

## On the Exam Line

### Product Backlog

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#### **Problem Statement**

When trying to schedule a time that you can meet up with a group of people, such as your coworkers, project partners, or even a circle of friends, it can be a daunting (and sometimes infeasible) task to try and find a time that works well for everyone. We want to solve this issue by creating a scheduling application that, unlike other scheduling apps, combines the personal schedules of multiple individuals and automatically suggests meeting times that won't create a time conflict, all in an easy and user-efficient application.

#### **Background Information**

##### **Audience**

With regards to our audience, our software targets all the individuals who seek to conduct exams for a large number of people and want to efficiently grade them. Primarily, these individuals will consist of teachers of various ages with varying positions and varying access to hard materials (like paper, printers, etc.). It can be used by people outside this classification depending on their requirements and the number of people they will be testing.

##### **Similar Platforms**

There are a variety of similar platforms available online. Among many others, three are ExamView, proctorio, and Eklavya. ExamView does an amazing job in creating the custom exams. It allows the test creator to include images, vary the number of options in each multiple-choice question, and include essay questions. It does not create user accounts, but instead passes a unique exam ID with the test taker's name which has to be entered in the start of each exam. Furthermore, proctorio and eklavya accomplish the entire goal. They create teacher and student accounts. Teachers create exams and students take only specific exams. Eklavya also includes a feature which enables the teacher to attach a payment option with the exam so the student has to pay to take the exam.

##### **Limitations**

Starting off with ExamView, this software is very well developed and very efficient. Its drawback is that it doesn't create user accounts. So, if there are 10 people taking the exam, there will be 10 computers connected to each other and the administrator computer by a LAN cable. Then it will generate an ID to recognize each exam submission. This makes conducting the exam restricted to the specific geographical location. Proctorio and Eklavya have a common drawback, all the users, irrespective of test creators or takers, have to pay to create an account to use the software. They are well developed, and efficiently and effectively reach the goals we are hoping to achieve, but this section for payment is what we are trying to work around.

## **Environment**

We decided to use technologies like HTML, PHP, JavaScript to code the website so as to have full control over all the attributes of the website. For the purpose of a web database that stores all administrator/user/ exam details that that would efficiently retrieve data from the database when needed, we used a relational database management system coded in MySQL.

## **Requirements**

### **Functional**

Administrator should be able to:

- Log in to the administrator account.
- Add new users.
- Modify existing users.
- Delete existing users.
- Add new exam.
  - Choose the number of multiple choice questions.
  - Choose the number of free response questions (Essay questions).
  - Set a custom time limit for each exam.
  - Enter multiple exams for each chapter.
- Clone an exam.
  - Copy all the questions into a new exam with a different name.
- Modify existing exam.
  - Edit the name of the exam.
  - Edit existing questions.
  - Add new questions.
  - Delete existing questions.
  - Change time limit.
- Change the name of an existing chapter.
- Delete an existing exam.
- Grade free response questions (essay questions) entered by users.
- Decide which chapter's exam the user should be able to take.
- Review the test scores of all the test takers.
- Review the answers of the users against the correct answers of that exam.
- Log out of the account.

User should be able to:

- Log in to their user account.
- Take a test.
- Be assigned an exam randomly from the selected chapter to users (if chapter has multiple variations).
- See time remaining during a test.
- See multiple choice grade as soon as test is over.
- See overall grade after free response questions (essay questions) are graded.
- Log out of their user account.

User should *not* be able to:

- Take a chapter test multiple times.

Database should store:

- User information.
- List of chapters.
- Test information.
- Test questions.
- Answers to multiple choice questions.
- Answers entered by the user.
- User's grades.
- Chapters the users are allowed to take a test for.

### Non-functional

- The application should be supported by all web browsers.
- The application should be attractive and easy to use.
- As a developer, I would like to store information in a MySQL database.
- Database should handle requests.
- Separate administrator privileges.

## Use Cases

### #1: Case: Log in to the administrator account

A) Success

Action	System Response
1. Enter correct credentials.	1. Redirects to admin page.

B) Failure

Action	System Response
1. Enter incorrect credentials.	2. Error in login.
	3. Redirects to login page.

### #2: Case: Add new user

Action	System Response
1. Select "add new user".	2. Redirects to new user information page.
3. Enter user information with unique username.	4. Stores information in database.

	5. Refresh page.
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**#3: Case: Modify existing user**

Action	System Response
1. Select "modify user".	2. Redirects to modify user page.
3. Select user to be modified.	4. Redirects to new information page.
5. Enter new information.	6. Stores information.
	7. Redirects to select user page.

