# **SD-TA-011 Quality Assurance & Software Testing** **Oleksii Nikitin Assignment**

# Task 1 - Understanding Quality Assurance Principles and Practices (30 Marks)

### A) Outline the importance of involving the principles of quality assurance throughout the various stages of a software development process.

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### B) Discuss how organisations can benefit from adopting and implementing robust quality assurance and software testing processes effectively.

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### C) Explain how both poor and robust quality assurance can impact the overall security of software.

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Task 2 - Preparing a Software Testing Plan (20 Marks)

With reference to the provided scenario, prepare a test plan for the application currently in development. The test plan should clearly outline and justify the objectives, scope, and testing methodology being utilised.

Task 3 - Implementing a Software Testing Plan (30 Marks)

Based on the test plan produced in Task 2, implement your plan by conducting a robust testing process on the application currently in development. The tests must be appropriately evidenced and supported by using a test log which clearly defines the test data, inputs, expected outputs, actual outputs and test results.

Task 4 - Analysing and Reviewing Testing Processes & Results (20 Marks) Produce a report containing a critical review of the testing process carried out in Task 3 including an analysis of the results produced by the application compared to the initial design specification. The report should also include a justification of the validity of the tests and identification of any potential issues.

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-001-A | Register a new account (Case A). | The user with typical credentials registers a new account on the platform. | 1. Navigate to the registration page by pressing ‘New User? [Click To Register](http://127.0.0.1:5000/register)’ from the Login page.  2. Enter the registration details.  3. Submit the registration form by pressing ‘Register’. | 1. Username: Caoimhe Ni Chathasaigh  2. Email: caoimhe@example.com  3. Password: lyFa$gnh}}Z8@hVMvH8n | A new account is successfully created, and confirmation is received. | [Passed]  As expected. |
| FR-001-B | Register a new account (Case B). | Register with edge-case credentials and a weak password | 1. Navigate to the registration page by pressing ‘New User? [Click To Register](http://127.0.0.1:5000/register)’ from the Login page.  2. Enter the registration details.  3. Submit the registration form by pressing ‘Register’. | 1. Username: Oisín N'Gallagher  2. Email: oisin@example.com  3. Password: 123 | A new account is successfully created, and confirmation is received as in the Application functionality not required to have a strong password | [Passed]  As expected. |
| FR-001-C | Register a new account (Case C). | Register with existing username and email, using credentials from the FR-001-A test case. | 1. Navigate to the registration page by pressing ‘New User? [Click To Register](http://127.0.0.1:5000/register)’ from the Login page.  2. Enter the registration details.  3. Submit the registration form by pressing ‘Register’. | 1. Username: Caoimhe Ni Chathasaigh  2. Email: caoimhe@example.com  3. Password: V]\_=%IfOPz2CA4Sefc}[ | The error message is displayed about username and/or email already existing. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-002-A | Login to existing accounts (Case A) | The user logs in to an existing account using FR-001-B credentials. | 1. Navigate to the [login page](http://127.0.0.1:5000/login).  2. Enter login credentials.  3. Submit the login form by pressing ‘Sign In’ button. | 1. Username: Oisín N'Gallagher  2. Password: 123 | The user is successfully logged in and redirected to the home (index) page. | [Passed]  As expected. |
| FR-002-B | Login to existing accounts (Case B) | Login with an incorrect password | 1. Navigate to the [login page](http://127.0.0.1:5000/login).  2. Enter login credentials.  3. Submit the login form by pressing the ‘Sign In’ button. | 1. Username: Oisín N'Gallagher  2. Password: password123 | An error message is displayed: The username or password is incorrect. | [Passed]  As expected. |
| FR-002-C | Log in to existing accounts (Case C) | Login attempt with an unregistered username | 1. Navigate to the [login page](http://127.0.0.1:5000/login).  2. Enter login credentials.  3. Submit the login form by pressing the ‘Sign In’ button. | 1. Username: Oisín N'Gallaghe  2. Password: 123 | An error message is displayed: The username or password is incorrect | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-003-A | Create a post (Case A) | The user creates a new post with max characters. | 1. Navigate to the post creation page (home page).  2. Enter 140 characters of text.  3. Submit the post by pressing the ‘Post’ button. | “Exploring the art of brevity: This post is designed to fit within 140 characters, showcasing the challenge of succinct expression.” | A new post with max characters is successfully created and visible on the user's profile. | [Passed]  As expected. |
| FR-003-B | Create a post (Case B) | The user creates a new post with over maximum characters. | 1. Navigate to the post creation page (home page).  2. Enter 150 characters of text.  3. Submit the post by pressing the ‘Post’ button. | “Quick insights in a flash: This ultra-short post is crafted to fit perfectly within 150 characters, demonstrating concise communication.” | A new post fails to appear on the user's profile after creation due to the 140-character limit. | [Failed/Medium]  The maximum allowed length should be 140. |
| FR-003-C | Create a post (Case A) | Create a post with special characters | 1. Navigate to the post creation page (home page).  2. Enter text with special characters.  3. Submit the post by pressing the ‘Post’ button. | “Amazing read! 📚💖 #inspired” | A new post with special characters is successfully created and visible on the user's profile. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-004-A | View existing posts (Case A) | The user views posts from the current user. | 1. Log in to the Oisín N'Gallagher account.  2. Navigate to the homepage to see the latest posts from the current user. | Target profile Oisín N'Gallagher | The user can see the posts made by himself starting from the recent ones. | [Passed]  As expected. |
