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Internet Systems Programming
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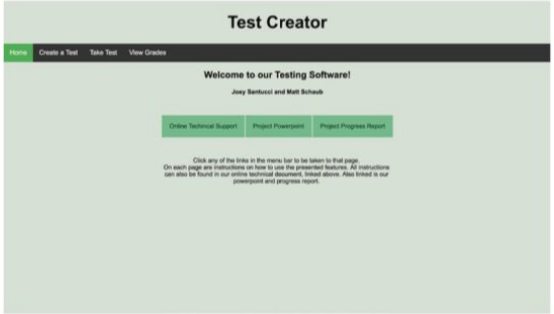
ISP Project Progress Report

Summary of Application & Implementation

Our term project had us create a testing software that allows users to create tests, take tests and view grades. When first accessing the website, the user is presented with the title screen that explains the navigation of the website, along with links to our external documents such as the online technical document, the powerpoint, and the progress report. The first menu bar option is to “Create a Test”. In this section, the user can create a new test or add questions to an existing test. All instructions for how to do this are listed on this page, as well as in our technical document. To implement this feature, an HTML form is submitted that stores the users questions and answers. The backend JavaScript then connects to our database and checks whether a test by the same name has been created. If it has not, then a new table is created with the name of the test that stores the question, answers, and correct answer. The name of the test is also added to a seperate table titled TestNames, whose use will be explained later. If a test name has already been used, the application will insert the new question and answer data into that test’s data table. A user then has the option to “Take a Test”, our second menu bar option. When a user goes to take a test, they are presented with instructions on what to do on each page. The first page has users input their student ID and then choose from a list of available tests. This list is populated using our TestNames table. The next page displays all test questions, followed by their respective answers. This is done using a ‘while’ loop to output the questions from the database for that specific test. Using radio buttons as input, the user will select their answers and then press the submit button to receive their score. The score is calculated by comparing the “CorrectAnswer” column of the test’s data table with answers inputted by the user. The system then checks to see if that student ID has already been created. If it has, the system will add the test name and the score to that user’s data table. If it is a new student ID, the system will create a new data table for that user, after which it will insert the test name and score for the user. The final option is for users to “View Grades”. On this page, three input boxes are presented, along with a series of radio buttons for different actions. The input boxes are as follows: Student ID, Quiz and Grade. These input boxes are used to customize the query statements for the database based on the user action. There are four options for users when viewing grade, listed as follows: Display all grades, Add a new test grade, Update an existing student grade, and Delete an existing test grade. These actions exact functionalities are listed on the “View Grades” page. To execute each action, query statements are formed based on the action and the updates are executed to the database.

Photos of Application



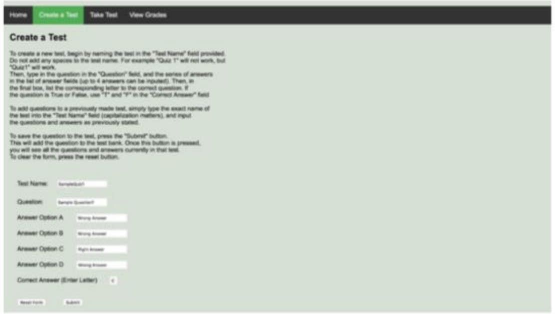
Test Creator

Welcome to our Testing Software!

Joey Santucci and Matt Schaub

Click any of the links in the menu bar to be taken to that page.
On each page are instructions on how to use the presented features. All instructions can also be found in our online technical document, linked above. Also linked is our powerpoint and progress report.

Homepage of website



Create a Test

To create a new test, begin by naming the test in the "Test Name" field provided.
Do not add any spaces to the test name. For example "Quiz 1" will not work, but "Quiz1" will work.
Then, type in the question in the "Question" field, and the series of answers in the list of answer fields (up to 4 answers can be inputed). Then, in the final box, list the corresponding letter to the correct question. If the question is True or False, use "T" and "F" in the "Correct Answer" field

To add questions to a previously made test, simply type the exact name of the test into the "Test Name" field (capitalization matters), and input the questions and answers as previously stated.

