representing these distinctive entity groupings
- Process of designating subgroupings within an entity set is called specialization depicted by triangle component labeled ISA ("is a")
- Bottom up design process in which multiple entity sets are synthesized into higher level entity set - Generalization
- ISA relationship may also be referred to as superclass-subclass relationship

- Higher and lower level entity sets are designated by the terms superclass and subclass.
- Specialization and generalization are simple inversions of each other; they are represented in an E-R diagram in the same way.

Total & Partial Participation

- Total participation (indicated by double line): every entity in the entity set participates in at least one relationship in the relationship set

E.g. participation of loan in borrower is total, every loan must have a customer associated to it via borrower

- Partial participation: some entities may not participate in any relationship in the relationship set

Example: participation of customer in borrower is partial

Cardinality limits

- Cardinality limits can also express participation constraints
- Minimum and maximum cardinality is expressed as l..h where l is the minimum and h is the maximum cardinality
- Minimum value of 1 indicates total participation of entity set in relationship set
- Maximum value of 1 indicates the entity participates in at most one relationship set.
- Maximum value of * indicates no limit

Role indicator

- Entity sets of a relationship need not be distinct
- The labels “manager” and “worker” are called roles; they specify how employee entities interact via the works-for relationship set.
- Roles are indicated in E-R diagrams by labeling the lines that connect diamonds to rectangles.
- Role labels are optional, and are used to clarify semantics of the relationship

Disjoint Generalization

- Disjointness constraint requires that an entity belong to more than one lower level entity set.
- Example: account entity can satisfy only one condition for account_type attribute ; entity can either be savings or chequing account but not both.

Result:

Thus, the entity relationship diagram was created successfully.



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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	8
Title of Experiment	Develop a Data Flow Diagram (Process-Up to Level 1)
Name of the candidate	MEENAKSHI GAYATHRI.S
Team Members	ANJANA.G, GAYATHRI.R
Register Number	RA211102901009
Date of Experiment	07/03/23

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
	Total	10	7

My
7/31/23

Staff Signature with date

Aim

To develop the data flow diagram up to level 1 for the <project name>

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

Data Flow Diagram

The DFD takes an input-process-output view of a system. That is, data objects flow into the software, are transformed by processing elements, and resultant data objects flow out of the software. Data objects are represented by labeled arrows, and transformations are represented by circles (also called bubbles). The DFD is presented in a hierarchical fashion. That is, the first data flow model (sometimes called a level 0 DFD or context diagram) represents the system as a whole. Subsequent data flow diagrams refine the context diagram, providing increasing detail with each subsequent level.

The data flow diagram enables you to develop models of the information domain and functional domain. As the DFD is refined into greater levels of detail, you perform an implicit functional decomposition of the system. At the same time, the DFD refinement results in a corresponding refinement of data as it moves through the processes that embody the application.

A few simple guidelines can aid immeasurably during the derivation of a data flow diagram:

- (1) Level 0 data flow diagram should depict the software/system as a single bubble;
- (2) Primary input and output should be carefully noted;
- (3) Refinement should begin by isolating candidate processes, data objects, and data stores to be represented at the next level;
- (4) All arrows and bubbles should be labeled with meaningful names;
- (5) Information flow continuity must be maintained from level to level and
- (6) One bubble at a time should be refined. There is a natural tendency to overcomplicate the data flow diagram. This occurs when you attempt to show too much detail too early or represent procedural aspects of the software in lieu of information flow.