| FR-004-B | View existing posts (Case B) | The user views posts from other users. | 1. Log in to the Oisín N'Gallagher account.  2. Navigate to Explorer page | Target the Explorer page | The user can see and interact with posts from other users. | [Passed]  As expected. |
| FR-004-C | View existing posts (Case C) | The user views the posts of a specific user. | 1. Log in to the Oisín N'Gallagher account.  2. Navigate to Explorer page  3. Pick a user from currently posted posts to navigate to their profile | Target profile Caoime Ni Chathasaigh | The user can see and interact with posts from the selected profile. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-005-A | Follow profiles (Case A) | The user follows another profile. | 1. Log in to the user account. 2. Navigate to the profile of another user. 3. Click the 'Follow' button. | Target profile Caoime Ni Chathasaigh | The user is now following the profile, and updates from this profile appear in the user's feed. | [Passed]  As expected. |
| FR-005-B | Follow a profile already followed (Case B) | Attempt to follow a profile that the user is already following. | 1. Log in to the user account. 2. Navigate to a profile that the user already follows. 3. Attempt to click the 'Follow' button (should be disabled or not visible). | Target profile Caoimhe Ni Chathasaigh | The system prevents the action and may display a message indicating the user already follows the profile. | [Failed/Non-Critical] The system didn’t prevent the action, instead, the following procedure was executed a second time, which didn’t cause any error, but still should be processed by the application. |
| FR-005-C | Follow a non-existent profile (Case C) | Attempt to follow a profile that does not exist. | 1. Log in to the user account. 2. Manually enter a URL /user/user123. 3. Attempt to follow. | Target non-existent profile username ‘user123’ | The system displays an error message indicating the profile does not exist. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-006-A | Unfollow a profile successfully (Case A) | A user successfully unfollows another user's profile. | 1. Log in to the user account. 2. Navigate to the profile of a user they are following. 3. Click the 'Unfollow' button. | Target profile Caoimhe Ni Chathasaigh | The user is no longer following the profile and will not see new updates in their feed. | [Passed]  As expected. |
| FR-006-B | Unfollow a profile not followed (Case B) | Attempt to unfollow a profile the user does not follow. | 1. Log in to the user account. 2. Navigate to a profile that the user is not following. 3. Attempt to click the 'Unfollow' button (should be disabled or not visible). | Target profile Caoimhe Ni Chathasaigh | The system does not display an 'Unfollow' button. | [Passed]  As expected. |
| FR-006-C | Unfollow a non-existent profile | Attempt to unfollow a profile that does not exist. | 1. Log in to the user account. 2. Manually enter a URL /unfollow/user123 and attempt to unfollow. | Target non-existent profile username ‘user123’ | The system displays an error message indicating the profile does not exist and the unfollow action won’t be executed | [Passed]  As expected. The Error message appeared and the user was redirected to the Home page. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-007-A | View profiles | The user views the details of a profile of another user. | Log in to the user account.  Navigate directly to another user's profile page via the search function or URL. | Target profile Caoimhe Ni Chathasaigh | Profile details are visible including posts, followers, and following count. | [Passed]  As expected. |
| FR-007-B | View a profile from a post | A user navigates to a profile by clicking on the username ‘Caoimhe Ni Chathasaigh’ from a post. | 1. Visit the Explore page to find posts from Caoimhe Ni Chathasaigh  2. Select and navigate to the [Caoimhe Ni Chathasaigh profile page](http://127.0.0.1:5000/user/Caoimhe%20Ni%20Chathasaigh) by clicking on the username | Target profile Caoimhe Ni Chathasaigh | The system navigates to the profile page of the user linked from the post. | [Passed]  As expected. |
| FR-007-C | Attempt to view a private or non-existent profile | A user tries to view a profile that is set to private or does not exist. | 1. Log in to the user account. 2. Search for a non-existent user ‘user123’ profile and attempt to view it. | Non-existent ‘user123’ profile | The system displays a message that the profile does not exist. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-008-A | Change username successfully | The user changes their username. | 1. Navigate to account settings.  2. Change the username.  3. Save changes. | New Username set to ‘Oisín N'Gallagher1’ | The username is successfully updated. | [Passed]  As expected. |
| FR-008-B | Change username to an already taken username | A user attempts to change their username to one that is already in use by another account. | Log in to the user account.  Navigate to the Profile page.  Attempt to change the username to one known to be already taken. | Set the Username to ‘Caoimhe Ni Chathasaigh’ | The system rejects the change and displays an error message indicating the username is already taken. | [Passed]  As expected. |
| FR-008-C | Change username to an invalid format | A user attempts to change their username to one that does not meet the format requirements (e.g., too long, contains multiple invalid characters). | 1. Log in to the user account. 2. Navigate to the account settings. 3. Attempt to change the username to an invalid format. | Very long and invalid username format | The system prevents the username change and displays an error message about the invalid format. | [Failed/Critical] The system didn’t prevent the action, it renamed to an invalid format username, which could cause significant errors for other users or significantly slow down the system. The Critical Error should be fixed. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-009-A | Customize the ‘about me’ section of your own profile | A user successfully updates the ‘About Me’ section of their profile. | 1. Log in to the user account. 2. Navigate to the profile edit page. 3. Update the ‘About Me’ section and save the changes. | New ‘About Me’ text | The system saves the changes and displays the updated ‘About Me’ on the user profile. | [Passed]  As expected. |
| FR-009-B | Update the ‘About Me’ section with an excessive character limit | A user attempts to update the ‘About Me’ section with text exceeding the character limit. | 1. Log in to the user account. 2. Navigate to the profile edit page. 3. Enter text exceeding the character limit in the ‘About Me’ section and attempt to save. | Excessively long ‘About Me’ text | The system does not save the text and shows an error message regarding the character limit. | [Passed]  As expected. |
