COM533 Databases and Web Based Information Systems

Group 6

GROUP PROJECT – ASSIGNMENT 2

Introduction

Following on from the project planning stage, team roles within the implementation phase of the project have been agreed to allow everyone within the team a clear and fair distribution of the workload. Using the Agile/Scrum approach for the project implementation stage to allow a small degree of flexibility if changes to the implementation of the design were needed and agreed within the team. We have created scrum burndown charts to track out own progress within our individual tasks and communicate our progression to the other team members through comments and images of our up to date progression via email and WhatsApp and in meetings.

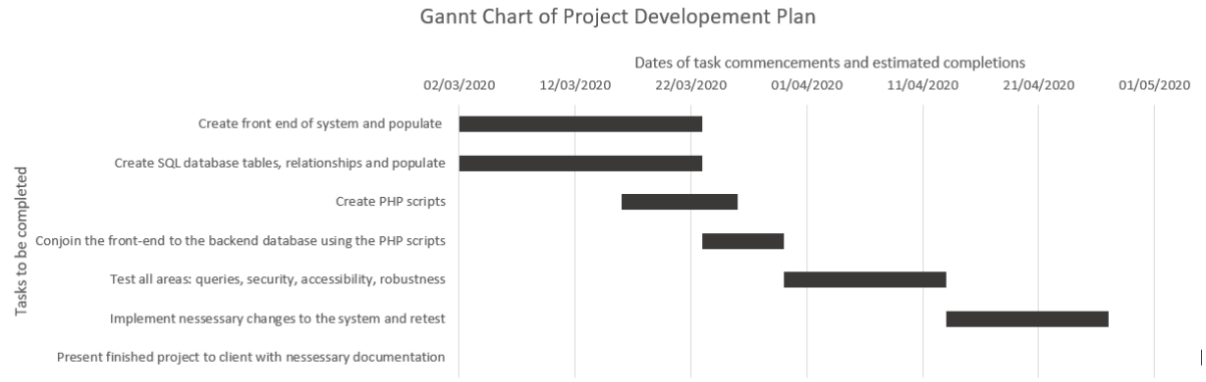


Figure 1-Gantt Chart Group Project Development

Using the previously determined timescales as a structure as shown within the Gannt chart, to enable everyone within the team clarity of the timescales.

Activity-Task	**Predecessor**	**Duration in working days**
A-Create front end of system and populate		21
B-Create SQL database tables, relationships and populate		21
C-Create PHP scripts		10
D-Conjoin frontend and backend using php scripts	A, B, C	7
E- Test all areas	A, B, C, D	14
F-Implement necessary changes to the system and retest	A, B, C, D, E	14
G-Present finished project to client with necessary documentation	A, B, C, D, E,F	1

Figure 1-Timescales within Gantt Chart

Furthermore, to the previously made Gannt chart is a diagram of dependencies. This displays the tasks which are dependent on other task's completion before they can themselves be completed.

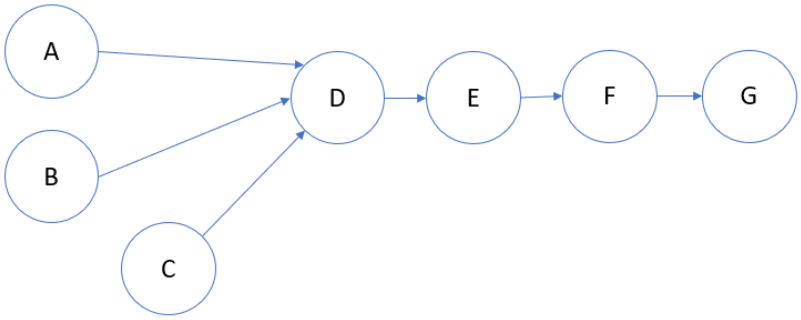


Figure 2-Diagram of Dependencies

By creating a Critical Path, Pert Chart we are able to establish the critical path and were the in the slack time (leniency time between one task dependency and another).
There is very little slack time within the project due to the imposed time constraint. It clearly defines that both tasks A and B and critical to be implemented first with no slack time whereas C can be commenced slightly later but is still a critical task which task D is equally dependant on.