To save the question to the test, press the "Submit" button.
This will add the question to the test bank. Once this button is pressed, you will see all the questions and answers currently in that test.
To clear the form, press the reset button.

Test Name: SampleQuiz1

Question: Sample Question?

Answer Option A Wrong Answer

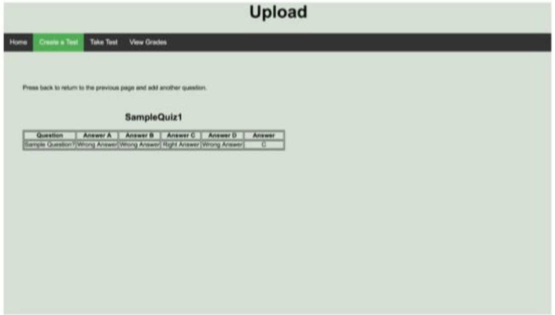
Answer Option B Wrong Answer

Answer Option C Right Answer

Answer Option D Wrong Answer

Correct Answer (Enter Letter) c

"Create a Test" Homepage



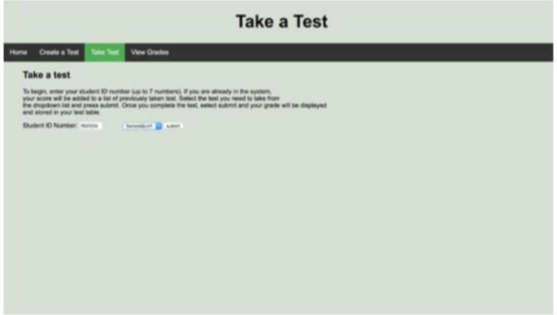
Upload

Press back to return to the previous page and add another question.

SampleQuiz1

Question	Answer A	Answer B	Answer C	Answer D	Answer
Sample Question?	Wrong Answer	Wrong Answer	Right Answer	Wrong Answer	C

"Create a Test" Submission page



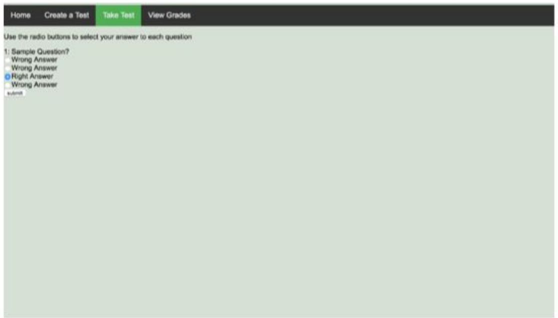
Take a Test

Take a test

To begin, enter your student ID number (up to 7 numbers). If you are already in the system, your score will be added to a list of previously taken test. Select the test you need to take from the dropdown list and press submit. Once you complete the test, select submit and your grade will be displayed and stored in your test table.

