

## Software Requirements Specification Documents-Version 2

Team Number	Team 33
Project Title	Framework for Automated Student Assessment using NLP - Audio
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### Brief problem statement

This application allows students to improve their skills through ongoing daily assessment and being supervised by an experienced teacher. Doing this physically is time-consuming and is an administrative burden.

The current work proposes to automate the test-taking/grading process by using the audio of the student-teacher interactions during class, to perform this assessment. The work shall start with a limited set of known questions with clear answers in the form of multiple choices or True/False. Based on the progress of work, an exploration into the use of semantic matching for allowing rephrasing of the questions by the teacher may be carried out.

To summarise main features of this application are:

- Automate the student assessment based on the student-teacher interactions during class.
- Start with basic MCQs and True/False questions and further expand the work too long answer questions.

### Profile of Users

The UI developed is meant only for demonstrative purposes only, hence has one end-user with a specific use case - the dev team to demo to an audience. As such the user must be capable of using the system by providing input audio and receiving output evaluation, through a clean self-explanative UI.

User:

- Have access to the internet.
- Need privacy of the assessment done.

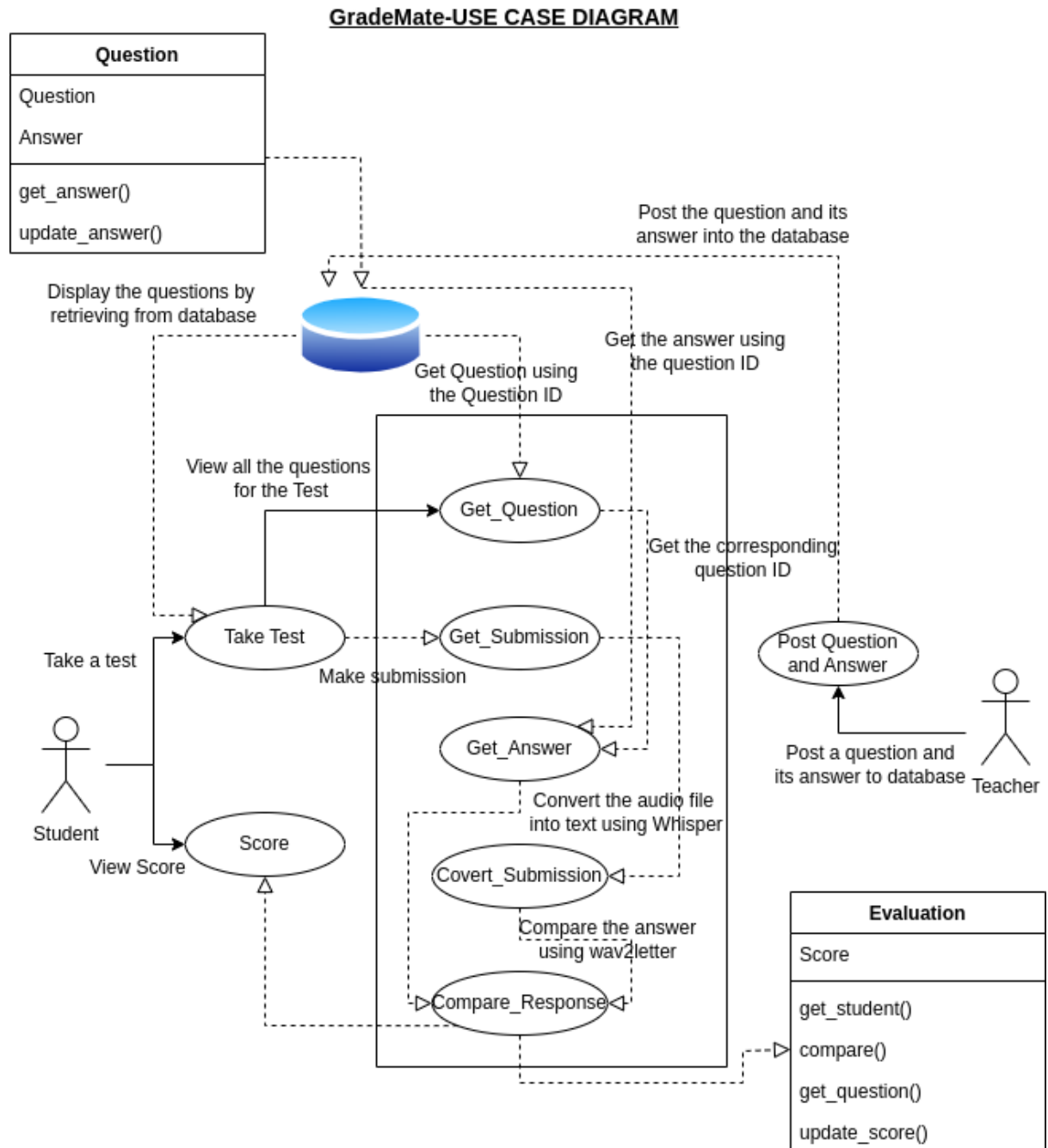
### Project Modules

- User Management
  - Recognize the question teacher asked during the class interaction.
  - Take input audio.
  - Display feedback from the candidate.
- ASR Module
  - Conversion of user audio into text.
  - We also identify which user is speaking in the audio file.
- Evaluation Module
  - Find the corresponding answer to the posted question.
  - Evaluate based on the scheme and produce the score.

### Features Requirements (Described using use cases)

S.No	User Case Name	Description	Release
1.	Registration for Students/Teachers	The different registration portals for Teachers and students	R1
2.	View/Update Profile	The user has a profile page, the user also has the option to update the information present on the page.	R1
3.	Speech Recognition	The audio file submitted by the student must be converted into text, for further analysis, this was done using the Whisper ASR module, except for the integration, the working model was built by R1.	R1