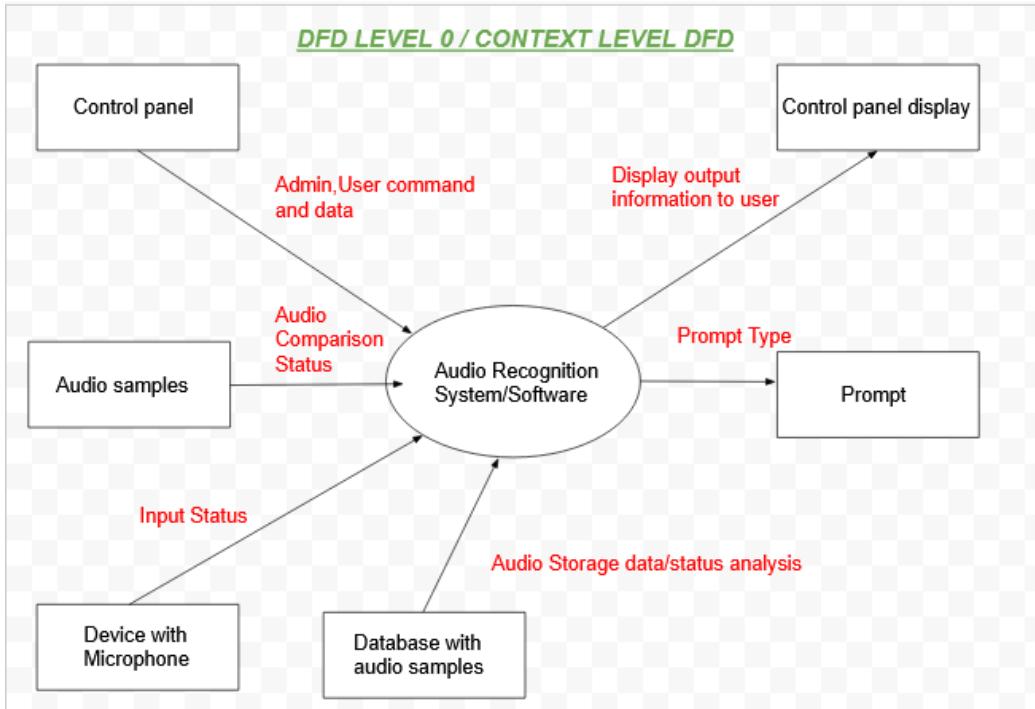


Figure 8.1 : DFD Diagram for level 0

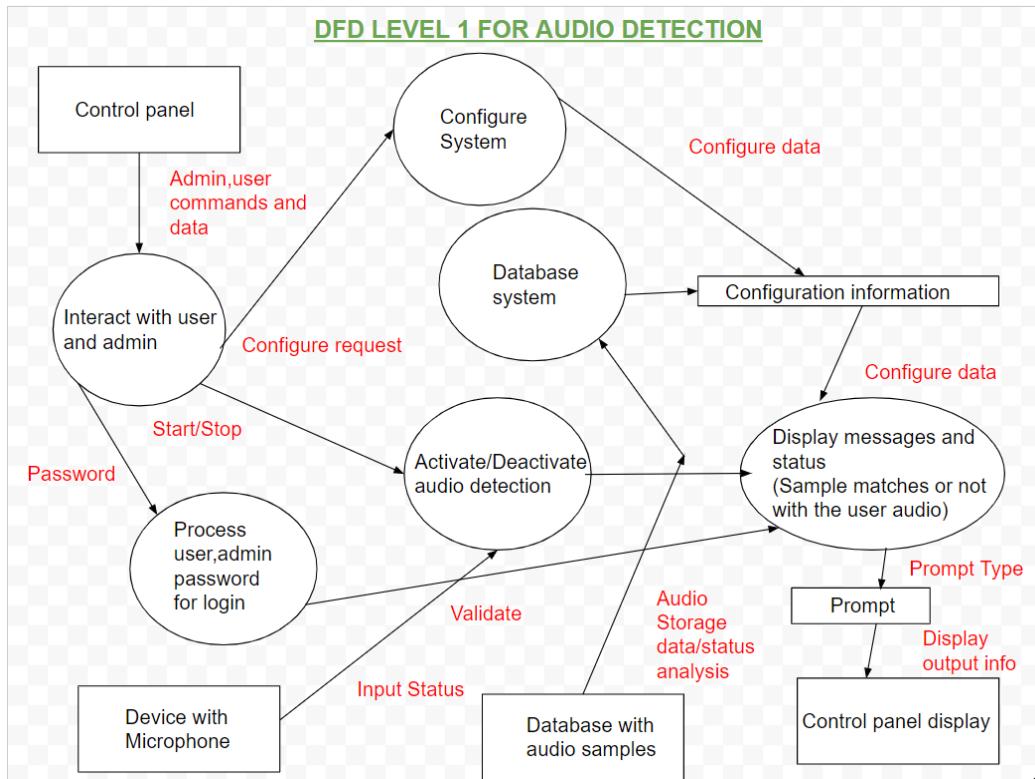


Figure 8.2 : DFD Diagram for Level 1

- The DFD for the audio detection system has been drafted with the required inputs and outputs.
- The Level 0 of the DFD gives a very basic idea regarding the inputs and outputs of the audio recognition system mapped with the help of the arrows/indicators. In this level the functioning aspects of the inputs and outputs are not mentioned.
- The Level 1 of the DFD gives a detailed description of the processes that happen between the input fetching and output delivery (to both admin and the user).

Result:

Thus, the data flow diagrams have been created for the Audio Detection system.



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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	9
Title of Experiment	Design a Sequence and Collaboration Diagram
Name of the candidate	MEENAKSHI YAMATHRI S
Team Members	ANJANA G, YAMATHRI R
Register Number	RA2111029010009
Date of Experiment	15/03/2023

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
Total		10	7

15/3/23

Staff Signature with date

Aim

To create the sequence and collaboration diagram for the Audio Detection System.

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep/Member
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

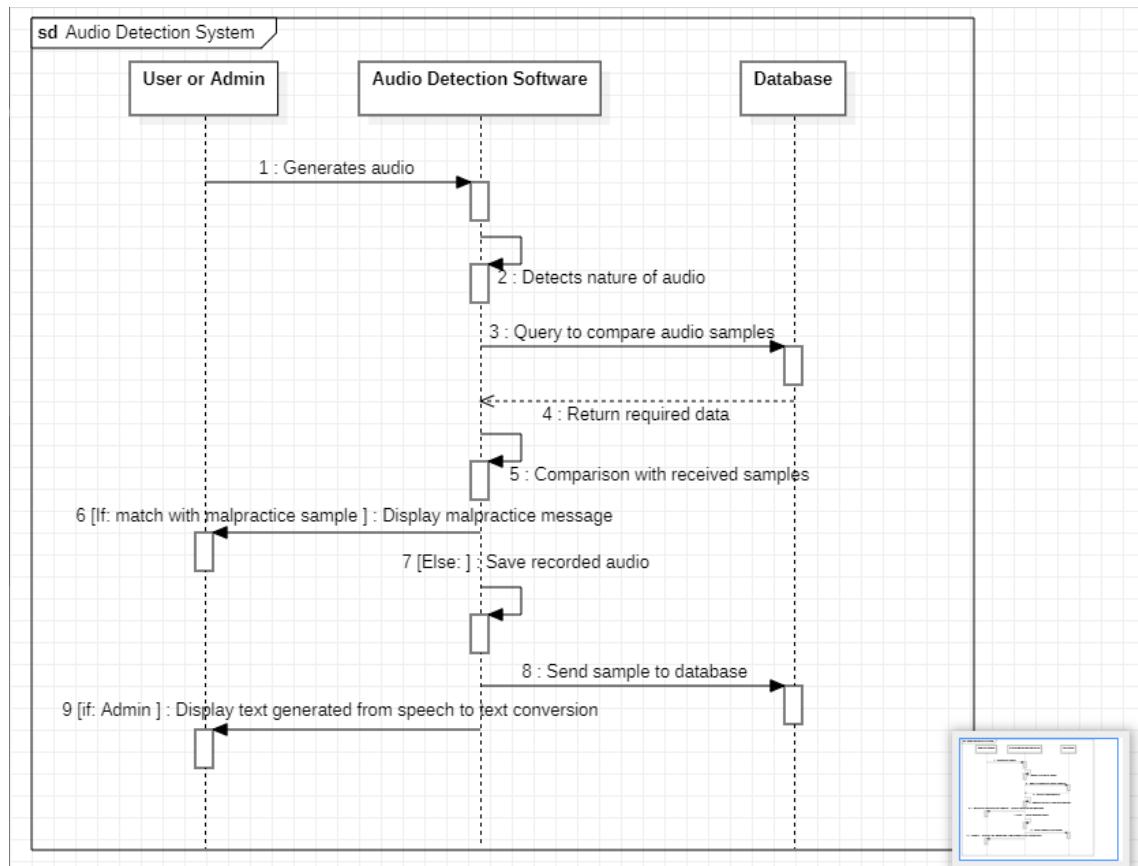


Figure 9.1 : Sequence Diagram

The three main lifelines as illustrated in the sequence diagram above are the user/admin, the audio detection software, and the database which will contain the sample audios that are to be used by the software for comparisons to detect whether the audio from the user indicates the registered forms of malpractice or not. The process begins with the user, who “begins the test”, following which the recording is initiated. The software detects the nature of the audio, and determines whether the audio indicates malpractice with the help of comparisons with the audio samples in the database. This is carried out through queries that are sent from the software to the database, which in turn sends the required samples. After the comparison is done, if malpractices

of any form are detected, the user is alerted of the same, else, the recorded audio is saved for future reference purposes, and is sent to the database for storing. If the overseer of this process is the admin, they would be provided with the option of looking into the text that is generated from the audio (which is generated by the text to speech converter), and the script would be displayed to them appropriately.