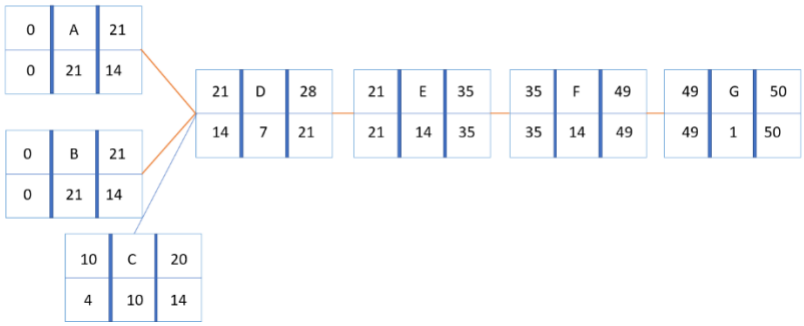


Figure 3-Diagram of Critical Path

Amendments and greater details of functional and non-functional requirements

Amendments to the methodology- On commencing this project and throughout the planning stages of the project the communication and work ethic throughout the group had proven itself to be strong and everyone with the group has agreed and implemented roles withing the planning and designing of the system. With this consideration is was agreed within the group that the communication should be upheld, and progress, issues and updates should be continued throughout the progression of the implementation phase via the WhatsApp Group set up prior. With each team member taking responsibility for areas within the projects and understanding their responsibility for their deadlines, based in the dependencies shown in the diagrams above, with a mutual agreement to communicate any issues infringing the project promptly.

Functional Requirements of the system

The GUI must firstly require user login in using correct username and password to allow applicable access to the system, dependant on their login credentials.

Access permissions will be based on a number within the database related to the individual's job role, in order to comply with GDPR regulations. Information only critical to the specific job role with be visible, editable or retrievable to that role.

Upon successful log in, the user will be able to access information required in their specific job role.

Those in the job role of help desk operators must be able to complete data entry in all fields of the online form within the system.

The help desk operators and managerial staff will have access to previous and currently active jobs on the system in order to update or retrieve further information pertinent to their job role in accordance to GDPR, such as searching for similar problems to see how they were solved or by whom.

Specialists can have more than one skill set on the database.

The data to be captured through the user interface by the help desk operator is to include all relevant data entry fields set out in the within the previous design brief, pertinent to the objectives set.

Logged jobs are to be stored with a date received, date of amendments and date of completion.

Once the job is completed the job should be changed from live to inactive, but still accessible on the database for data retrieval.

Help Desk operators must also have the ability to update forms by searching the database through the online using either the name of the worker who lodged the technical issue over the phone, the unique reference, the type of complaint, the date it was lodged.

Further information must be able to be retrieved from the database and displayed via the relative html fields to screen, providing the user has the job role permissions to do so.

The database must be created to third normal form to ensure that data redundancy and repetition of data is not an issue within the formed system.

Non-Functional Requirements of the system

The front-end layout is to be to a standardised structure as displayed in the prior design brief.

The Navigation bar is to display clear links to the areas of the system in which the user has access to.

There should be adequate spacing between the fields within the data entry forms

Clear font should be used throughout the system

The GUI should be responsive to layouts up to small laptop/ iPad size.

All pages within the GUI should show consistency of design.

The system should be created for the expectation of being self-explanatory and user-friendly with minimum time needed for training.

Changes to the original design

Due to the agile, scrum strategy the changes were made as the development took place. Issues and discussions over these changes were discussed with the contributing members of the team and agreed within the group via WhatsApp, face to face and there further to the lock down restrictions via Microsoft Teams and Zoom video calls.

Changes to the database and HTML were implemented to allow for access permissions and data security to be heightened. Further HTML pages have been created to allow fields of sensitive data to only be retrievable and processable staff in job roles which require this data. Using AES encryption method to further strengthen this approach and due to its straight forward implementation in the code.

