## Testing

### Final Test Plan

I will be testing to see if my project fulfils all requirements effectively. To assess this, I will be using test cases, comprehensive testing and personas to ensure that my code is fit for purpose and to fix any errors encountered.

This testing will be carried out as part of requirement testing:

|  |  |
| --- | --- |
| Requirement | Testing strategy |
| 1. Validate user inputs for account facilities | Use comprehensive testing with the following test data…  **Normal**: Quizmaster11  **Extreme**: FV6MYrcIe6xe8jBNv2RcIJGMkhPCPlG2RSL0c4ILpP4OwBbaT0 (this includes 50 characters - the maximum length for username and password for the user table)  **Exceptional:** FV6MYrcIe6xe8jBNv2RcIJGMkhPCPlG2RSL0c4ILpP4OwBbaT01 (above 50 characters and thus above the maximum length for username and password for the user table),  NULL,  OR 1=1 (SQL injection),  %q8Q\* |
| 1. Show different user interfaces based on whether user is on mobile or desktop | Use the following test cases…  Access the website via desktop  Access the website via mobile |
| 1. Authenticate that users if logging in, exist within the external database | Use the following test cases…  User trying to log in with an account  User trying to log in without an account |
| 1. Authenticate that users if registering, the username they have inputted does not exist within the external database | Use this test case:  User trying to register with someone else’s username |
| 1. Redirect to the appropriate error page when users who are not registered try to access the quiz | Use this test case:  Unregistered user trying to access the quiz |
| 1. When the countdown times out or when the user submits the quiz, calculate the score and update the leaderboard by querying the external database | Use comprehensive testing with the following test data, keeping the number of correct answers a constant of 3 (testing is being based on the time the user completes the quiz)…  Normal: User completes quiz in 50s with 3 correct answers  Extreme: User completes quiz with 3 correct answers and in…  70s  69s  31s  30s  10s  9s  0s  Exceptational: User completes quiz in -1s (after the countdown should be terminated) with 3 correct answers |
| 1. Sort the leaderboard details so that it is ordered by each user’s score and the time they completed it (both in descending order) and for each user, give them a numbered rank in ascending order | Use the following test cases and assess the results given under the table heading “Rank”...  Two users share the same time  Two users share the same score  Two users share the same time and score |
| 1. Logout users from the account they are using. If they are not using an account, do not perform the logout. | Use the following test cases…  User logging out with an account in use  User trying to log out without an account in use |

This testing will be carried out for persona and test cases testing:

For tests using a tester, I have decided to get the testers to adopt each of the personas and carry out the following scenario:

* Navigate to the quiz page
* Try and take the quiz without an account
* Register for an account
* Go to home page
* Return to quiz page
* Take the quiz
* View position on leaderboard
* Logout for next tester

For each tester, I will give them the following survey to assess whether requirements have been met effectively after they have carried out the scenario:

|  |  |  |
| --- | --- | --- |
| Requirement | Question (Yes/No) | Expected Response |
| Use session variables to store the current account in use | Were you aware what account you were using when using the website? | Yes |
| Format the user interface based on the CSS in an external stylesheet / make each page similar in layout and design for visual clarity | Do you think the website is consistent in design and layout? | Yes |
| Use a clear and legible font family, colour and size for readability | Can you read the text on each page clearly with the font that has been used? | Yes |
| Make use of white space for further readability | Are elements spaced out well? | Yes |
| Use a pleasing and consistent colour palette for visual clarity | Do you find the colours used overwhelming? | No |
| Implement a intuitive navigation bar so the website is easy-to-navigate | Is the website easy to navigate? | Yes |
| Make the functions of buttons, links, etc clear so users know what to expect when they use them | Do you understand what each button and link does? | Yes |

The following personas will be tested on:

1. S3 student
2. Parent of the S3 student
3. A teacher

These personas match the end-users who will be using the solution.

