Software Requirements Specification

for

GUI for Question Bank Management

Version 1.0 approved

Interns:

Bhalchandra Naik & Tushar Shah

Mentors:

Shubham Gupta & Yogita Mali

e-Yantra

16/06/2015

Table of Contents

1. Introduction

1.1 Purpose

The purpose of this software is to enable users to create, modify, review and manage questions of objective nature, through a web-based GUI. Users should be able to create Questions with various elements such as options, equations, code, diagram etc. which have been discussed in further detail in section 2.2. , get them reviewed by peers over the application and view or recover older versions of questions

1.2 Intended Audience

The document is intended for developers, project managers, users, testers, and documentation writers.

1.3 Product Scope

This software is a web-application that enables authorized users to manage question banks. It shall enable users to create, review and modify question. It shall keep track of the evolution of questions, allow them to view those editions, restore them if intended and enable users to trace a question back to a question setter.

2. Overall Description

2.1 Product Perspective

This project is a new self-contained product aimed at making question bank management organized and easier.

2.2 Product Functions

Given below is overview of the functional requirements which have been discussed in detail section 3.

1. Revision history of question
2. Difficulty level of questions
3. Converting question text to image
4. Adding diagrams to questions
5. Adding questions with choices
6. Account management
7. Equation box (latex to image)
8. Managing access rights
9. Adding difficulty level tags and category tags

10. Navigating questions
11. Expected solving time-Manually entering the solving time
12. Coding Box (code to image)

2.3 User Classes and Characteristics

1. **Admin:** Exercises the following privileges:
    a. Adds or deletes new tags to permitted existing set
    b. Registers new users in to the system.
    c. Allots new questions to different users for reviewing using a Round Robin approach(logic used in implementation may deviate from that of Round Robin algorithm)
    d. Browse the Question Bank like any normal user

2. **Normal user :** These users shall have the following privileges:
    a. Creates questions with elements like equation, code, diagram, options (for MCQ), difficult level, category, tags and expected solving time.
    b. Browse the Question bank using string search or by tags
    c. See her/his own questions
    d. Review a question if allotted one
    e. Restore her/his own question to an earlier version before any editing or reviewing.

2.4 Operating Environment

The software requires a web-browser to operate and any device that supports the same.

2.5 User Documentation

A comprehensive developer and user manual.

3. External Interface Requirements

3.1 User Interfaces

User interface shall be created by using available open source CSS libraries such as bootstrap or W3.css etc.

3.2 Communications Interfaces

Usage requires presence of web-browser, internet support and a device (such as computers, smart phones etc) that support the same.

4. System Features

4.1 Revision history of question

4.1.1 Description

A particular question may be reviewed by 2 reviewers and be edited any number of times by the creator. The system must therefore keep track of all editions made to every question (i.e changes made to any of the elements of the question like tags, question description, equation, diagram, code etc.)

4.1.2 Stimulus/Response Sequences

- The user at any point may decide to restore a question to its earlier version based on the premise that the earlier version was correct and current revision of question is inconsistent with the subject matter.

- The user may wish to see the changes made to a question or simply view any of the older versions.

4.2 Difficulty level of Question

4.2.1 Description

A question must have an element of expected solving time in seconds so individuals answering those questions have a better discretion over answering the entire question set.

4.3 Converting text to image

4.3.1 Description

The description of the question must be converted to an image which shall be used later during tests. The application must convert the question description being typed by the creator to an image and also show a preview of the same while composing.

4.4 Adding diagrams to questions

4.4.1 Description

The question might have diagrams such as flowcharts, circuit diagrams, charts etc. required for solving the question. The application must allow the user to upload diagrams from her/his file system.

4.5 Adding questions with choices

4.5.1   Description

The question might be a Multiple Choice Question. The application must allow the creator to add options to the question. A minimum of 2 and a maximum of 6 options can be inserted.

4.6 Account Management

4.6.1   Description

a. Account Creation : New Users can only be created by the Admin as the Application can only be accessed by a closed group of users.

b. Account Access : Users must log in with proper credentials into the system to access any of the specified privileges.

4.7 Equation Box(Latex to Image)

4.7.1   Description

The user may wish to add equations to the question, for which a LaTeX coding window must be integrated into the application. The LaTeX code must be converted into the equation image.

4.8 Managing Access rights

4.8.1   Description

a. Normal User:
   1. A users must be able to create a question
   2. A user must be able to edit his own question
   3. A user can only review those question that are allotted to her/him
   4. A user must be able to restore her/his own question(the ones he created) to any of its older version
b. Admin :
`
   1. The admin must be able to allot questions to the Users for reviewing evenly.
   2. New tags for the questions can only be created by the admin.
   3. New users can only be added into the system by the Admin

4.9 Adding difficulty level and category tags

4.9.1 Description

Each question must have a difficulty level tag whose values can be either of the following:
      1. Easy   2. Medium   3. Hard

Each question must belong to any of the following categories.
      1.Quantitative   2. Electronics   3. Programming

Each question must also be tagged with certain tags which must from a fixed list of tags, created by the admin. These tags shall be short phrases which give the reader a quick idea of the subject matter pertaining to the subject matter of the question

4.10 Navigating questions

4.10.1 Description

The user must be able to browse the question bank using the tags or through string search.

4.11 Expected Solving Time

4.11.1 Description

Each question must have an expected solving time. This time must be entered by the user manually while composing the question. The time must be in seconds and at least 30 seconds.

4.12 Coding Box (text to image)

4.12.1 Description

A question of the programming category may have a code. A feature to add images of code snippets to questions must exist in the application. There must be a coding window available where user can type the code he wishes to insert and image must be produced dynamically to give the user a preview of how the code will look like.

Kindly choose fonts and colours of the final image produced, such that it is consistent with the theme of Programming.