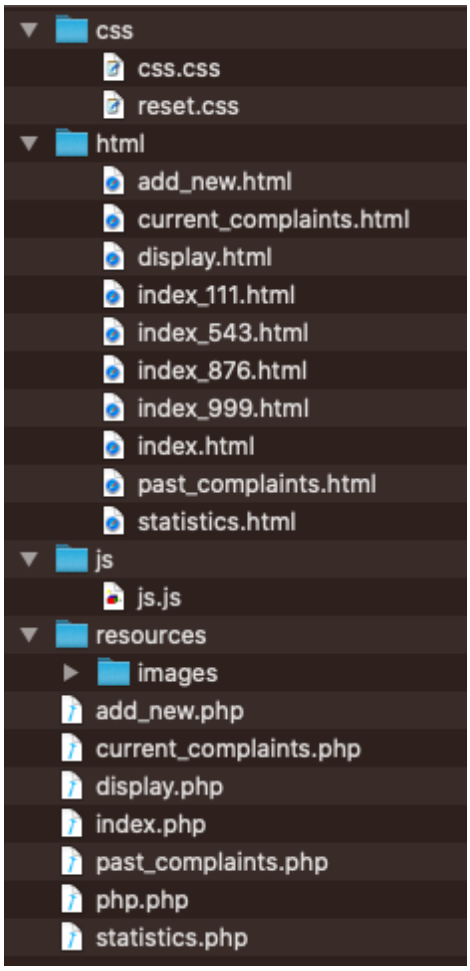


Figure 4-Amended file management

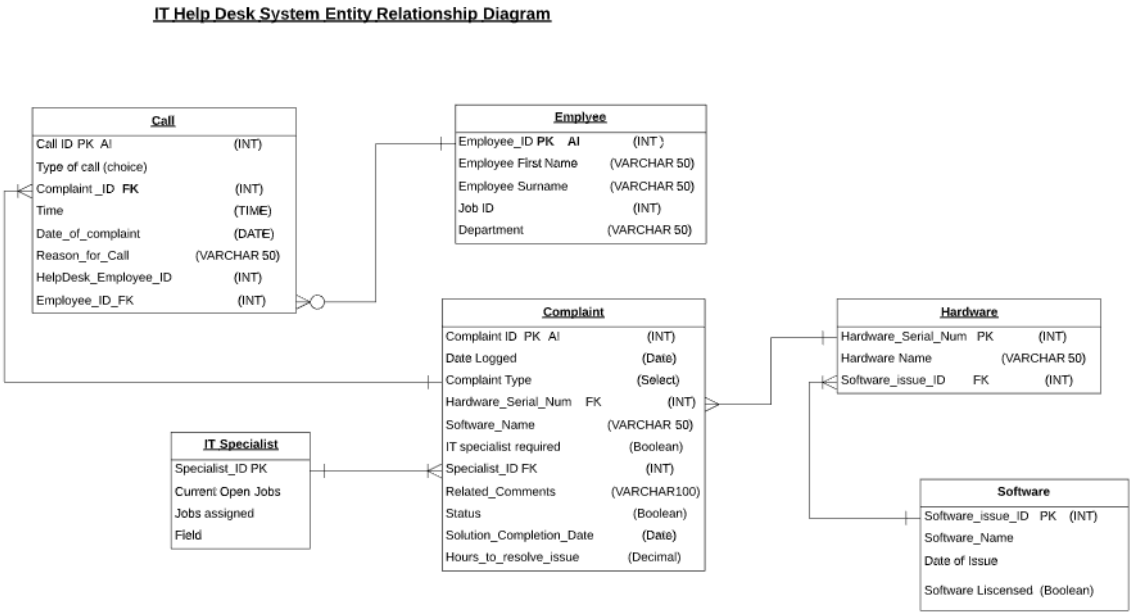


Figure 5-Original Entity Relationship Diagram

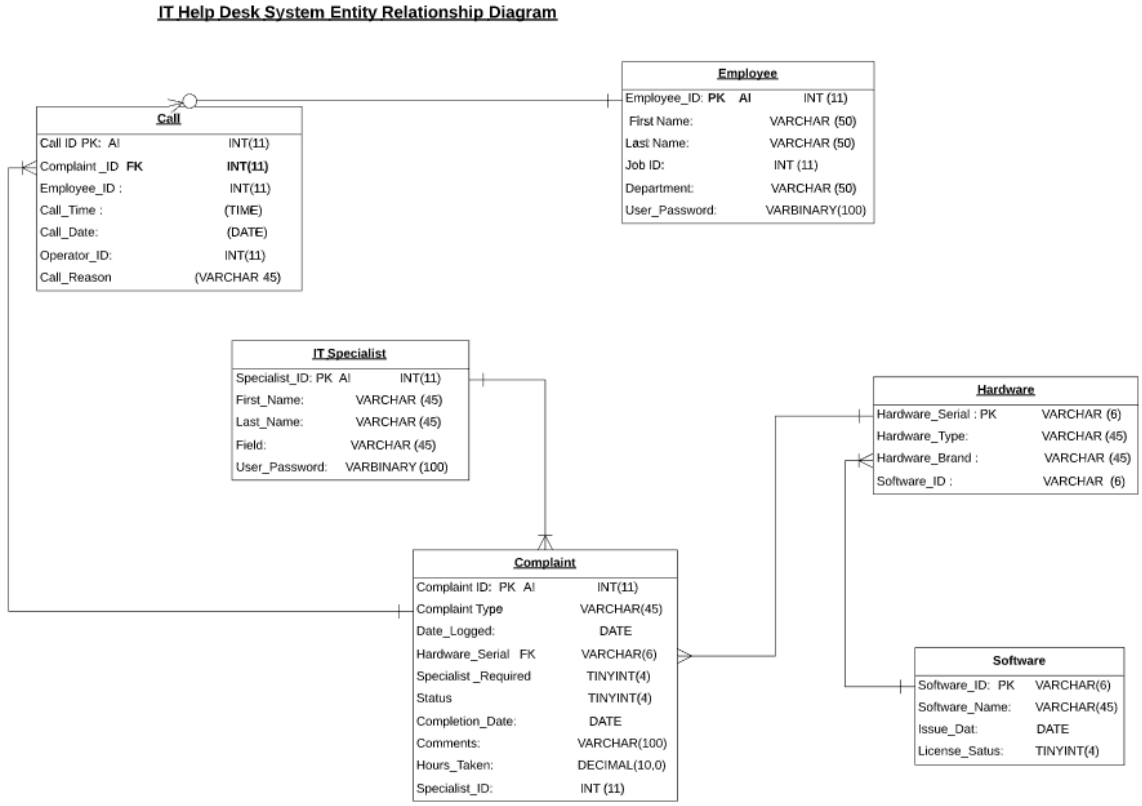


Figure 6-Amended Entity Relationship Diagram

Implementation of the project

By referring to the aims, objectives, functional and non-requirements, plus the time constraints of the project, as a team we were able to fine tune in further details the tasks required to be completed in a hierarchy of project needs defined in the Critical Path within the PERT chart, and clarified within scrum meetings and regular correspondence. From this, sprints were established to allow clarity of what was required and by whom.

Firstly, research and self-learning to develop the front end of the system

Sam creating the HTML layout structure of the 3 pages.

Jennifer creating the CSS styling of the HTML.

Beth creating and populating the relational database.

Pablo creating the connection through PHP language to the database, JavaScript and security functionality.

Sprints and burndown charts

The overall plan of creating completing task A was separated into two main factors (creating the html and creating the css). The html was assigned to Samuel and the css to Jennifer. From this within a scrum meeting the objectives to be undertaken were decided.

To stay within the time boundaries set to each task. All members were to create sprints of how to complete their tasks within the time boundaries set within the initial Gannt chart to give all members clarity throughout the project of both their own and team members' progress.

