**Testing**

**Comprehensive Test Plan**

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| Functionality to test | Time taken to test this | Tester | Issues |
| Basic playing the quiz | Unit testing as programmed | Me | No |
| Refreshing leader board | Unit testing as programmed | Me | Reading database wouldn’t work so bubble sort had nothing to sort |
| Logging into an account | Unit testing as programmed | Me | Reading database wouldn’t work so had nothing to verify the login |
| Registering an account | Unit testing as programmed | Me | Syntax error with insert query stated in ongoing log |
| Saving account details | Unit testing as programmed | Me | Syntax error with insert query stated in ongoing log |

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| Test case | Time taken to test this | Tester | Issues |
| Reading quiz data into method | Unit testing as programmed | Me | Library not downloaded stated in ongoing log |
| Button to refresh leader board | Unit testing as programmed | Me | Library not downloaded stated in ongoing log |
| Level methods | Unit testing as programmed | Me | no |
| Inserting quiz data into database | Unit testing as programmed | Me | Syntax error with insert query stated in ongoing log |

Requirements Testing

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| Test Case | User input | Output | Expected Output |
| Check if the user can play the game without logging in | Clicking the start quiz button |  | The program will display a message saying you must log in or create an account |
| Check user input for account input(same regardless of login or register button pressed) | The username “sahil123” and the password “sahil123” after clicking the login button        The username “sahil123” and the password “WRONG” after clicking the login button      The username “WRONG” and the password “sahil123” after clicking the login button | The output of entering username “sahil123” and password “sahil123”    The output of entering username “sahil123” and the password “WRONG”    The output of entering username “WRONG” and the password “sahil123” | The program will display a message saying which input isn’t 8 characters |
| Questions are validated correctly | I logged into the sahil123 account and played from the start it then asked me this    I responded with: | The program then said this after I inputted the capital of France as “Paris”    It said that the answer was “correct” the previous message was there from before  It then asked me if I wanted to continue | The program will say the answer is correct if the answer is correct, it should then ask if I would like to continue on from that level |
| Check registration info is written to database upon registration | I registered with the username “TEST1234” and the password “SQACOOL1” as these were both 8 characters | The program then told me how many users there were    And then it showed that I had registered by showing the username and what level I am at login    I then opened up the database and went to the table here’s what I saw:  It registered the username and password perfectly and set the level to 0 as it should | The program should tell me how many users there is and then it will tell me that I have registered and logged in my showing me in the username listbox  It will update the database with my new registered information |
| User tries to sign out and save an account without being logged in | I started the program and did nothing but press the sign out button    after the program had outputted I then closed the program  I started it again and pressed the save account button    after the program had outputted I then closed the program | After I pressed sign out this is what had outputted    After I pressed the save account button this is what had outputted | The program should regardless of button pressed display a message saying I was not signed in |
| Check a user’s username is the same as when they registered | Earlier when I had registered the account to check the account was written to the database I had registered with the username “TEST1234” and the password “SQACOOL1” I then logged into this account | After I logged in here’s what displayed    This shows that the username is remembered and the username is the same as when I registered | The program will display in the listbox what the logged in username is and if the program has remembered my username then it will show that in the listbox |
| Check a user with the highest level gets the position on the leader board | For testing purposes I had then inputted various values into the database    After that I had then clicked the refresh leaderboard after starting the program | After I had clicked the button here is what came up on the leaderboard    This clearly did what it was meant to and was a huge success! | The bubble sort should sort the highest user and whoever ties with them and then display their usernames |
| Check a user can’t make an account when there’s already 10 users | For testing purposes I needed to create 10 accounts and then try to make an 11th  Heres the 10 accounts    Next I tried to make the 11th account with the username”testing1” and the password “notgonna” | Here’s what happened  After it told me how many users there were it then said    The program would not continue as expected  Here’s the database after    It didn’t change at all thank god | The program MUST not write to the database if there is 10 users instead it will output a message saying theres too many accounts |
| Check a user gets recognised for tying with the highest scorer | I pressed the refresh leaderboard button  Here was the database | Here’s the output    This is exactly what should’ve happened and is the correct 3 that all tied together with a score of 3 | the program should find the highest users and say they are either the highest or tied with the highest |
| Not answering correctly | I then logged into the random12 user account and then continued and answered London to the question what is the capital of France | Here's what happened  The program listbox outputted this    And it then asked me the question again    This is exactly what I wanted it to do but this also raised the issue what happens if a user doesn’t know the answer to a question  In hindsight implementing a way for a user to exit a question would’ve been wise  Let’s say I still didn’t know it was paris and tried to exit by pressing the cancel button here’s what happens    This is an extreme design flaw that should’ve been thought about at the requirements stage | The program should tell me the question is wrong and give me another chance to answer it |
| Check a user can continue from the last level they completed plus 1 | I logged into the TEST1234 account as its level was 2 this means I should be able to start from level 3  When prompted do I want to select a level I said yes and it asked what level I wanted to start from I said 3 | Here’s what happened    It played the next level as expected | It should logically go to the next level as the last level TEST1234 had completed was level 2 |
| See what the program does when 2 highest scorers with the same name tie | For testing purposes I changed the database so that jack was now woohoo12 the same username as another user with the same level    After that I started the program and pressed the refresh leaderboard button | Heres what happened    This is what was expected and there was no errors here | The program should just display a message saying they both tied with suittie1 |

**Persona test**

Persona- Michael is a 22-year-old university student who has an interest in fun little games like quizzes and puzzles he forgot about my quiz and hasn’t played it in a year! He didn’t ever complete it fully but remembers his username and password. When Michael played the game a year ago he completed level 1 and stopped playing.

He remembers his username and password as the following:

Username-Michael1

Password-COOLquiz

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| Test Case | User Input | Output | Expected Output |
| Michael continuing from after completing 1 level | After I entered the details it told me the characters for username and password were both 8 and then it said this    Meaning the login was verified I then tried to select level 2 | And it asked me    This was exactly what was expected that still after a year the account would be logged into and would be able to continue from level 2 | The account will have a level of 1 since he has already completed 1 and therefore, he will be allowed to continue from 2 |
| Michael saves his account after continuing | I entered London and then once I got the question right I said no I don’t want to continue it was here that I pressed the save account button | It had then saved michaels name and password in the database and his level was now 2 with no duplicates | Michaels level should simply change to 2 |
| Michael forgets to login and clicks sign out | I clicked the sing out button after starting the program | Here’s what happened    This is exactly what was expected | The program should simply tell Michael he wasn’t signed in so how can you sign out |
| Michael gets to level 3 and wants to see himself on the leader board | Michael is now level 3 and refreshes the leaderboard  Here’s what the database looked like | Michael is now on the leaderboard!    This is the expected outcome with him tied in the leaderboard | Michael should be on the leaderboard now with anybody else that is level 3 aswell |
| Michael starts from the start when logging in | Michael types “start” after clicking the start quiz button | Heres what happened    As expected level 1 is what is outputted | It should start level 1 |