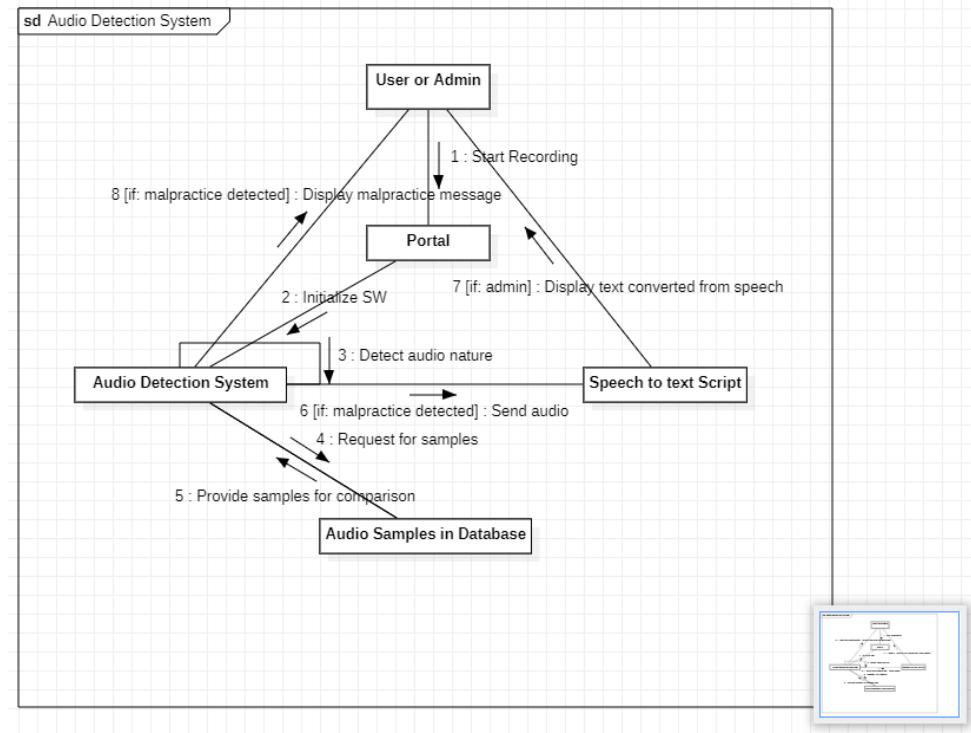


Figure 9.2 : Collaboration Diagram

The collaboration diagram above illustrates the structural representation of the process described in the sequence diagram section. The user/admin initiates the recording through the portal, after which the command to activate the audio detection software is executed. The audio system then detects the audio nature with the help of the audio samples in the database, which are sent and received upon request by the software and the database respectively. If malpractice of any form is detected, the malpractice message is displayed to the user, and the audio is sent to the speech to text converter as well, which converts the speech in the acquired audio into text. The script of this text can be accessed by the admin.

Result:

Thus, the sequence and collaboration diagrams were created for the Audio Detection System.



School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	10
Title of Experiment	Develop a Testing Framework/User Interface
Name of the candidate	MEENAKSHI GAYATHRI S
Team Members	ANJANA G, GAYATHRI R
Register Number	RA2111029010009
Date of Experiment	30/03/2023

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
	Total	10	7

Staff Signature with date

Aim

To develop the testing framework and/or user interface framework for the Audio Detection system.

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep/Member
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

SCOPE:

Audio detection in online examination refers to the use of software tools and technologies to identify and flag any unauthorized audio sources or disturbances during an online exam. The scope of audio detection in the online examination is to ensure the integrity and authenticity of the exam results by preventing cheating or unethical practices.

Audio detection tools can monitor the exam taker's microphone to identify any sounds that may indicate the use of unauthorized materials or assistance, such as whispering or the sounds of typing on a keyboard. Additionally, they can also detect any background noises or disturbances that may impact the exam's quality, such as barking dogs or loud music.

The scope of audio detection in online examinations is to enhance the security of the exam and ensure that all candidates are evaluated based on their own knowledge and abilities, rather than any outside help or resources. By flagging any suspicious audio activity during an exam, these tools can help to prevent cheating and maintain the integrity of the exam process.

OBJECTIVE:

The objective of an audio detection system in an online examination is to prevent cheating and ensure the integrity of the exam process. Audio detection systems are designed to monitor the exam taker's microphone and detect any unauthorized sounds or disturbances that may indicate cheating or using outside resources.

By flagging any suspicious audio activity, such as the sounds of whispering or typing on a keyboard, the system can alert the exam proctor to investigate further and take appropriate action, such as disqualifying the exam taker or investigating the incident further.

An audio detection system aims to create a fair and level playing field for all exam takers, ensuring that they are evaluated based solely on their own knowledge and abilities. This helps to maintain the credibility and validity of the exam results and ensures that they are an accurate reflection of the exam taker's skills and knowledge.

APPROACH:

The approach of an audio detection system in online examination typically involves using advanced software algorithms and machine learning techniques to analyze audio signals and identify any suspicious or unauthorized activity.

These systems typically work by monitoring the exam taker's microphone and analyzing the audio signal in real time. They use a combination of audio processing techniques, such as signal processing and feature extraction, to identify specific audio patterns that may indicate cheating or the use of unauthorized materials.

For example, the system may be programmed to identify the sound of whispering, typing on a keyboard, or the use of electronic devices, such as cell phones or smartwatches. It may also be trained to detect background noises or disturbances that may indicate the presence of unauthorized individuals in the room.

Once the system detects any suspicious audio activity, it can alert the exam proctor to investigate further and take appropriate action, such as disqualifying the exam taker or launching a more detailed investigation.

Overall, the approach of an audio detection system in an online examination is to use advanced software and machine learning techniques to monitor and analyze audio signals in real-time, in order to detect any suspicious or unauthorized activity and maintain the integrity of the exam process.

FUNCTIONAL TESTING:

Functional Testing refers to the type of testing that verifies the system's behavior or functionality according to the requirements specifications. It aims to ensure that the system works according to its intended purpose. Here is the functional testing of the given code:

Upon clicking on the 'Register' button, the Register function should be called, and a new window should open for user registration.

When a user enters valid login credentials and clicks on the 'Submit' button, the system should save the user's data in the database.

When a user tries to log in with valid credentials, the system should grant access to the system and show the dashboard screen.

If a user enters invalid credentials, the system should display an error message.

NON-FUNCTIONAL TESTING:

