

Technical Design Document for Online Exam Project

Design Overview:

This project aims to create an online application to administer exams. The exam administrators will be able to set parameters of their online exams. The users will be able to see the currently available exams, and will be able to select them from a list to take the exam. Upon completing the exam, the user will see their score and will have the option to either view the exam answers, or to attempt the exam again. Once the user views the answers for an exam, they will no longer be able to attempt that exam. The exam administrator will be able to view grading information for all users who have taken an exam, as well as the individual user attempts.

User Interface:

1. Login page: all users must register and log in on this page before accessing the main page. Users will be redirected to this page every time they log off or a session has expired.

2. Main page: this is the main page of the website which would link all other pages together.

- For teacher account users:

3. Create Exam page: users can create their exams on this page.

4. View Exam page: users can view all the exams that they have created on this page.

5. Exam Detail page: users can view all the details of a particular exam on this page.

6. Student List page: users can create/modify/delete student lists on this page.

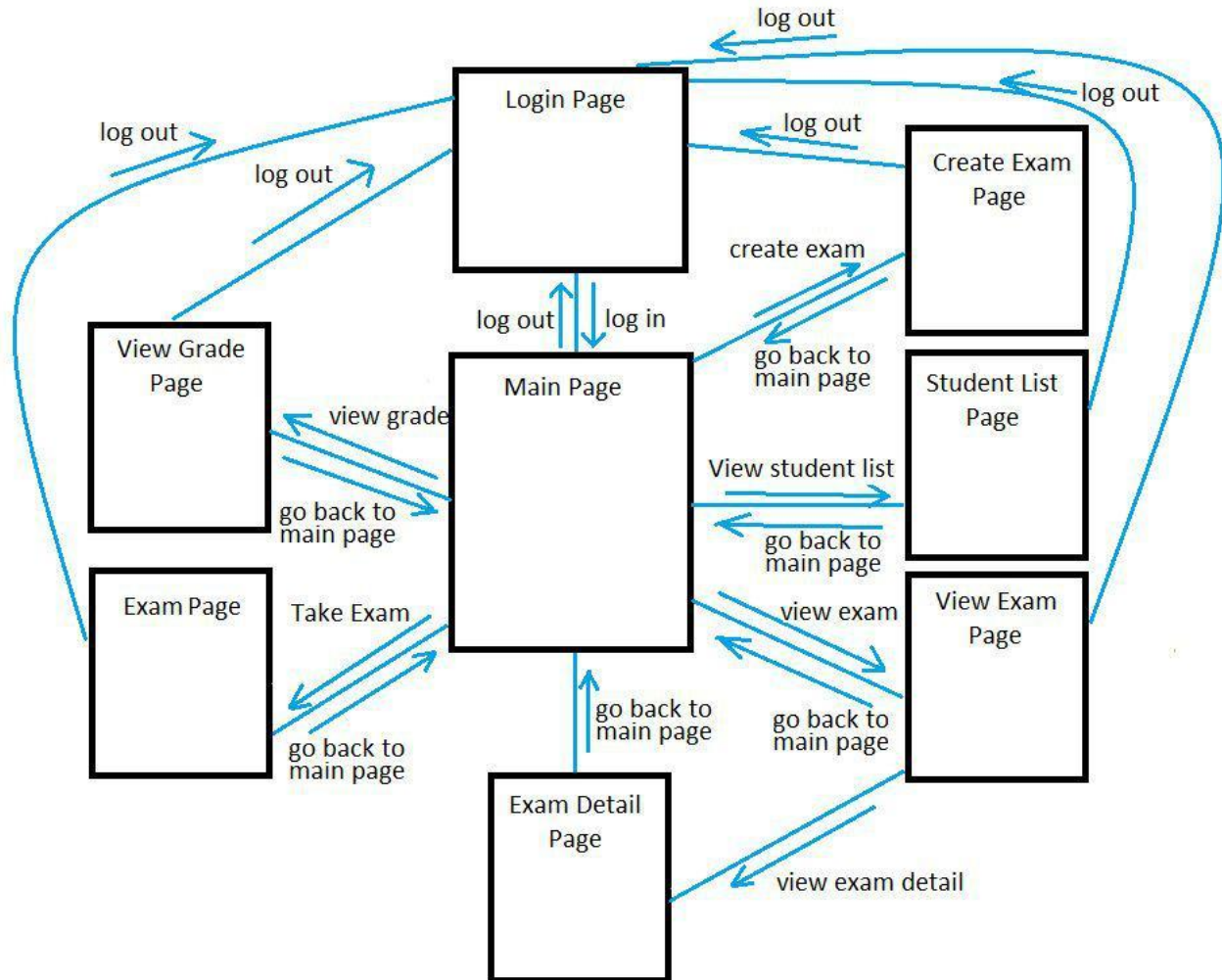
- For student account users:

7. Take Exam page: a page for users to take their exam.

8. View Grade page: users can view the score they received on all the exams.

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Data Model:

Our database will consist of three tables, Users, Exams, and Attempts.