| FR-009-C | Clear ‘About Me’ section | A user clears all text from the ‘About Me’ section of their profile. | 1. Log in to the user account. 2. Navigate to the profile edit page. 3. Clear the ‘About Me’ text and save changes. | Empty text field | The system saves the changes and displays an empty ‘About Me’ section on the profile. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-010-A | See when a profile was last active | A user views the last active time displayed on current user's profile. | 1. Navigate to another user’s profile page. |  | The profile page shows the last active time correctly based on the user's last login or activity. | [Passed]  As expected. |
| FR-010-B | Last active time updates on activity | Verify that a user’s last active time updates when they perform an activity (e.g., posting). | 1. Log in to the user account. 2. Post a new message. 3. View the user's profile. | Any message content for the post | The profile's last active time updates to reflect the time of the last post. | [Failed/Critical]  The user’s Last activity time was updated on login, not on the post activity, which could cause privacy concernes. |
| FR-010-C | Verify display of approximate post time | Ensure that the system correctly displays the approximate time a post was made. | 1. Log in to the user account. 2. Navigate to the homepage or feed where posts are displayed. 3. Observe the time indication next to a post. |  | Each post should display an approximate time since posting, such as "a few seconds ago," "5 minutes ago," "2 hours ago," "yesterday," "2 days ago," etc., based on the current time and the post creation timestamp. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-011-A | See how many followers a profile has | The user checks how many followers a profile has. | Navigate to a profile page. |  | Number of followers is visible on the profile. | [Passed]  As expected. |
| FR-011-B | Update follower count after new follow | Verify that the follower count updates immediately after a new user follows the profile. | 1. Log in with a secondary account and follow a primary user. 2. Refresh or revisit the primary user's profile from a different account to check the updated follower count. |  | The follower count on the primary user’s profile increments by one immediately after the follow. | [Passed]  As expected. |
| FR-011-C | Follower count accuracy with unfollow action | Ensure the follower count decreases accurately when a user unfollows the profile. | Unfollow a user from a secondary account.  Revisit the unfollowed user's profile to check the updated follower count. |  |  | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-012-A | See how many people a profile is following | The user checks how many people a profile is following. | Navigate to another user's profile. |  | The number of people the profile is following is visible. | [Passed]  As expected. |
| FR-012-B | Following count updates after new follow | Verify that the following count updates correctly when a user follows a new profile. | Log in to the user account.  Follow another user.  Check the user’s own profile to see if the following count has updated. | Caoimhe Ni Chathasaigh of the user to follow | The user's profile page shows an incremented following count. | [Passed]  As expected. |
| FR-012-C | View own following count after unfollowing | A user unfollows another user and checks if their own following count decreases. | Log in to the user account.  Unfollow another user.  View own profile to check updated following count. | Caoimhe Ni Chathasaigh user profile | The following count on the user’s profile decreases by one. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-013 | Customize their own avatar using the Gravatar service | The user customizes their avatar using Gravatar. | 1. Navigate to the Gravatar website.  2. Link Gravatar to profile.  3. Customize avatar. | Email associated with Gravatar | A new avatar is successfully displayed on the profile. | [Untestable]  The service is untestable on developing stage as not real emails were used for these tests. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-014-A | View a feed of posts from profiles being followed | The user views a feed of posts from profiles they are following. | Navigate to the Home page. |  | The feed displays posts from all profiles the user is following in reverse chronological order. | [Passed]  As expected. |
| FR-014-B | Feed updates after following a new profile | Verify that the feed updates to include posts from a newly followed profile. | Log in to the user account.  Follow a new profile.  Navigate back to the Home page. | The newly followed profile is Oisín N'Gallagher | The feed now includes posts from the newly followed profile. | [Passed]  As expected. |
| FR-014-C | No posts in feed from unfollowed profiles | Ensure that the feed does not show posts from profiles after they have been unfollowed. | Log in to the user account.  Unfollow a profile whose posts were previously visible in the feed.  Navigate back to the main feed page. | The unfollowed profile is Oisín N'Gallagher | The feed no longer shows posts from the unfollowed profile. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| NFR-001 | User profiles on the site can only be changed by the owner of the profile | Verify that the profile owner can successfully modify their profile information. | Log in to the user account.  Navigate to profile settings.  Make changes to profile details and save. | New profile name admin1 | Changes are saved and reflected on the profile. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| NFR-002 | The site shall be efficient and easy to use | Evaluate the site's usability and efficiency. | 1. Navigate through the site's main features.  2. Assess load times and responsiveness.  3. Check for intuitive navigation and user interface.  4. Check Console Panel on Dev Tools for errors |  | The site is user-friendly, error-free with quick load times and intuitive navigation. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| NFR-003 | Viewing posts on the site shall require registration to the site | The site requires users to register before they can view posts. | 1. Attempt to view posts without logging in.  2. Register a new account.  3. Attempt to view posts after logging in. |  | Posts are not visible without registration. After registration, posts are accessible. | [Passed]  As expected. |