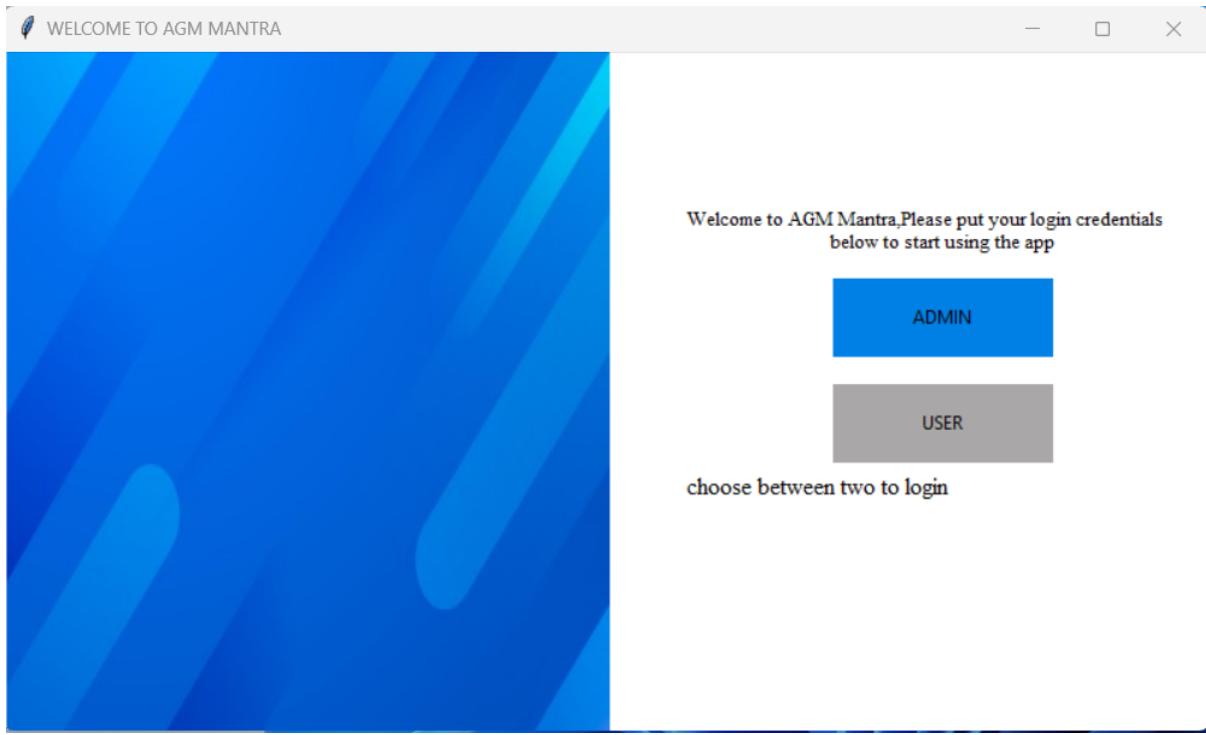
Non-Functional Testing refers to the type of testing that verifies the system's non-functional aspects such as performance, usability, reliability, etc. Here is the non-functional testing of the given code:

The user interface should be user-friendly and easy to use.

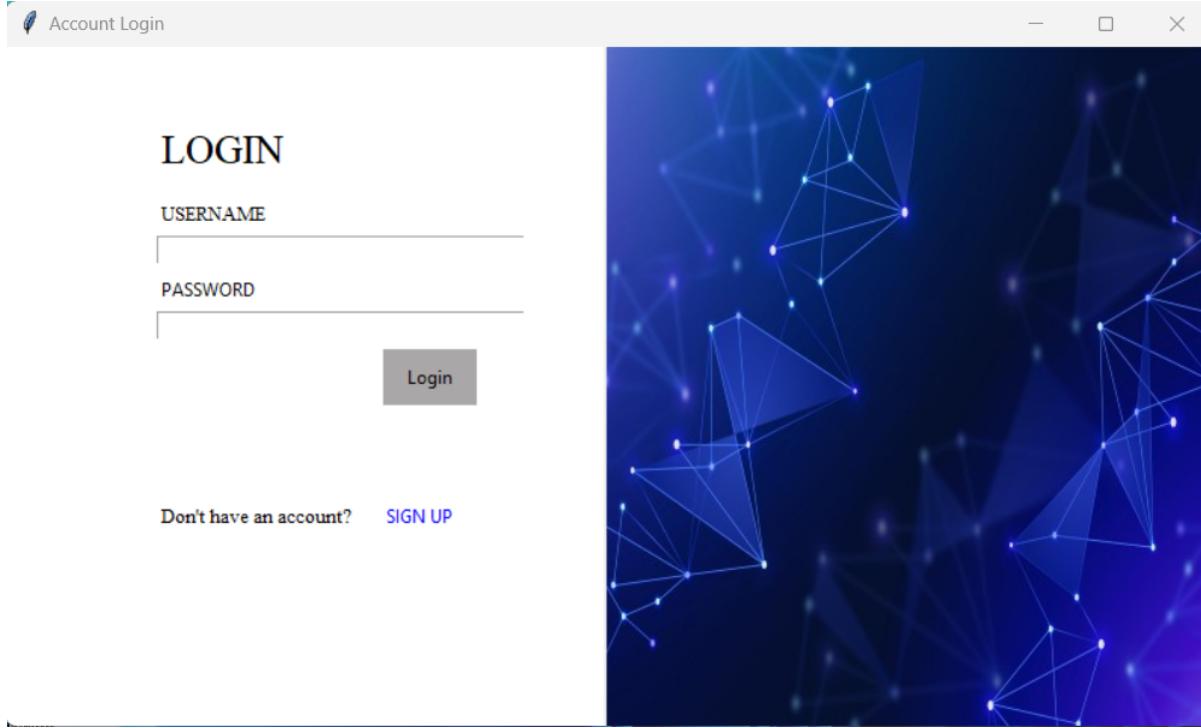
The system should respond quickly to user input.

The system should handle multiple users simultaneously without crashing.

