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Department of Computer Science

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**Testing document**

Impact Project Records Website (project 3)

Team 1

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# 1. Acceptance testing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Input sequence | Expected result | Current output | comments | user |
| Req 1: Login |  |  |  | Admin, Reviewer, Collaborator |
| Correct login:  Valid\_name,  Valid\_psswd | Login accepted | Load home page |  |  |
| Incorrect login:  Valid\_name,  Wrong\_psswd | Login incorrect  "Incorrect Email or Password Found" | Login incorrect  "Incorrect Email or Password Found" |  |  |
| Incorrect login:  Wrong\_name | Login incorrect  "Incorrect Email or Password Found" | "Incorrect Email or Password Found" |  |  |
| Incorrect login:  No email | Login fails  “Username is required” | Login fails  “Username is required” |  |  |
| Incorrect login:  No password | Login fails  “Password is required” | Login fails  “Password is required” |  |  |
| Req 2: Access dashboard | Accessible | View dashboard |  | Admin |
| Req 3: Access research project records | Accessible | View research projects page (name, summary, department etc) |  | Admin, reviewer, collaborator |
| Req 4: filter research projects (by departments) | Filter by chosen department | Show the research projects for chosen department |  | Admin, reviewer, collaborator |
| Req 5: sort research projects (by project title, department, investigator, progress, UOA) | Filter by chosen option | Show the research projects alphabetically for chosen option |  | Admin, reviewer, collaborator |
| Req 6: upload research project |  |  |  | Admin |
| Correct upload:  All fields are filled, and selections were made | Upload accepted | Research project uploaded |  |  |
| Incorrect upload:  Any required field not filled | Upload not accepted | Empty field is required (e.g., Project title is required) |  |  |
| Incorrect upload:  No selection of Grants, Faculty, UOA, impact progress, file | Upload not accepted | Select your (Grants, Faculty, UOA, impact progress, file) |  |  |
| Req 7: upload more files for selected research project |  |  |  | Admin |
| Correct upload:  Research project was selected, and file was chosen | Upload accepted | File uploaded |  |  |
| Incorrect upload:  Valid\_ResearchProject,  No selection of file | Upload not accepted | Please select file |  |  |
| Incorrect upload:  No selection of Research Project,  Valid\_file | Upload not accepted | Select a Research Project |  |  |
| Req 8: upload more grants |  |  |  | Admin |
| Correct upload:  Research project was selected, date was chosen, valid\_amount, valid\_name | Upload accepted | Grant uploaded |  |  |
| incorrect upload: Any required field not filled | Upload not accepted | Empty field is required (project, date, amount, name) |  |  |
| Req 9: view impact projects | Accessible | View impact project page (impact record name, impact record evidence, impact record file) |  | Admin, reviewer, collaborator |
| Req 10: download all files in zip folder | Zip downloaded with all files | Zip downloaded with all files |  | Admin, reviewer, collaborator |
| Req 11: upload impact evidence |  |  |  | Admin, reviewer, collaborator |
| Correct upload:  All fields are filled, and selections were made | Upload accepted | Impact project uploaded |  |  |
| Incorrect upload:  Any required field not filled | Empty field is required (e.g., Research Project is required) or select a file | Empty field is required (e.g., Research Project is required) or select a file |  |  |
| Req 12: Edit impact records | Records updated | Records  updated |  | Admin, reviewer, collaborator |
| Req 13: View all impact project | Accessible | View all impact records (name, evidence) |  | Admin, reviewer, collaborator |
| Req 14: view project details | Accessible | View all project details (name, summary, investigator, department etc) |  | Admin, reviewer, collaborator |
| Req 15: view users | Accessible | View all users(UserID, Email, collaborator/reviewer) |  | Admin |
| Req 16: assign users to projects |  |  |  | Admin |
| Incorrect project allocation: Research Project selected, Collaborator/reviewer not selected or selected | Incorrect project allocation if user already assigned to project | User already assigned to project |  |  |
| Correct project allocation: Research Project selected, Collaborator/reviewer selected | Correct project Allocation if user not already assigned to project | Project Allocation Added |  |  |
| Incorrect project allocation: No Research Project selected, Collaborator/reviewer not selected | Incorrect project allocation | Please fill out all inputs to assign the user. |  |  |
| Incorrect project allocation: Research Project selected, Collaborator/reviewer not selected | Incorrect project allocation | Please fill out all inputs to assign the user. |  |  |
| Req 17: view their profile | Accessible | View user profile (logoff, change password) |  | Admin, reviewer, collaborator |
| Req 18: log off | Correct log off | Load login page |  | Admin, reviewer, collaborator |
| Req 19:  Change Password |  |  |  | Admin, Reviewer, Collaborator |
| password verified:  Valid\_old\_psswd,  Valid\_new\_psswd | Password verified,  Password changed | Password verified  Password Changed Successfully |  |  |
| Incorrect Password:  Wrong\_old\_psswd,  Valid\_new\_psswd | Password  Incorrect,  Password stays the same | Incorrect Password |  |  |
| Req 20:  Delete User |  |  |  | Admin |
| Confirmation popup accepted | User Deleted | User Deleted, Changes page |  |  |
| Confirmation button denied | User not deleted | User not deleted, Stays on same page |  |  |