Student ID Number: [illegible] SampleQuiz1

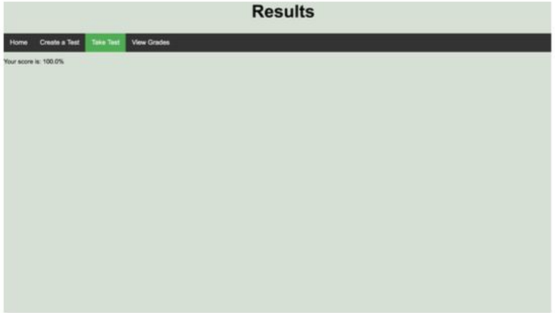
"Take a Test" mainpage



Use the radio buttons to select your answer to each question

1: Sample Question?
○ Wrong Answer
○ Wrong Answer
● Right Answer
○ Wrong Answer

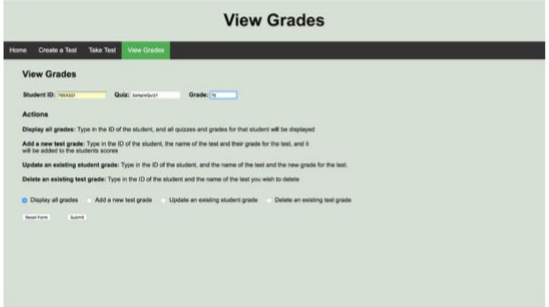
"Take a Test" display questions page



Results

Your score is: 100.0%

"Take a Test" display test results



View Grades

View Grades

Student ID: 7654321 Quiz: SampleQuiz1 Grade: 75

Actions

Display all grades: Type in the ID of the student, and all quizzes and grades for that student will be displayed

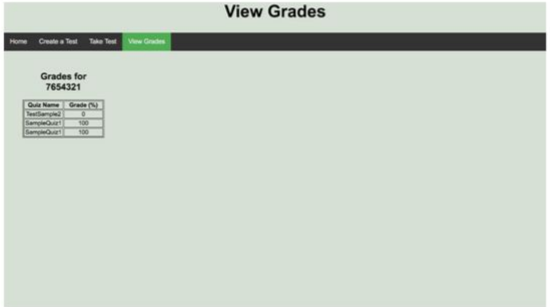
Add a new test grade: Type in the ID of the student, the name of the test and their grade for the test, and it will be added to the students scores

Update an existing student grade: Type in the ID of the student, and the name of the test and the new grade for the test.

Delete an existing test grade: Type in the ID of the student and the name of the test you wish to delete

● Display all grades ○ Add a new test grade ○ Update an existing student grade ○ Delete an existing test grade

“View Grades” mainpage

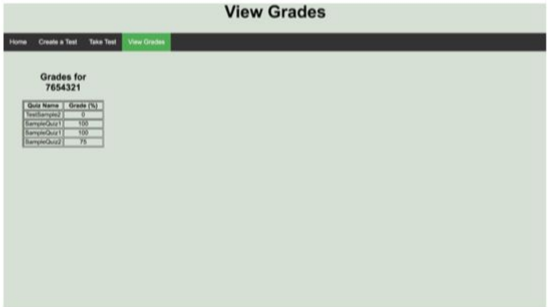


View Grades

Grades for 7654321

Quiz Name	Grade (%)
TestSample2	0
SampleQuiz1	100
SampleQuiz1	100

“View Grades” display grades table

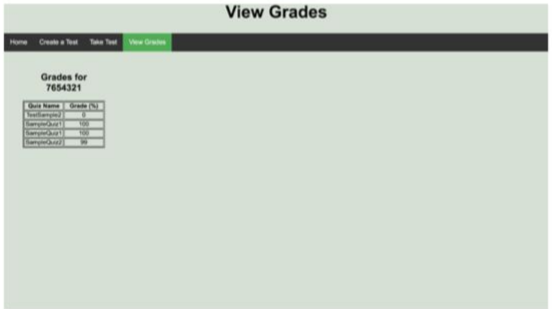


View Grades

Grades for 7654321

Quiz Name	Grade (%)
TestSample2	0
SampleQuiz1	100
SampleQuiz1	100
SampleQuiz2	75

“View Grades” add a new test



View Grades

Grades for 7654321

Quiz Name	Grade (%)
TestSample2	0
SampleQuiz1	100
SampleQuiz1	100
SampleQuiz2	99

“View Grades” update test value

Contributions

Joseph Santucci - 50%

- *Create a Test* functionality
- *View Grades* functionality
- Documentation & Progress Reports

Matthew Schaub - 50%

- *Take Test* functionality
- HTML & CSS

Lessons Learned

The biggest lessons taken away from this project was time management and database management. In terms of time management, we successfully completed our project without rushing because we had worked on it slowly for weeks. This gave us plenty of time to communicate with each other and fix any bugs we ran into. We also learned a lot about database management in SQL. Storing, comparing, and checking data in SQL was challenging at first, yet we managed to get everything we wanted working. The most prominent lesson learned, however, was just how much a project can change in its lifetime. Initial database design when we were discussing what we wanted to do for our term project was almost completely different than how most of our data storage ended up. As we worked on the project, we figured out what we actually needed or found better ways to implement than we had originally planned.