The system should be secure and protect user data from unauthorized access.



```
main_screen=Tk()
main_screen.geometry('800x450')
main_screen.config(bg = "white" )
#main_screen_HEADING = ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\the sepm\5559852.jpg"))
#Label(main_screen,image = main_screen_HEADING).pack()
#main_screen.iconbitmap(r"C:\Users\DELL\Desktop\Moonsun hospital\background\hospital-2_icon-icons.com_66067.ico")
main_screen.title("WELCOME TO AGM MANTRA")
main_screen_img = ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\the sepm\5559852.jpg"))
#login_button_img = ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\Desktop\Moonsun hospital\background\icons8-login-32.png"))
#register_button_img= ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\Desktop\Moonsun hospital\background\icons8-register-32.png"))
Label(text="",image = main_screen_img ,bg="white").pack(side=LEFT)
Button(main_screen,text="ADMIN", height=3, width=20,bg="#008080",compound="left",borderwidth=0,command=login).place(x=550,y=150)
Button(text="USER", height=3,bg="#A9A7A7", width=20,compound="left",borderwidth=0,command=login).place(x=550,y=220)
l1=Label(main_screen,text="""choose between two to login""",bg='white',font=( "Times New Roman",12)).place(x=450,y=275)
l=Label(main_screen,text="""Welcome to AGM Mantra,Please put your login credentials  
below to start using the app""",bg='white',font=( "Times New Roman",10)).place(x=450,y=100)
username=StringVar()
email=StringVar()
password=StringVar()
var=IntVar()
main_screen.mainloop()
```



```

def login():
    global login
    username=StringVar()
    email=StringVar()
    password=StringVar()
    confirm_password=StringVar()
    ECODEI=StringVar()
    #var=StringVar()
    login_screen=Toplevel()
    login_screen.geometry('800x450')
    login_screen.title('Account Login')
    login_screen.config(bg="white")
    #login_screen.iconbitmap(r"C:\Users\DELL\Desktop\Moonsun hospital\background\hospital-2_icon-icons.com_66067.ico")
    login_screen_img =ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\5135289.jpg"))
    lb2 = Label(login_screen,image =login_screen_img)
    lb2.image =login_screen_img
    lb2.pack(side=RIGHT)
    Label(login_screen,text="LOGIN",bg="white",font=("Times New Roman",20)).place(x=100,y=50)
    Label(login_screen,text="LOGIN",bg="white",font=("Times New Roman",10))
    Label(login_screen, text="USERNAME",bg="white",font=( "Times New Roman",10)).place(x=100,y=100)
    username_login_entry = Entry(login_screen, textvariable="username",width=40)
    username_login_entry.place(x=100,y=125)
    Label(login_screen, text="PASSWORD",bg="white").place(x=100,y=150)
    ll1=Label(login_screen, text="''Don't have an account?''",bg="white",font=( "Times New Roman",10)).place(x=100,y=300)
    password_login_entry = Entry(login_screen, textvariable="password", show= '*',width=40)
    password_login_entry.place(x=100,y=175)
    def OK():
        username = username_login_entry.get()
        password = password_login_entry.get()

        mydb = mysql.connector.connect(host="localhost",user="root",passwd="welcome123456",database="Audio_detection")
        cursor = mydb.cursor()

        savequery = "SELECT * FROM Login_Table WHERE username=%s AND password=%s"
        # Get the records with these username and password ONLY
        cursor.execute(savequery,(username,password))
        myresult = cursor.fetchone()

        if myresult: # If there is such a record, then success
            messagebox.showerror("LOGIN ERROR","LOGIN ERROR")
            # Whatever you want to do after user is authentic

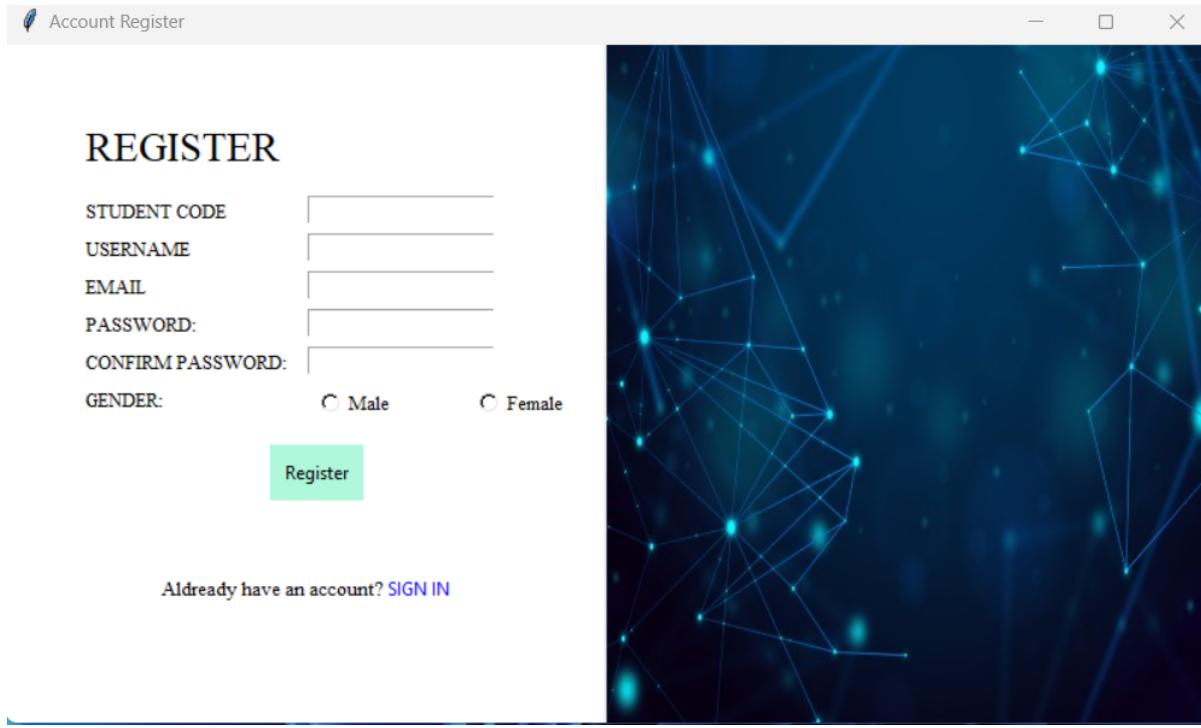
        else:
            login_screen.destroy()
            start_recording()

        if myresult: # If there is such a record, then success
            messagebox.showerror("LOGIN ERROR","LOGIN ERROR")
            # Whatever you want to do after user is authentic

        else:
            login_screen.destroy()
            start_recording()

        cursor.close()
        mydb.close()
    Button(login_screen, text="Login", height=2, width=8,bg="#A9A7A7",command=OK,borderwidth=0).place(x=250 , y = 200 )
    Button(login_screen, text="SIGN UP",height=1,width=6,bg="white",borderwidth=0,command=Register,fg="Blue").place(x=250,y=300)

```



```

def Register():
    global Register
    Register_screen=Toplevel()
    Register_screen.geometry('800x450')
    Register_screen.config(bg="white")
    #Register_screen.iconbitmap(r'C:\Users\Del\Desktop\Moonsun hospital\background\hospital-2_icon-icons.com_66067.ico')
    #Register_screen_img = ImageTk.PhotoImage(Image.open(r"C:\Users\Del\Desktop\Moonsun hospital\background\Different Pills And Equipment At Paper.jpeg"))
    #lbl = Label(Register_screen,image =Register_screen_img)
    #lbl.image_=Register_screen_img
    #lbl.grid(column=0, rows=3)
    Register_screen.title('Account Register')

    username=StringVar()
    email=StringVar()
    password=StringVar()
    confirm_password=StringVar()
    ECODE1=StringVar()
    #var=StringVar()

    l_screen_img =ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\3409297.jpg"))
    l = Label(Register_screen,image =l_screen_img)
    l.image_=l_screen_img
    l.pack(side=RIGHT)

    Label(Register_screen, text="CODE",bg="white",font=("Times New Roman",10)).place(x=50,y=100)
    username_login_entry = Entry(Register_screen, textvariable=ECODE1)
    username_login_entry.place(x=200,y=100)
    Label(Register_screen, text="USERNAME",bg="white",font=("Times New Roman",10)).place(x=50,y=125)
    email_login_entry = Entry(Register_screen, textvariable=username)
    email_login_entry.place(x=200,y=125)
    Label(Register_screen, text="EMAIL",bg="white",font=("Times New Roman",10)).place(x=50,y=150)
    email_login_entry = Entry(Register_screen, textvariable=email)
    email_login_entry.place(x=200,y=150)
    Label(Register_screen, text="PASSWORD:",bg="white",font=("Times New Roman",10)).place(x=50,y=175)
    password_login_entry = Entry(Register_screen, textvariable=password, show='*')
    password_login_entry.place(x=200,y=175)
    Label(Register_screen, text="CONFIRM_PASSWORD:",bg="white",font=("Times New Roman",10)).place(x=50,y=200)
    confirmPassword_login_entry = Entry(Register_screen, textvariable=confirm_password, show='*')
    confirmPassword_login_entry.place(x=200,y=200)
    gen=IntVar()
    Label(Register_screen, text="GENDER:",bg="white",font=("Times New Roman",10)).place(x=50,y=225)
    Radiobutton(Register_screen, text="Male",padx=5,variable=gen,value=1,font=("Times New Roman",10),bg="white").place(x=200,y=225)
    Radiobutton(Register_screen, text="Female",padx=10,variable=gen,value=2,font=("Times New Roman",10),bg="white").place(x=300,y=225)
    Label(Register_screen, text="REGISTER",font=("Times New Roman",20),bg="white").place(x=50,y=50)

    def submit():
        
```

Figure 10.1 : User interface and Code snippet

Result:

Thus, the testing framework/user interface framework has been created for the Audio detection system.