4.	Response Analysis	The Response file i.e, the file obtained as a result of the ASR module was compared with the existing answer in the database, to make the analysis of the answer submitted.	R2
5.	Take a Test	The student as a user has the option to take a test, where a dropdown of questions is present, and he can end the test at any time if the user wishes to do so.	R2
6.	Audio Recording	The option for audio recording was set up in the application, after R1, which records the audio from the student and pushes it into the backend.	R2
7.	View Analysis	The student after submission of the test has the option to view the analysis. The analysis of the previous tests will also be stored for future reference.	R2
8.	Post a Question	The Teacher has the option to post a question and its answer into the database	R2
9.	Update Question and Answer	The Teacher has the option to update an already existing question and its answer in the database	R2
10.	Integrate Backend	The created backend and the external ASR modules must be integrated with the front-end already created.	R2

## Use Case Diagram



## User Stories

Student as the User		
Use Case	As a student, I want	So that
View/Update Profile	As a student, I want an option to view my profile with all my details and my progress in the tests I take.	It would be helpful for me to access my weak area and share my progress with my parents easily.
Take a Test	As a student, I want an option to take a test, which is the sole purpose of the application.	It helps me to evaluate myself and learn more by knowing my mistakes.
Audio Recording	As a student, I want an option to record audio rather than audio file submission.	It would be difficult to record audio on another device and upload it here, so it would be easier if there is an option to record audio here.
View Analysis	As a student, I want an option to view my analysis for every test I take.	It helps me to evaluate myself and learn more by knowing my mistakes.

Teacher as the User		
Use Case	As a teacher, I want	So that
View/Update Profile	As a teacher, I want an option to view my profile with all my details and the question I added.	It would be helpful for finding any mistakes in the questions and answers
Post a Question	As a teacher, I want an option to add new questions along with answers to the database.	Numerous questions help to increase the quality of the tests students take.
Update a Question or Answer	As a teacher, I want an option to update existing questions or answers.	Any mistake found in the question or answer can be sorted to prevent the passage of wrong information.