Estimated time for sprint completion for sprint 1 part 1

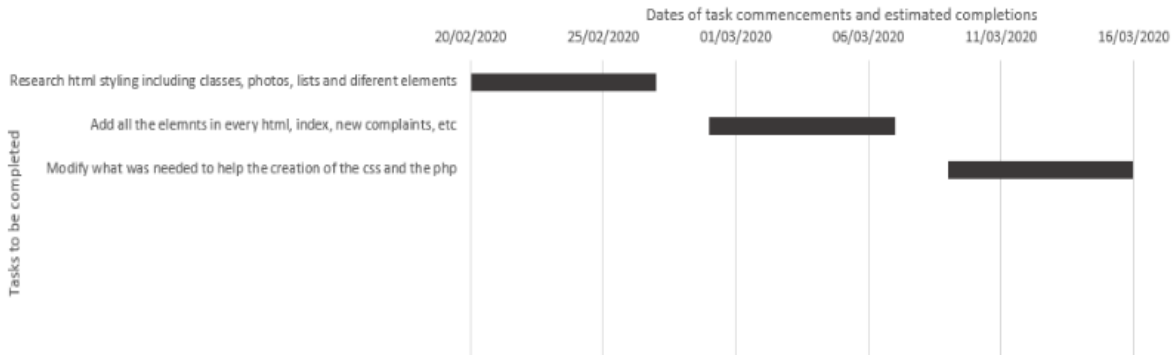


Figure 7-Samuel's sprint plan

Real time burndown chart sprint 1 part 1

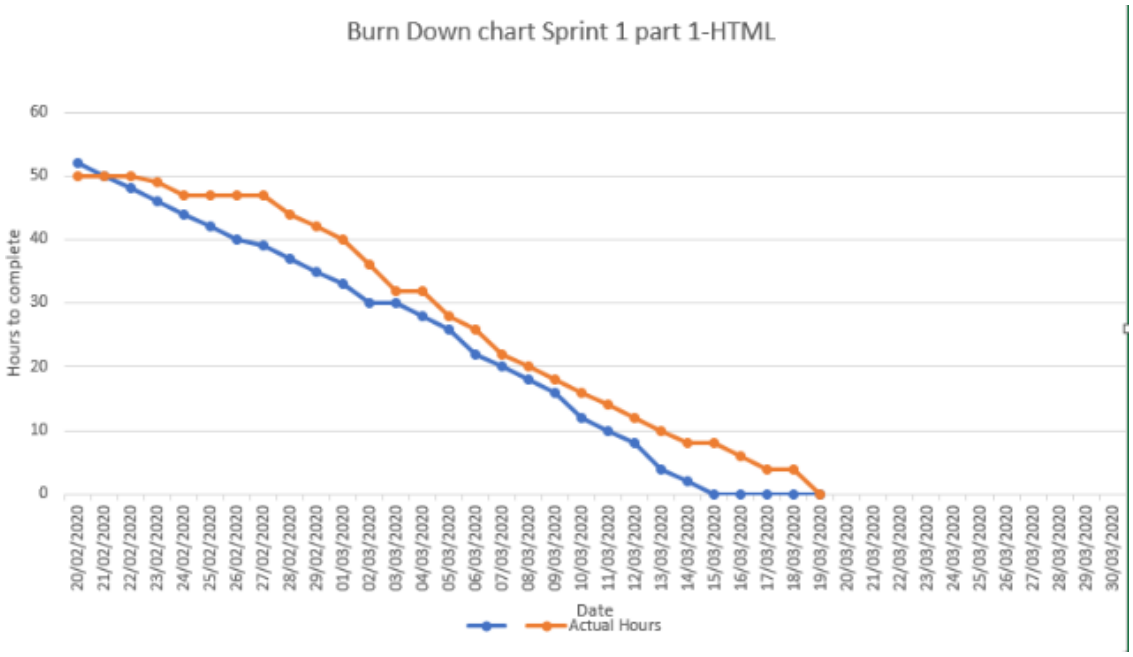


Figure 8-Samuel's projected and real time completion of sprint

Estimated time for sprint completion for sprint 1 part 2

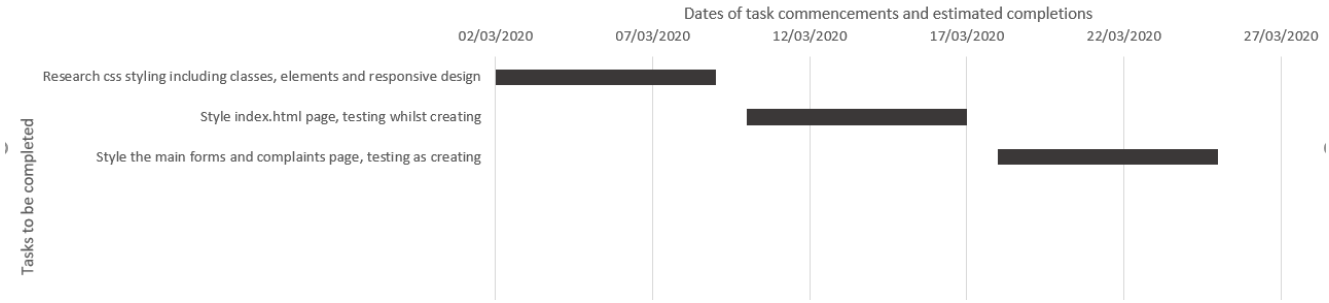


Figure 9-Jennifer planned sprint

Actual time- Burn down chart- sprint 1 part 2

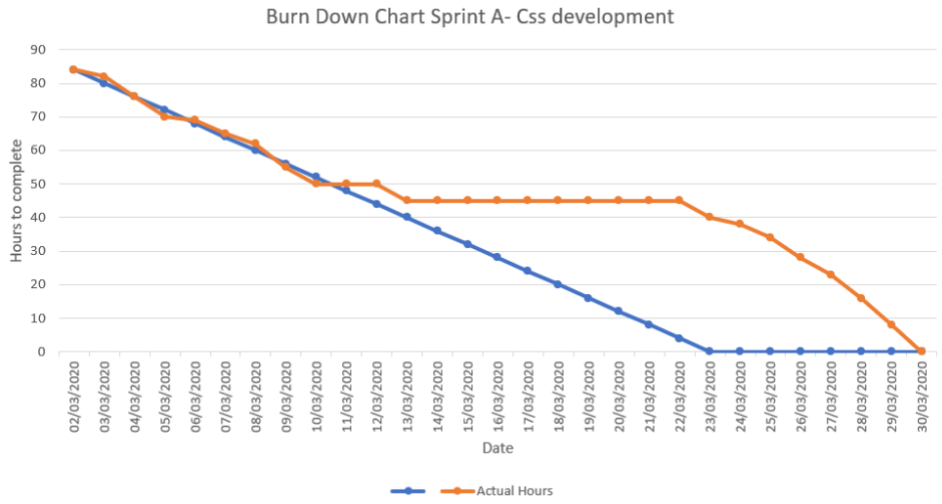