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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	11
Title of Experiment	Test Cases
Name of the candidate	MEENAKSHI GAYATHRI S
Team Members	ANJANA G, GAYATHRI R
Register Number	RA2111029010009
Date of Experiment	06/04/2023

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3 -5
2	Viva	5	3 5
	Total	10	7

[Signature]

Staff Signature with date

Aim

To develop the test cases manual for the audio detection system.

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

Test Cases Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Verify User Registration	Receive the Username and the password from the user/admin	1. User clicks on the “Register” button. 2. User enters the required details for their registration. 3. User clicks on the “Sign Up” button.	User is taken to the next page with the options to start taking the test. initiate the recording, gain access to sample audios and text generated from the audios.	Same as expected outcome.	Pass	Success
2	Verify User Login	Receive the Username and the password from the user/admin	1. User selects “user” or ”admin”. 2. User enters the username and the password in the given text boxes. 3. User clicks on the “sign in” button.	User is taken to the next page with the options to start taking the test. initiate the recording, gain access to sample audios and text generated from the audios.	Same as expected outcome.	Pass	Success
3	Enable recording after verifying the proper working of microphone	Check for microphone compatibility and, accept the command to begin the recording (“take the test”)	1. The user is notified of the functioning of the microphone, and is asked to fix it if the mic is dysfunctional. 2. The user clicks on “take the test”.	After verifying that the requirements are satisfied, the recording begins.	Same as expected outcome.	Pass	Success

Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Creation of new account if required	If the details of the user are not present in the database, “Don’t have an account? SIGN UP” opens up a new registration window.	The user clicks on the “Don’t have an account? SIGN UP” button.	The new registration window is opened	Same as expected outcome.	Pass	Success
2	Hiding of Password	The password is not displayed while being typed as is - that is, as alphanumeric characters; each character will instead be displayed as a star - '*'.	User enters their password in the password section provided.	Password typed out by the user is displayed as a string of '*'s.	Same as expected outcome.	Pass	Success
3	Ensuring compatibility	To make sure that the hardware components (microphone/PC) work in line with the software system.	Constantly check whether or not the microphone is picking up audio, and to display the appropriate messages.	When audio is detected, the script is shown along with any malpractice detection.	Same as expected outcome.	Pass	Success

Result:

Thus, the test case manual has been created for the audio detection system.



School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	12
Title of Experiment	Manual Test Case Reporting
Name of the candidate	MEENAKSHI GAYATHRI.S
Team Members	ANJANA.U, GAYATHRI.R
Register Number	RA&111029010009
Date of Experiment	17/04/2023

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	8.5
2	Viva	5	3.5
	Total	10	7

Staff Signature with date

Aim

To prepare the manual test case report for the Audio Detection System

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep/Member
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

MANUAL TEST CASE REPORT:

FUNCTIONAL TESTING:

Category	Progress Against Plan	Status
Username to be an existing user/admin after registration.	Green	Completed
Username to be a non-existing user/admin for registration	Green	Completed
Password to be unique and hidden	Green	Completed
User and Admin button to be viewable and clear	Green	Completed
Login button for user and admin should direct to the next page of the interface	Green	Completed
Audio detection to be started once the user and the admin login to their account	Green	Completed

NON-FUNCTIONAL TESTING:

Category	Progress Against Plan	Status
Enabling forgot password option for the users	Red	Not completed
Assurance that the user/admin has entered the correct credentials	Amber	In progress
Confirm whether the portal is authentic or not	Red	Not Completed
Password should be hidden	Green	Completed

Functional	Test Case Coverage (%)	Status
User/AdminLogin	100%	Completed
Audio detection	100%	Completed

Result:

Thus, the test case report has been created for the Audio Detection System.



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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	13
Title of Experiment	Provide the details of Architecture Design/Framework/Implementation
Name of the candidate	MEENAKSHI GAYATHRI S
Team Members	ANJANA G, GAYATHRI R
Register Numbers	RA211029010009
Date of Experiment	24/04/2023

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	3.5
2	Viva	5	3.5
	Total	10	7

Varji

Staff Signature with date

Aim

To provide the details of architectural design/framework/implementation

Team Members:

S No	Register No	Name	Role
1	RA2111029010009	Meenakshi Gayathri S	Rep/Member
2	RA2111029010017	Anjana G	Member
3	RA2111029010033	Gayathri R	Member