# 3. Code inspection report

## 3.1 Introduction:

A code inspection of the Impact Project Records Website was undertaken, utilizing CSS, HTML, and PHP programming languages. This platform was developed for The University of Bradford's Research Development and Impact Team to manage and update information on research outputs and impact activities. The website's principal objective is to facilitate the uploading and viewing of files and data by project collaborators, reviewers, and administrators, respectively. Subsequent to the first presentation, client feedback prompted adjustments to the website's interface to satisfy the following specifications: the management of users by the admin, the addition of a progress table to the database, and the uploading/editing of impact records by the administrator. Additionally, impact records were to be linked to research projects, with notes and comments visible only to administrators. Collaborators and reviewers would no longer have access to view all collaborators or reviewers. Further specifications included a profile page for the user, cookies popup, and the merging of collaborators and reviewers into a single admin page, with the addition of a filtering feature for user type display.

As the Impact Project Records Website plays a crucial role in the University of Bradford's Research Development and Impact Team, it is imperative to maintain its performance, quality, and security. Our team conducted a comprehensive code inspection to identify potential issues that could affect the website's usability, performance, and security. The objective was to ensure the code's quality and maintainability to guarantee the website's functionality for all users.

## 3.2 Code Quality:

The quality of the website's codebase is commendable, with no significant issues likely to arise in the future. The HTML and CSS code have been meticulously organized, with appropriate tags and classes applied consistently throughout the website. The PHP code exhibits strong structural integrity and adheres to established best practices, including proper indentation and variable naming conventions. However, our team did identify several functions and classes that lacked comprehensive documentation, which could impede a new developer's ability to understand the code's purpose. To mitigate this issue and enhance the codebase's readability and maintainability, we added comments to all code files. These comments aim to explain the code's functionality and purpose, especially in complex or non-obvious sections. Our team also ensured that the website's performance is optimized, with fast load times and minimal page bloat, to provide users with a seamless browsing experience.

## 3.2 Usability:

The website design is characterized by its high level of clarity and user-friendliness, which is facilitated by the use of a consistent layout that enables easy access to various sections. The website's professional and minimalist appeal is enhanced by the predominantly black and white hues used in its design. Moreover, the text and images are suitably sized and formatted, which promotes ease of comprehension and readability. In addition, our team implemented a navigational feature in the form of the 'back' button, which is located on relevant pages to enhance user-friendliness and reduce confusion, thereby optimizing the website's usability. To ensure continuous improvement, we recommend comprehensive testing of the website on diverse systems and screens. This is crucial in verifying its responsiveness and adaptive design, which is tailored to fit different screen sizes, and ultimately enhances the user experience.