The Users table manages information associated with each registered user. This information includes a username and password, as well as an email address and their full name. This also tracks which users are administrators, who are permitted to create and change exams.

The Exams table contains information related to each exam that can be taken. This includes parameters such as time limits, start and end times, and the maximum number of attempts. The database will manage data outside of the test content itself. For the content of the exam, it contains a filename which corresponds to the exam file. The contents of these files is discussed further in the File Structure section of this design document.

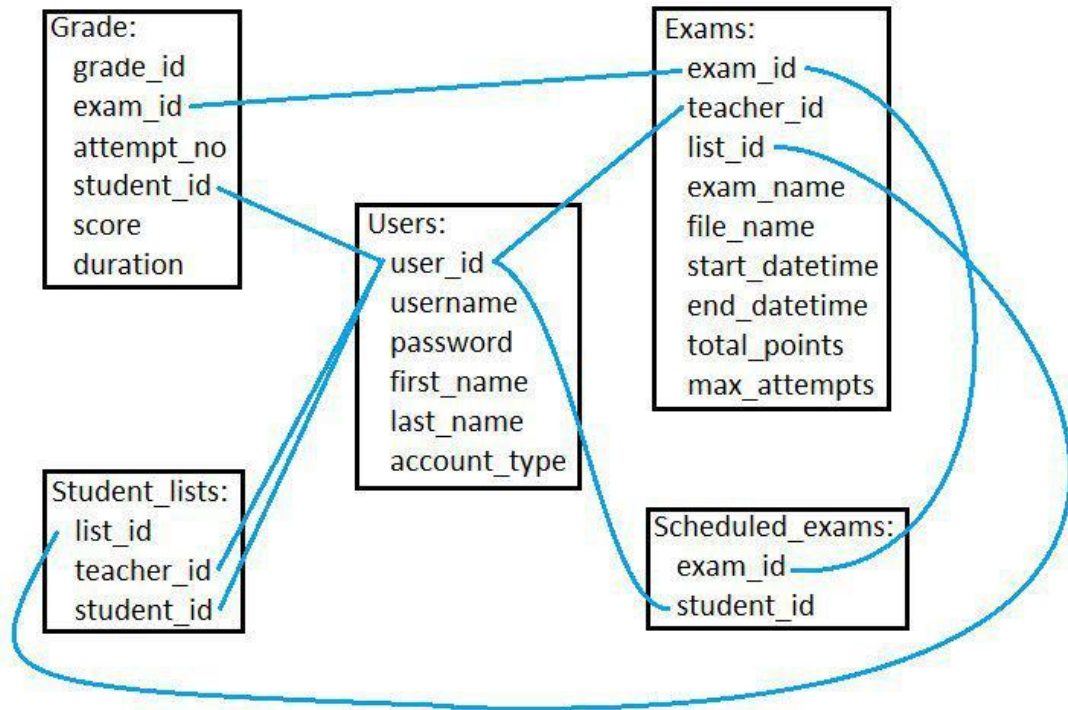
The Attempts table provides recording functionality for exams taken. It links the User and Exam through their respective IDs, and saves the score and start/end times. It also saves whether or not the user chose

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to view the exam answers, which bars them from additional attempts. Queries to this table can determine the average score for a given exam, as well as attempts made by a particular user.

The relationships between these tables can be illustrated through the figure below:



File Structure:

Each exam will be a standalone file. They will be CSV files, which allows for easy editing through spreadsheet tools such as Microsoft Excel. The format for each line will be:

<Exam Question>,<Point Value>,<Correct Answer Index>,<Answer 1>,< Answer 2>,...,<Answer N> The indexing of these answers will start at zero.

This adds a great amount of flexibility to the format, as True/False and Multiple Choice questions can be represented with one file format. Each line will contain one question.