**#4: Case: Delete existing user**

Action	System Response
1. Select "delete user".	2. Redirects to user page.
3. Select user to be deleted.	4. Deletes all trace of the selected user.
	5. Redirects to the select user page.

**#5: Case: Add new Exam**

Action	System Response
1. Select "add new exam".	2. Redirects to the new exam information page.
3. Enter correct information with unique chapter and test name combination.	4. Store exam information.
	5. Redirect to the insert questions page.
6. Enter all the questions, options, and answers.	7. Store all the questions, options, and answers in the database.
	8. Redirects to the "add new exam" page.

**#6: Case: Clone an Exam**

Action	System Response
1. Select "clone exam".	2. Redirects to the select exam page.
3. Select the exam to be cloned.	4. Redirects to the new exam name page.

5. Enter unique chapter and test name combination.	6. Clones the selected exam and stores it with the new name.
	7. Redirects to the select exam page.

### #7: Case: Modify Existing Exam

Action	System Response
1. Select "modify exam".	2. Redirects to the select test page.
3. Select the test to be modified.	4. Redirects to the "modify options" page.

#### A) Edit Test Name

Action	System Response
1. Select "edit test name".	2. Redirects to the new test name page.
3. Enter new test name.	4. Changes the name of the previously selected test to the new name in all occurrences.
	5. Redirects to the "modify options" page.

#### B) Edit Existing Questions

Action	System Response
1. Select "Edit existing questions".	2. Redirects to the new questions page.
3. Modify the wanted questions.	4. Stores the new questions.
	5. Redirects to the "modify options" page.

#### C) Modify Number of Questions

Action	System Response
1. Select "modify number of questions".	2. Redirects to the new number of questions page.
3. Enter the new number of questions.	4. Redirects to the new questions page.
5. Enter the new questions and/or modify the existing questions.	6. Store all new and modified questions.
	7. Redirects to the "modify options" page.

## D) Delete Specific Questions

Action	System Response
1. Select "delete specific questions".	2. Redirects to the select question page.
3. Select the question to be deleted.	4. Deletes the question.
	5. Redirects to the select question page.

## E) Change Time Limit

Action	System Response
1. Select "change time limit".	2. Redirect to the new time limit page.
3. Enter the new time limit.	4. Store the new time limit.
	5. Redirects to the "modify options" page.

## #8: Case: Delete Exam

Action	System Response
1. Select "delete exam" in admin page.	2. Redirects to select exam page.
3. Select exam to be deleted.	4. Deletes all trace of the selected exam.
	5. Redirects to the select exam page.

## #9: Case: Grade Free Response Questions

Action	System Response
1. Select "grade exam".	2. Redirects to the select user page
3. Select user to be graded.	4. Redirects to the display exams page.
5. Select the exam to be graded.	6. Redirect to the grade questions page.
7. Enter grades for all questions.	8. Stores all grades.
	9. Calculates the final grade.
	10. Redirects to the select user page.

**#10: Case: Review Test Scores**

Action	System Response
1. Select "review client performances".	2. Display all the client names, test the clients took, and grades in a table.

**#11: Case: Review Answers**

Action	System Response
1. Select "Review client answers".	2. Redirects to the select user page.
3. Select the user.	4. Redirects to the select exam page.
5. Select the exam.	6. Displays all the questions, all the options, the correct answers, and the user's answers.
7. Click the OK button.	8. Redirects to the select user page.

**#12: Case: Test Statistics**

Action	System Response
1. Select "Test Statistics".	2. Redirect to select test page.
3. Select one of the tests displayed.	4. Display all statistics with pictographic representation.
5. Click on the "OK" button.	6. Redirect to the select test page.

**#13: Case: Log in to the user-account**

A) Success

Action	System Response
1. Enter correct credentials.	2. Redirects to user page.

B) Failure

Action	System Response
1. Enter incorrect credentials.	2. Error in login.
	3. Redirects to login page.

**#14: Case: Take a test**

Action	System Response
1. Select "take test".	2. Redirects to the chapter select page.
3. Select chapter.	4. Redirects to test confirmation page.
5. Select "OK"	6. The test begins.
7. User enters response.	
8. Click "submit" / time runs out	9. Responses are stored in the database.
	10. Multiple choice questions are graded
	11. Displays the grades for the MCQ's
12. Click "OK".	13. Redirects to user page.

**#15: Case: Review Test**

Action	System Response
1. Select "review test".	2. Redirect to select test page.
3. Select the test you want to review.	4. Display final test scores, all questions, options, answer key, and user answers.
5. Click "OK".	6. Redirect to user page.