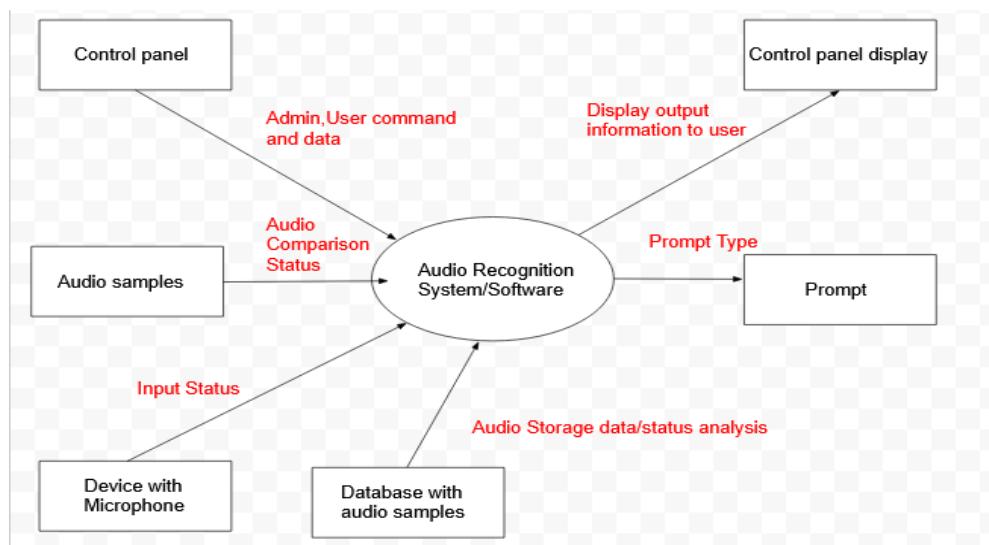
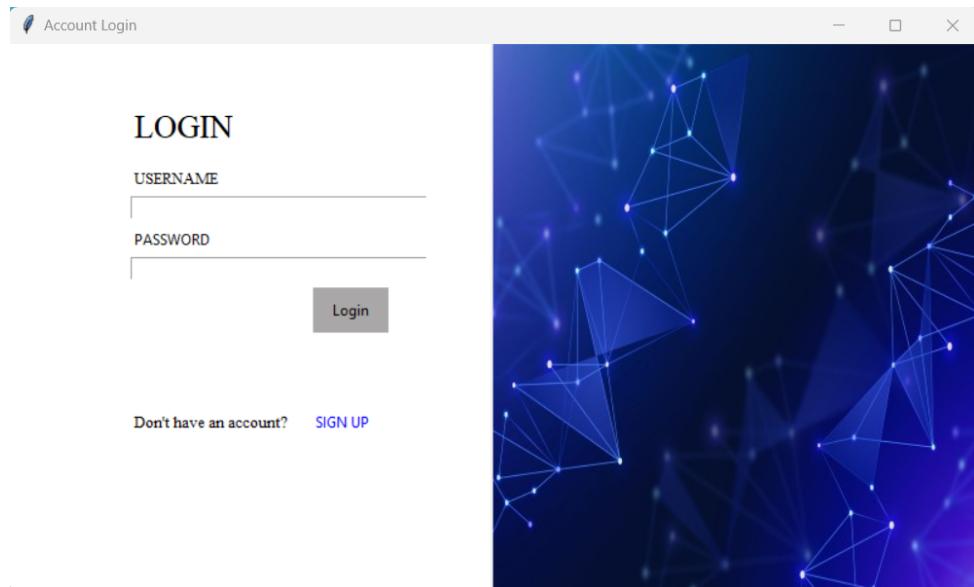
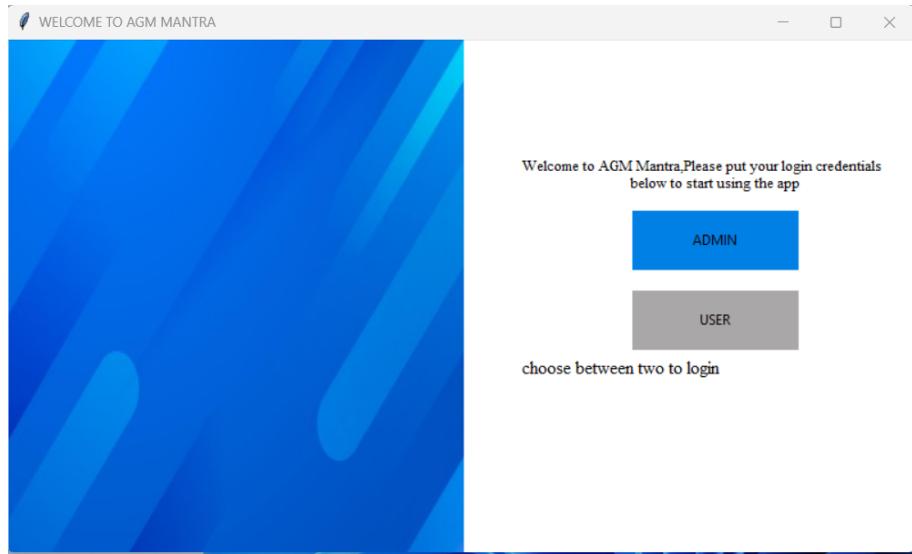


Figure 13.1 : Architectural Design



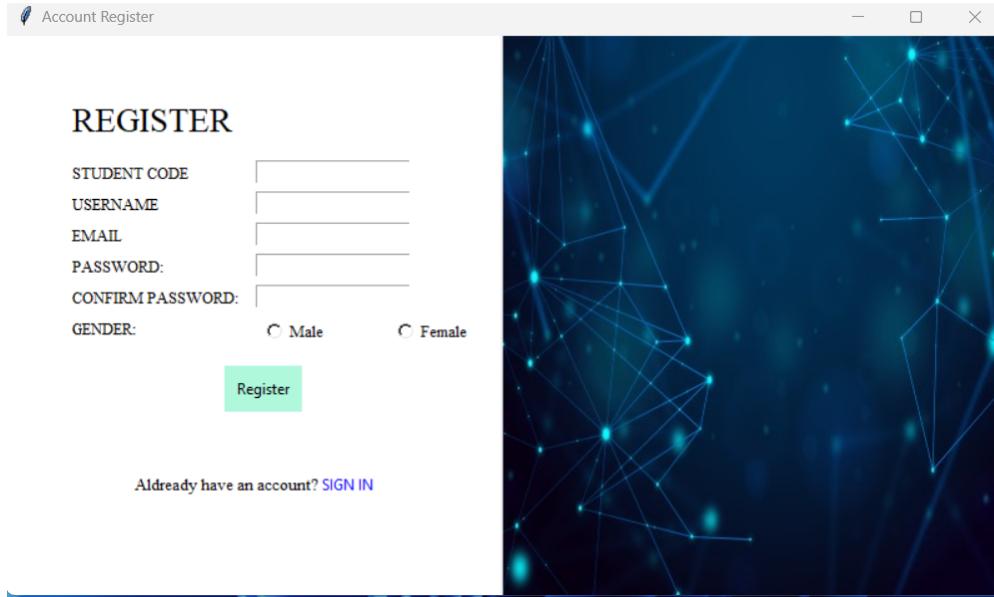


Figure 13.2 : Framework

```

main_screen=Tk()
main_screen.geometry('800x450')
main_screen.config(bg = "white" )
#main_screen_HEADING = ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\the sepm\5559852.jpg"))
#Label(main_screen,image = main_screen_HEADING).pack()
#main_screen.iconbitmap(r"C:\Users\DELL\OneDrive\Desktop\the sepm\5559852.ico")
main_screen.title("WELCOME TO AGM MANTRA")
main_screen_img = ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\the sepm\5559852.jpg"))
#login_button_img = ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\the sepm\icons8-login-32.png"))
#register_button_img= ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\the sepm\icons8-register-32.png"))
Label(text="",image = main_screen_img ,bg="white").pack(side=LEFT)
Button(main_screen,text="ADMIN", height=3, width=20,bg="#0080B5",compound="left",borderwidth=0,command=login).place(x=550,y=150)
Button(text="USER", height=3,bg="#A9A7A7", width=20,compound="left",borderwidth=0,command=login).place(x=550,y=220)
l1=Label(main_screen,text='''choose between two to login''',bg='white',font=("Times New Roman",12)).place(x=450,y=275)
l1=Label(main_screen,text='''Welcome to AGM Mantra,Please put your login credentials
below to start using the app''',bg='white',font=("Times New Roman",10)).place(x=450,y=100)
username=StringVar()
email=StringVar()
password=StringVar()
var=IntVar()
main_screen.mainloop()

