SOFTWARE REQUIREMENT SPECIFICATION DOCUMENT

Question Answer Generator Using NLP

Submitted in partial fulfillment of the requirements for the degree of Bachelor of Technology in Information Technology

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1. Introduction

A software requirements specification (SRS) is a description of a software system to be developed. It lays out functional and non-functional requirements and may include a set of use cases that describe user interactions that the software must provide.

1.1 Purpose

The purpose of our project is to generate the question-answers automatically from a given text and the main focus for the project is on the teachers and students. It provides teacher with a platform that can help them to generate questions for a test and automatically evaluate the result of the student.

1.2 Scope

- The best thing about this software is that of generating Objective Type and Subjective Type questions in an easy way.
- The fast computation of results will help the teacher and reduce their effort.

1.3 Definitions, Acronyms, and Abbreviations.

Question Answer Generator:
Question Answer generator software is provided for both objective type and subjective type questions.

Abbreviations of these terms used in SRS

MCQ	Multiple Choice Question
QB	Question Bank
RS	Random Selection
SQL	Structured Query Language
APPS	Application

2. The Overall Description

The main factor that can affect the system is the length of the data. If the user did not provide enough text to generate relevant number of questions.

2.1 Product Functions

- Dataset is required for generating question and answers using NLP (Natural Language Processing).
- Different login portals available for teachers and students.
- Objective as well as Subjective questions will be generated and the result will be evaluated using NLP.

- Result is evaluated and a file containing result of all the students is sent to teacher's portal.

2.2 User Characteristics

There are two types of users that are going to interact with system, i.e. students and teachers. User interface of the system is easily understandable by every age group. The end users might use the user interface model to get their desired outputs and the backend engineers (developers) that control, fix bugs and change the code or technique of the software program as per the requirement.

2.3 General Constraints

- Teacher will have complete authority over all test assessment.
- Teacher and student portals for a better interface.
- Passwords to enhance security.
- This application is a web application.

2.4 Assumptions and Dependencies

- User should be aware about the operational functioning of the system.
- The Source data provided by the user for the generation of the questions-answer must be in meaningful and usable form.
- User should have enough storage to store the results of students.
- Each teacher has a specific subject and all the students have their unique roll numbers.

3. Specific Requirements

The basic specific requirements are:

- The project will work only when Python and SQLite is installed on your PC.
- Some libraries use some older version of Python.
- PC with good GPU must be used for faster execution of code.

3.1 External Interfaces

3.1.1 Interfaces

There are basically three modules involved in this project and they are:

1. User login
   - Teacher Login:-

     Teacher can generate the test by providing some data. Test will be available to every student and after the student completes the test, teacher can either see the results on

the website or can download the CSV file.

- Student Login:-

  Each student will receive subjective or objective test with random questions and after they submit the test, result is evaluated and sent to teacher's portal.

2. Online generated test questions
   - Objective type questions:-

     Five objective questions will be generated.

   - Subjective type question:-

     Two objective questions will be generated.
3. Result declaration
   - CSV file format:-

     Teacher can download the result of all the students.

   - Online Portal:-

     Teacher can view the results online.

3.2 Functional Requirement

The system should specify the following requirement of administrator that will be required as.

1. This project requires dataset for generating questions and answers.
2. Based on this dataset the software will generate questions using NLP (Using Python and its libraries).
3. Its User Interface design presents a seamless blend of visual design, interaction design, and information architecture.
4. Automatic evaluation of result also reduces effort of teacher to manually evaluate them.
5. Stores result of all students in database for future use.

3.3 Non Functional requirements

1. User Satisfaction: - The system is such that it stands up to the user expectations.
2. Response Time: - The response of all the operation is good. This has been made possible by careful programming.
3. Error Handling: - Response to user errors and undesired situations has been taken care of to ensure that the system operates without halting.

4. Safety and Robustness: - The system is able to avoid or tackle disastrous action. In other words, it should be foul proof. The system safeguards against undesired events, without human intervention.
5. User friendliness: - The system is easy to learn and understand. A native user can also use the system effectively, without any difficulties.

3.4 Performance Requirements

This subsection specifies both the static and the dynamic numerical requirements placedon the software or on human interaction with the software.

3.3.1 Static Requirements

This software can get any length of the data from the user but there is a limit to the minimum data given to the software. There is some threshold data length in which relevant number of questions can be generated.

3.3.2 Dynamic Requirements

The more the data the more time will be taken by the software to generate questions. The software should process 50% of the text in first five seconds.

3.5 Logical Database Requirements

- The database can only be accessed by the admin.
- External user does not interact to the database.
- Invalid users are not allowed to enter.
- Incorrect data does not enter in database.

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3.6 Design Constraints

3.5.1 Standards Compliance

Specify the requirements derived from existing standards or regulations. They might include:

- Does not accept incorrect data from user.
- After the test ends, result will be available to both student and teacher.
- Result can be downloaded in a CSV file.

3.6.1 Software Constraints

The necessary softwares required are:

- Python & its libraries
- SQLite
- NLP(its libraries)

3.6.2 Hardware Constraints

The minimum hardware requirements are as follows:

1. Processor: Intel Quad-core 1.7 GHZ Processor or above.
2. HD: Minimum 10 GB of HD.
3. RAM: Minimum 8 GB of RAM.