## 3.3 Security:

Access to each user’s account is locked behind a password, which is stored in the database and hashed using the Crypt\_Blowfish algorithm which is proven to be a strong hashing function. Using a strong hashing function will help ensure that if there is a data breach any hackers will still be unable to reverse-engineer any users password.

Example 1:

The website is secure, with appropriate measures taken including user input is being validated and sanitized to prevent common security issues such as SQL injection and cross-site scripting attacks. However, there is no code in place to regenerate the session ID after a user log in or logs out. This could potentially allow an attacker to hijack a user's session and access their account information.

## 3.4 Observations and recommendations:

HTML:

a) The overall structure of the code is well-organized and follows the HTML standards.

b) All the HTML tags are properly closed, and the code is indented correctly for readability.

c) Some pages were missing meta tags; they were added so they do not negatively impact search engine optimization (SEO).

d) The HTML code has some inline styles, which may lead to maintenance issues in the future. For further use, we suggest using a separate CSS file for styling the website.

e) Some images do not have alt attributes, which is essential for accessibility purposes.

f) There was a small amount of code duplication found throughout the codebase. They were removed to improve maintainability.

CSS:

a) The CSS file is well-structured and organized, with each selector and property on a separate line.

b) Some of the CSS styles were not used so they were removed to reduce the file size and improve website performance.

c) Instead of hard-coded pixel values, CSS frameworks like Bootstrap were used to prevent issues with responsiveness.

PHP:

a) The PHP code has several SQL queries and uses mysqli functions to interact with the database, which is a good practice for preventing SQL injection attacks.

b) The code has a well-structured variable naming consistency, which prevents confusion during maintenance.

c) The code has proper error handling, which prevents security vulnerabilities and website crashes and improve the robustness of the code. However, more error handling can be done. For instance, if a database connection fails, the code handles the error gracefully.

d) Several debugging procedures were conducted to ensure the accuracy of the hyperlinks and their ability to properly direct users to their intended webpages.

Dashboard:

Due to limits regarding licensing and the fact that we are developing through local machines we are unable to properly implement a live dashboard. Should this be properly implemented in a live environment with proper licensing the dashboard could be directly connected to the database so would be able to dynamically update as opposed to having to manually update the data the dashboard is handling.

# 3.5 Conclusion:

In conclusion, our team conducted a thorough code inspection of the Impact Project Records Website and found that the website's codebase is of commendable quality, with no significant issues likely to arise in the future. We identified several areas where improvements could be made, such as adding comprehensive documentation to functions and classes, optimizing the website's usability, and enhancing the codebase's readability and maintainability. To ensure the website's continued functionality, we recommend that the University of Bradford's Research Development and Impact Team conduct comprehensive testing on diverse systems and screens. Overall, this code inspection report provides valuable insights into the website's performance, quality, and security, and offers recommendations for improvements to ensure the website's continued success.

# 4. Work assignment and peer-review

Samuel Coyle 21011003

Samuel updated the boot strap of the home page after the prototype meeting as the client wished to restrict the user's accessibility from within the website and have admin only having full access. This meant that the layout was changed using the new interfaces as a guide and the pages were linked together to create seamless transitions when navigating the website. A GDPR prompt to allow the user to accept the use of cookies was created and allows the user to never accept cookies again once they had done in once unless they are using a different browser or incognito mode. Some CSS was changed to alter the colour of buttons such as the logoff/login button. Samuel collaborated with Ceri to create the dashboard; the dashboard was made with Tableau Public using data from the database and embedded within the website. Also, the images were changed from being hosted on imgur to being hosted locally within a folder called IMG. (Some of Samuel’s additions to GitHub were uploaded by Ceridwen as they collaborated). The best lesson Sam learned from this project was having to use JavaScript after having never used JavaScript before. Sam had to create a GDPR cookie prompt via the use of JavaScript, which was a difficult process as the language differs from the conventions of HTML and CSS. Sam found this opportunity useful and was intrigued over the potential of JavaScript.