```

```

def login():
    global login
    username=StringVar()
    email=StringVar()
    password=StringVar()
    confirm_password=StringVar()
    ECODE1=StringVar()
    #var=StringVar()
    login_screen=Toplevel()
    login_screen.geometry('800x450')
    login_screen.title('Account Login')
    login_screen.config(bg="white")
    #login_screen.iconbitmap(r":\Users\DELL\OneDrive\Desktop\5135289.jpg")
    login_screen_img =ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\5135289.jpg"))
    lb2 = Label(login_screen,image =login_screen_img)
    lb2.image =login_screen_img
    lb2.pack(side=RIGHT)
    Label(login_screen,text="LOGIN",bg="white",font=("Times New Roman",20)).place(x=100,y=50)
    Label(login_screen,text="LOGIN",bg="white",font=("Times New Roman",10))
    Label(login_screen, text="USERNAME",bg="white",font=("Times New Roman",10)).place(x=100,y=100)
    username_login_entry = Entry(login_screen, textvariable="username",width=40)
    username_login_entry.place(x=100,y=125)
    Label(Login_screen, text="PASSWORD",bg="white").place(x=100,y=150)
    ll=Label(login_screen,text="Don't have an account?",bg='white',font=("Times New Roman",10)).place(x=100,y=300)
    password_login_entry = Entry(login_screen, textvariable="password", show= '*',width=40)
    password_login_entry.place(x=100,y=175)
    def OK():
        username = username_login_entry.get()
        password = password_login_entry.get()

    mydb = mysql.connector.connect(host="localhost",user="root",passwd="welcome123456",database="Audio_detection")
    cursor = mydb.cursor()

    savequery = "SELECT * FROM Login_table WHERE username=%s AND password=%s"
    # Get the records with these username and password ONLY
    cursor.execute(savequery,(username,password))
    myresult = cursor.fetchone()

    if myresult: # If there is such a record, then success
        messagebox.showerror("LOGIN ERROR","LOGIN ERROR")
        # Whatever you want to do after user is authentic

    else:
        login_screen.destroy()
        start_recording()

    if myresult: # If there is such a record, then success
        messagebox.showerror("LOGIN ERROR","LOGIN ERROR")
        # Whatever you want to do after user is authentic

    else:
        login_screen.destroy()
        start_recording()

    cursor.close()
    mydb.close()
    Button(login_screen,text="Login", height=2, width=8,bg="#A9A7A7",command=OK,borderwidth=0).place(x=250 , y = 200 )
    Button(login_screen,text="SIGN UP",height=1,width=6,bg="white",borderwidth=0,command=Register,fg="Blue").place(x=250,y=300)

```

```

def Register():
    global Register
    Register_screen=Toplevel()
    Register_screen.geometry('800x450')
    Register_screen.config(bg="white")
    #Register_screen.iconbitmap(r"C:\Users\DELL\OneDrive\Desktop\3409297.jpg")
    #Register_screen_img =ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\3409297.jpg"))
    #lbl = Label(Register_screen,image =Register_screen_img)
    #lbl.image =Register_screen_img
    #lbl.grid(column=0, row=3)
    Register_screen.title('Account Register')

    username=StringVar()
    email=StringVar()
    password=StringVar()
    confirm_password=StringVar()
    ECODE1=StringVar()
    #var=StringVar()

    l_screen_img =ImageTk.PhotoImage(Image.open(r"C:\Users\DELL\OneDrive\Desktop\3409297.jpg"))
    l = Label(Register_screen,image =l_screen_img)
    l.image =l_screen_img
    l.pack(side=RIGHT)

    Label(Register_screen, text="CODE",bg="white",font=( "Times New Roman",10)).place(x=50,y=100)
    username_login_entry = Entry(Register_screen, textvariable=ECODE1)
    username_login_entry.place(x=200,y=100)
    Label(Register_screen, text="USERNAME",bg="white",font=( "Times New Roman",10)).place(x=50,y=125)
    email_login_entry = Entry(Register_screen, textvariable=username)
    email_login_entry.place(x=200,y=125)
    Label(Register_screen, text="EMAIL",bg="white",font=( "Times New Roman",10)).place(x=50,y=150)
    email_login_entry = Entry(Register_screen, textvariable=email)
    email_login_entry.place(x=200,y=150)
    Label(Register_screen, text="PASSWORD:",bg="white",font=( "Times New Roman",10)).place(x=50,y=175)
    password_login_entry = Entry(Register_screen, textvariable=password, show= '*')
    password_login_entry.place(x=200,y=175)
    Label(Register_screen, text="CONFIRM PASSWORD:",bg="white",font=( "Times New Roman",10)).place(x=50,y=200)
    confirmPassword_login_entry = Entry(Register_screen, textvariable=confirm_password, show= '*')
    confirmPassword_login_entry.place(x=200,y=200)
    gen=IntVar()
    Label(Register_screen, text="GENDER:",bg="white",font=( "Times New Roman",10)).place(x=50,y=225)
    Radiobutton(Register_screen,text="Male",padx=5,variable=gen,value=1,font=( "Times New Roman",10),bg="white").place(x=200,y=225)
    Radiobutton(Register_screen,text="Female",padx=10,variable=gen,value=2,font=( "Times New Roman",10),bg="white").place(x=300,y=225)
    Label(Register_screen, text="REGISTER",font=( "Times New Roman",20),bg="white").place(x=50,y=50)

    #An E message box

```

Figure 13.3 : Implementation

Implementation: Design implementation refers to the real, live running of the designed program.

The above screenshots of the code illustrate the functioning behind the interface as well as the detection of audio.

Result:

Thus, the details of architectural design/framework/implementation along with the screenshots were provided.

CONCLUSION

Thus, the development of the audio detection software was executed successfully. The creation of a business case, arriving at the problem statement, identifying the ideal process methodology to be the waterfall model, describing the stakeholders involved and their significance in the project, deriving the functional, system, and non-functional requirements for the combined working of the software and hardware, preparing a project plan and defining roles of team members, creating a timeline chart and analyzing the risks that may be encountered, designing system architecture, use case and class diagrams, entity relationship diagrams, data flow diagrams, sequence and collaboration diagrams, and finally developing a user interface and defining and carrying out test cases were all procedures of great significance in every step of the development of the audio detection software system. The audio detection system is able to detect audio, determine whether any form of malpractice is taking place through distinguishing between the recording and the sample questions text, and displaying messages to the user in line with the detection. This system has been designed to focus solely on detecting suspicious audio activity related to the exam content, and not on any conversations or noises from the outside, or any other audio that is unrelated to the user's test that may be picked up by the microphone. By preventing cheating, the system ensures that each student is evaluated based solely on their own knowledge and abilities, and also helps in alleviating the workload of human online exam administrators, where the audio system automates the process of monitoring one more aspect to take care of, which enables the human administrators to focus on other important aspects of the exam process. Potential areas of further research in line with this project include audio based detection of malpractice through translation of different languages and comparing question texts of the examination, combination of enhanced audio detection and video detection in online exam proctoring by AI, developing on the process of sensing the usage of phones or other devices by tracking activity through audio, video, and even signal based detections.