### Requirements Testing

The following results were returned for each requirement test…

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Requirement | Test Data/Case | Expected Result | Result | Evidence |
| 1 | **Normal**: Quizmaster11 | Input is accepted and inserted into the user table. Input echoed on home page after account has been registered | Follows expected result |  |
|  | **Extreme**: FV6MYrcIe6xe8jBNv2RcIJGMkhPCPlG2RSL0c4ILpP4OwBbaT0 (this includes 50 characters - the maximum length for username and password for the user table) | Input is accepted and inserted into the user table. Input echoed on home page after account has been registered | Follows expected result |  |
|  | **Exceptional:** FV6MYrcIe6xe8jBNv2RcIJGMkhPCPlG2RSL0c4ILpP4OwBbaT01 (above 50 characters and thus above the maximum length for username and password for the user table) | Input is not accepted and not inserted on the user table. | Error message echoed in the header - informs user that their input was invalid |  |
|  | **Exceptional:** “ “ | Input is not accepted and not inserted on the user table. Error echoed in the header. | Follows expected result |  |
|  | **Exceptional:** NULL | Input is not accepted and not inserted on the user table. | Form requests user to fill out form. |  |
|  | **Exceptional:** OR 1=1 (SQL injection) in password field | Input is not accepted and not inserted on the user table. Error message echoed in the header. | Follows expected result |  |
|  | **Exceptional:** %q8Q\* | Input is not accepted and not inserted on the user table. Error message echoed in the header. | Follows expected result |  |
| 2 | Access the home page via desktop | Displays the CSS style rules for the media query | Follows expected result |  |
|  | Access the home page via mobile | Omits the CSS styles rules for the media query | Follows expected result |  |
| 3 | User trying to log in with an account  (login using Quizmaster11) | Executes login and echoes input on home page | Follows Expected result |  |
|  | User trying to log in without an account (log in using noAccount as not on user table) | Redirects user to error page | Follows expected result |  |
| 4 | User trying to register with someone else’s username (register using Quizmaster11) | Echoes error message from session variable | Follows expected result |  |
| 5 | Unregistered user trying to access the quiz | Redirects user to error page | Follows expected result |  |
| 6 (Using account Quizmaster11) | Normal: User completes quiz in 50s with 3 correct answers | Inserts the score as 5 and the time completed as 50 | Returns expected result |  |
|  | Extreme: User completes quiz with 3 correct answers and in 70s | Inserts the score as 6 and the time completed as 70 | Returns expected result |  |
|  | Extreme: User completes quiz with 3 correct answers and in 69s | Inserts the score as 5 and the time completed as 69 | Returns expected result |  |
|  | Extreme: User completes quiz with 3 correct answers and in 31s | Inserts the score as 5 and the time completed as 31 | Returns expected result |  |
|  | Extreme: User completes quiz with 3 correct answers and in 30s | Inserts the score as 4 and the time completed as 30 | Returns expected result |  |
|  | Extreme: User completes quiz with 3 correct answers and in 10s | Inserts the score as 4 and the time completed as 10 | Returns expected result |  |
|  | Extreme: User completes quiz with 3 correct answers and in 9s | Inserts the score as 3 and the time completed as 9 | Returns expected result |  |
|  | Extreme: User completes quiz with 3 correct answers and in 0s | Inserts the score as 3 and the time completed as 0 | Returns expected result |  |
|  | Exceptational: User completes quiz with 3 correct answers and in -1s | Alert pops up and user cannot interact with the page | Returns expected result |  |
| 7 (using user101 and user202) | Two users share the same time on leaderboard |  |  |  |
|  | Two users share the same score on leaderboard |  |  |  |
|  | Two users share the same time and score on leaderboard |  |  |  |
| 8 | User logging out with an account in use |  |  |  |
|  | User trying to log out without an account in use |  |  |  |

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### Testing with Persona and Test Cases

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| --- | --- | --- | --- | --- | --- |
| Requirement | Question | Persona 1: S3 Student | Persona 2: Parent of S3 Student | Persona 3: Teacher | Evaluation of Results |
| Use session variables to store the current account in use | Were you aware what account you were using when using the website? | Yes | Yes | Yes | Requirement met |
| Format the user interface based on the CSS in an external stylesheet / make each page similar in layout and design for visual clarity | Do you think the website is consistent in design and layout? | Yes | Yes | Yes | Requirement met |
| Use a clear and legible font family, colour and size for readability | Can you read the text on each page clearly with the font that has been used? | Yes | Yes | Yes | Requirement met |
| Make use of white space for further readability | Are elements spaced out well? | Yes | Yes | Yes | Requirement met |
| Use a pleasing and consistent colour palette for visual clarity | Do you find the colours used overwhelming? | No | No | No | Requirement met |
| Implement a intuitive navigation bar so the website is easy-to-navigate | Is the website easy to navigate? | Yes | Yes | Yes | Requirement met |
| Make the functions of buttons, links, etc clear so users know what to expect when they use them | Do you understand what each button and link does? | Yes | Yes | Yes | Requirement met |