Contribution: 10 out of 10.

Ceridwen Grey 21005946

Ceridwen Grey is the Team speaker. The tasks after the prototype showing with the client was to create the updates interfaces with specificities that the client requested, these included that the research projects and impact records be separated. Then to create a new page to view the projects of a user, to rearrange the layout of the home page in accordance with the wishes of the client, the addition of back buttons throughout the website and a template for the impact projects page. The spreadsheet page was deleted as client didn’t want any association with the excel spreadsheet. The dashboard was created from the data within the dashboard and embedded onto the website to be viewed through the dashboard page: the dashboard contains infographics which benefits the client as data is visualised and can be easily read. (Some of Ceridwen’s additions to GitHub were uploaded by Samuel as they collaborated). The best lesson Ceridwen learned from this project was to use data visualise software such as Tableau to display the contents of the database in a way which was user friendly and easy to read. Ceri also touched on her problem-solving skills within a team and how to communicate effectively with other team members to keep on track of the project and to keep up tp date with GitHub submits.

Contribution: 10 out of 10.

Joanna Oruba 21025084

Joanna contributed to project, fulfilling the role of the Team Secretary. While attending the team’s meetings she took the minutes and uploaded them straight to the GitHub repository. One of Joanna’s responsibilities was to contact the Client via email, regarding content of templates or in case, where team wanted to clarify any queries. Joanna’s part in code was mainly anything related to functionality of uploading/downloading the files, uploading data to database from Research Project or Impact Evidence template, as well as debugging the project. The best lesson that Joanna learned from this project was problem-solving skills, expanding the knowledge of PHP language and learning how to work effectively with other team members.

Contribution: 10 out of 10.

Joshua Mackay 21030482

Joshua was the team leader and responsible for directing the team and over seeing their task submissions. During the development of the website, Joshua mainly focused on the database and integrating it with the websites PHP operations. This included the initial set up and further development of the database such as in handling user account operations. After the meeting with the client, Joshua gave the admin more access over the users; the ability to filter users, delete users and then created a page of all users and the ability to assign to project, delete their account and approve them as users for the site (after their initial account was made by them), this ensure only people approved by the user can access the site and no projects can be viewed unless the user is personally assigned to a project by the admin. More functionality pertaining to the user was also added; the user can now change their passwords via icon in the top right corner (users profile link). A new table was added to the database to store all the file names, and more columns to store data for each research project were added, this included an extra column to the research project table named Impact Assessment and changed the value of grant ID to be able to hold multiple grants. Also, he handled displaying the details of the research projects and impact records and assisted with implementing the ability to upload and download files for both the research project and impact records. The best lesson Joshua learned from this project was in expanding his knowledge and understanding of GitHub and how to use it effectively.

Contribution: 10 out of 10.

Shamim Akbari Bavani 21018873

Shamin oversaw the second submission template document, this includes the acceptance testing and code inspection for the project; this is based off the requirements document and holds all the information related to any occurrences that happen within the project such as, the log in feature and if it catches all instances of wrong log in detections. She also compiled a list of the entire work assignment dedicated to everyone based off the weekly meeting minutes. The CSS for change password and users profile page along with the CSS for the displayed research records and impact projects, along with assigning to a projects page were completed by Shamin and ensured that information that was being pulled from the database and displayed on the website was coherent and uniform with the CSS for the rest of the website. Another column was added within the database for notes that can be edited by the admin. The best lesson Shamim learned from this project was to work as a member of a team towards a project and communicate via GitHub and Teams. Shamim has also learnt to do CSS for website design in addition to acceptance testing and code inspection report.

Contribution: 10 out of 10.

# 5. Others

**Attached below are the GitHub Links to relevant files required from Team 1**

GitHub link <https://github.com/jfmackay01/Enterprise-Pro-Team-1/tree/main>

Meeting minutes link <https://github.com/jfmackay01/Enterprise-Pro-Team-1/tree/main/minutes>