## Additional extra test cases were taken from The Assessment Scenario Documentation but weren't mentioned in the test cases list.

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-015 | Posts will be made up of any characters of a length from 1 to 140 | Ensure posts can be created with any length within the specified range. | 1. Attempt to create posts of various lengths within and outside the specified range. | Post content of various lengths | Post creation is successful for lengths from 1 to 140 characters and fails for lengths beyond 140. | [Failed/Non-Critical]  The actual maximum allowed length is 160. |

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| FR-016 | Each and every feed shall support pagination to the degree of ten posts being displayed per page | Verify the pagination supports displaying exactly ten posts per page. | 1. Populate the feed with more than ten posts. 2. Navigate through pages to verify the count per page. |  | Each page should display exactly ten posts until there are fewer than ten remaining. | [Failed/Non-Critical]  Each page shows only 9 posts. |

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| FR-017 | The user should not be able to click ‘newer posts’ or ‘older posts’ if there are none of the desired left to view | Ensure the navigation buttons for newer and older posts are disabled when appropriate. | 1. Navigate to the oldest and newest posts in the feed.  2. Check the state of the navigation buttons. |  | The ‘Older Posts’ buttons are disabled when there are no more posts to navigate to. | [Passed]  As expected. |

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| FR-018 | Only users registered to the site should be able to view posts on the site. | Confirm that viewing posts requires user registration. | 1. Attempt to view posts without being logged in. |  | Unregistered users cannot view posts, and a prompt to log in or register is displayed; registered users can view posts. | [Passed]  As expected. |

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| **Test Case ID** | **Test Title** | **Description** | **Test Steps** | **Input Data** | **Expected Results** | **Actual Results** |
| FR-019-A | Users should not be able to **follow** themselves | Ensure users cannot follow their own profiles. | 1. Login.  2. Enter a custom URL to execute command of following themselves. | /follow/admin1 | Related Error message should appear emphasising the impossibility of the action | [Passed]  As expected. |
| FR-019-B | Users should not be able to **Unfollow** themselves | Ensure users cannot unfollow their own profiles. | 1. Login.  2. Enter a custom URL to execute command of following themselves. | /unfollow/admin1 | Related Error message should appear emphasising the impossibility of the action | [Passed]  As expected. |