Possible Future Work

As with any project, there are features that could be added in the future. If we were to continue to work on the project, the first feature we would add would be a login feature. This would prohibit students from seeing anyone's grade other than their own. It could also grant permission levels, such that a teacher permission level would allow teachers to view all grades and create tests. We would also have liked to include test management features, such as deleting tests from the system or deleting certain questions from certain tests. Ultimately time constraints and some lack of knowledge held us back from implementing most of these features.

Online Technical Document

How to use . . .

- ***Create a Test:*** To create a new test, begin by naming the test in the "Test Name" field provided. Do not add any spaces to the test name. For example "Quiz 1" will not work, but "Quiz1" will work. Then, type in the question in the "Question" field, and the series of answers in the list of answer fields (up to 4 answers can be inputed). Then, in the final box, list the corresponding letter to the correct question. If the question is True or False, use "T" and "F" in the "Correct Answer" field.
  To add questions to a previously made test, simply type the exact name of the test into the "Test Name" field (capitalization matters), and input the questions and answers as previously stated.
  To save the question to the test, press the "Submit" button. This will add the question to the test bank. Once this button is pressed, you will see all the questions and answers currently in that test. To clear the form, press the reset button.

- ***Take Test:*** To begin, enter your student ID number (up to 7 numbers). If you are already in the system, your score will be added to a list of previously taken test. Select the test you need to take from the dropdown list and press submit. Once you complete the test, select submit and your grade will be displayed.

- ***View Grades:***
    - *Display all grades:* Type in the ID of the student, and all quizzes and grades for that student will be displayed
    - *Add a new test grade:* Type in the ID of the student, the name of the test and their grade for the test, and it will be added to the students scores
    - *Update an existing student grade:* Type in the ID of the student, and the name of the test and the new grade for the test.
    - *Delete an existing test grade:* Type in the ID of the student and the name of the test you wish to delete.

Architecture

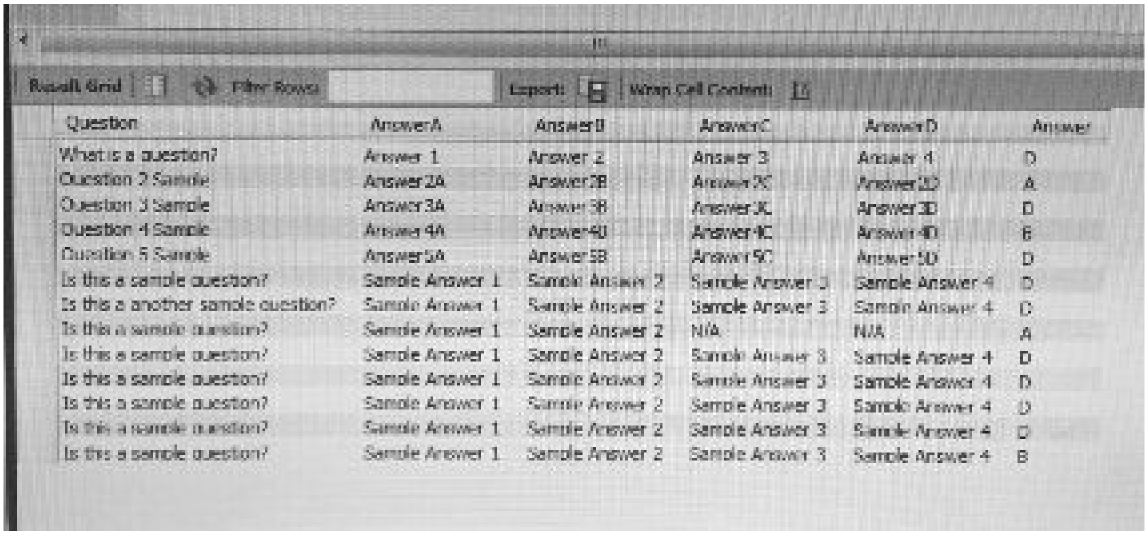
We utilized the attributes of a 4-Tier web application for our project. This included a Client Tier, a Presentation Logic Tier, an Application Logic Tier, and the Data Tier. The Client Tier is the website that the user accesses, and is the visual UI of the system. The Presentation Tier is the HTML source code that creates the UI for the user on the website. The Application Logic Tier includes the Javascript that makes our website dynamic and helps in displaying different information. The Data Tier stores our websites data, including tables for different tests, student grade data, and a list of test names, all using SQL database.

