Teach-Me Application

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***Abstract*—This document gives an overview about the progress made in the first phase of the project including the objectives, deliverables, issues along with its mitigation plan and test strategies.**

I. Objectives

- To create an online system aimed to teach students a particular subject.
- The application should be compliant to student's ability and should evaluate them accordingly.
- The application should give feedback about the student's performance.
- The system should be robust and durable.
- It should easily accessible to authorized personnel and restrict access to unauthorized personnel.

II. Deliverables

- Artifacts of Inception and FURPS+ document.
- Source code of Project in initial phase
- Database Design Document
- Version control setup for the project
- Project Architecture Document
- Test Plan

III. Issues and their mitigation plan

The issues and risks examined during the Inception phase along with their mitigation plan are highlighted below:

A. Database Design

Database designing was one of the most crucial part of the project as it will create the base for our project. We faced various problems in database design such as how to store the responses of each test, how to store the questions extracted from the excel files, how topics are related with test and question. Most of the issues are resolved in this phase but some of them are yet to be resolved. That includes:

- Password should not be present in the User table – it is used just for authentication/authorization process which can be outsourced using spring framework.
- Relation between field 'response' of table 'Response' and 'answer' field of table 'Question' seems to be ambiguous – Needs to revisited and defined properly.

B. Security

Security has always been a major concern for any web application. The authentication and authorization process has to be robust and reliable at the same time. So instead of using conventional method of storing the credentials in in house database we are planning to implement spring security in order to make it more secure.

IV. Test Strategies

Test strategy for Teach-Me application is as follows:

- Creating a test plan that includes all important entities i.e. scope, testing methodologies to be followed, test deliverables and resource and environment needs.
- Creating/developing the test cases/test scripts as per the defined scope.
- Execute the tests and generate reports based on test results.
- Log bugs if any found with detailed information.
- Defect management: It will include fixing the logged bugs and their verification after the fix is done. Parallelly, tracking the overall status of bug until it is resolved.
- Delivering the feature.

Please refer our Test Plan Document for Testing methodologies which are to be used in this project.

Fig. 1. Testing Strategies

V. Product Documentation Draft

Below is the Product Document Draft for Inception Phase where we have finalized the Inception Artifact Document, Project Architecture, Database Design, Environment/VCS Setup, Project Management/Tracking tool setup.

A. Inception Artifact Document

For Artifact Document, please visit Inception Artifact Document

B. Project Architecture

A good architecture can cover most of the non functional requirements. Designing it was the most crucial task of this phase. We have finalized monolithic design for our application where the back-end application consists of REST APIs with proper authorization and the front-end service will make request to these APIs. Please refer our Architecture Diagrams for more understanding.

The finalized technology stack for the project is given below:

- Back-end service: Java (Spring Boot)
- Front-end service: Angular 9
- Database: MySQL
- IDE: Eclipse, IntelliJ Idea, Visual Studio Code
- Database Client: MySQL Workbench
- Other Tools: Postman, SourceTree, Github

C. Database Design

For further references see Database Design

D. Environment/VCS Setup

For Source Code, please visit TeachMe App page for Back End Application, and UI Service page for Front End Application.

E. Project Management

For Project Management, please visit our RedMine page.

REFERENCES

- Java Documentation: https://docs.oracle.com/javase/8/docs/api/overview-summary.html
- Baeldung Documentation: https://www.baeldung.com/spring-boot
- Spring Documentation: https://docs.spring.io/spring/docs/current/spring-framework-reference/overview.html
- Angular Documentation: https://angular.io/docs
- Testing Strategies:https://www.guru99.com/how-to-create-test-strategy-document.html