Business Logic

The purpose of this software was to create an online testing center for students. This would allow instructors to create and distribute tests, as well as check students' grades on said tests. To execute this task, our group broke the tasks up and divided them amongst the members. We worked to implement the necessary features that are essential to an online test taking environment. This included a platform to create and add questions to tests, a page for students to take tests and receive results directly after taking, and a form to see all past grades test grades, with the option to update scores for discrepancies amongst the teacher and student.

Database Design

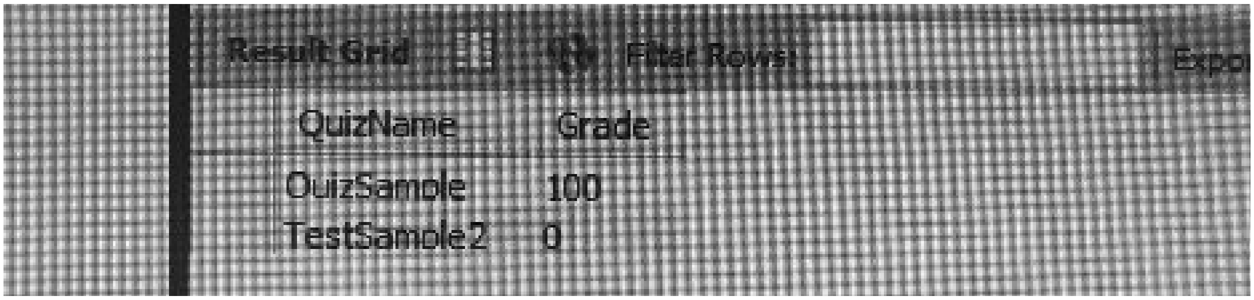
Our database contains 3 types of different tables. The first table is used to store different tests. These tables are created/added to under the "Create a Test" page upon form submission. The table name is taken from the form under when a user names the test. The table is composed of 6 columns named as follows: Question, AnswerA, AnswerB, AnswerC, AnswerD, and CorrectAnswer. When a user adds a question to a test database, these columns are populated with the user input data. If the user fails to input data into an input spot on the form, the slot is filled with a "N/A". A sample table can be seen below.



Question	AnswerA	AnswerB	AnswerC	AnswerD	Answer
What is a question?	Answer 1	Answer 2	Answer 3	Answer 4	D
Question 2 Sample	Answer2A	Answer2B	Answer2C	Answer2D	A
Question 3 Sample	Answer3A	Answer3B	Answer3C	Answer3D	D
Question 4 Sample	Answer4A	Answer4B	Answer4C	Answer4D	B
Question 5 Sample	Answer5A	Answer5B	Answer5C	Answer5D	D
Is this a sample question?	Sample Answer 1	Sample Answer 2	Sample Answer 3	Sample Answer 4	D
Is this a another sample question?	Sample Answer 1	Sample Answer 2	Sample Answer 3	Sample Answer 4	C
Is this a sample question?	Sample Answer 1	Sample Answer 2	N/A	N/A	A
Is this a sample question?	Sample Answer 1	Sample Answer 2	Sample Answer 3	Sample Answer 4	D
Is this a sample question?	Sample Answer 1	Sample Answer 2	Sample Answer 3	Sample Answer 4	D
Is this a sample question?	Sample Answer 1	Sample Answer 2	Sample Answer 3	Sample Answer 4	D
Is this a sample question?	Sample Answer 1	Sample Answer 2	Sample Answer 3	Sample Answer 4	D
Is this a sample question?	Sample Answer 1	Sample Answer 2	Sample Answer 3	Sample Answer 4	B

An example of a test table

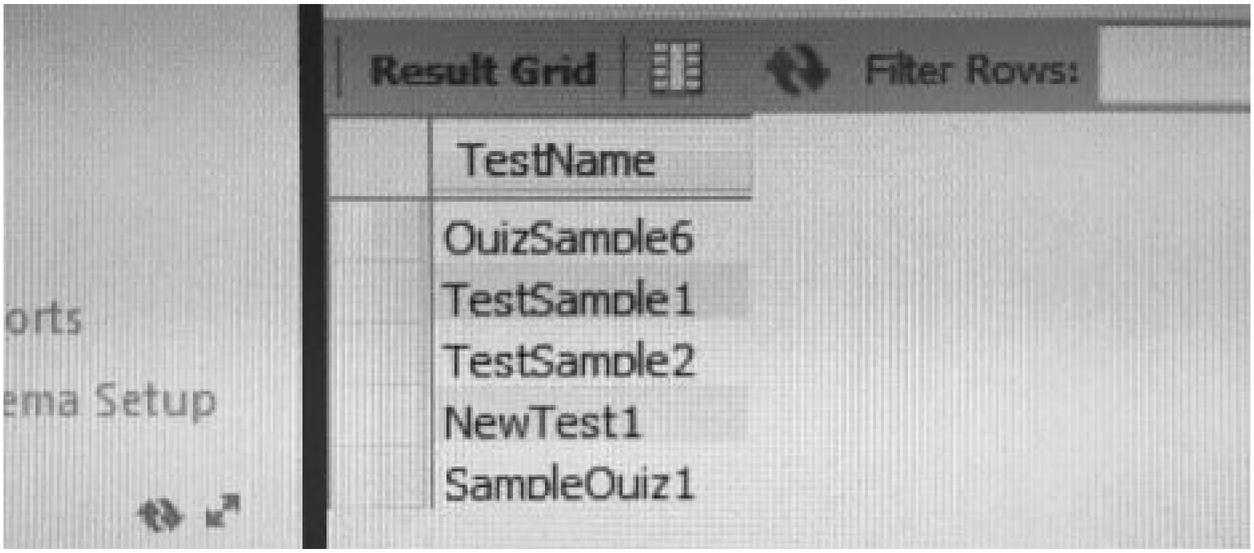
The second type of table stores student grade data. Each table name begins with the letters "id", followed by the student ID. These tables are populated/created when a user takes a test. The system checks if the table name exists; if it exists, it will simply add to the table while new entries result in new tables. Each of these tables has two columns: QuizName and Grade. The QuizName column holds the name of the test, and the adjacent Grade column has the user's test grade for that particular test. A sample table can be seen below.



QuizName	Grade
QuizSample	100
TestSample2	0

An example of a student grade table

Only one of the final table types exists, and that is the table TestNames. TestNames is a table that has only one column—TestName. This column holds all test names and is populated whenever a new test is created under the "Create a Test" section of the website. The table is used to populate the available tests in the "Take Test" section of the website. The example table can be seen below.



TestName
QuizSample6
TestSample1
TestSample2
NewTest1
SampleQuiz1

The TestNames table