Figure 10-Jennifer's planned and actual time sprint

Estimated Gannt Chart for sprint 2- Creating and populating the database

Figure 11-Beth's planned sprint

Actual time- Burn down chart- sprint 2

Figure 12-Beth's planned and actual time sprint

Estimated Gannt Chart for sprint 3 and 4 - create php scripts

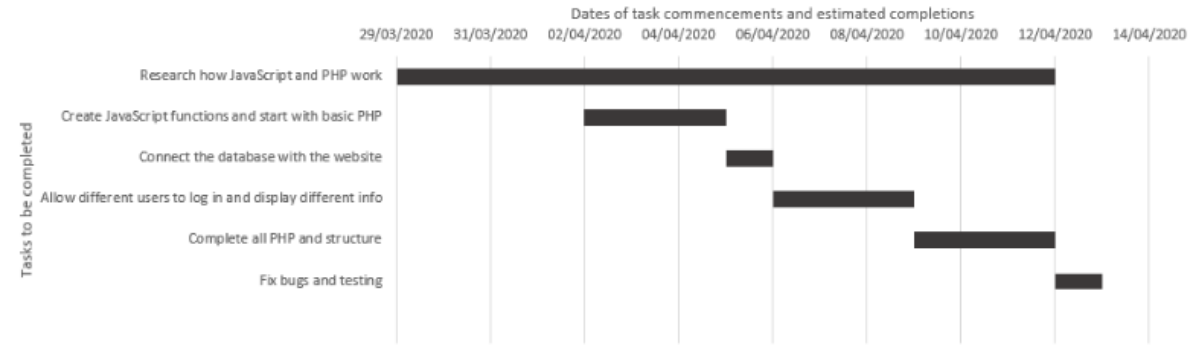


Figure 13-Pablo's planned sprint

Actual time- Burn down chart- sprint 3 and 4

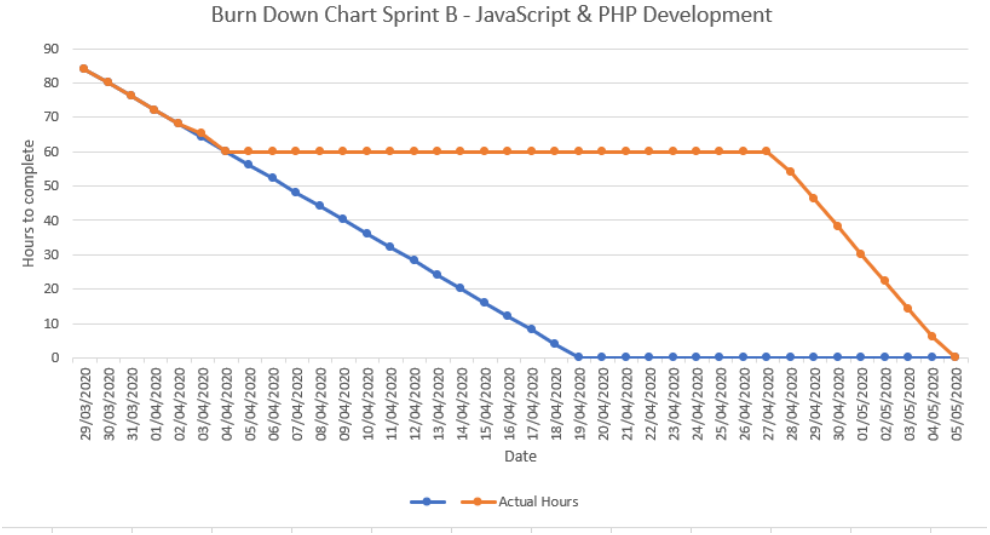
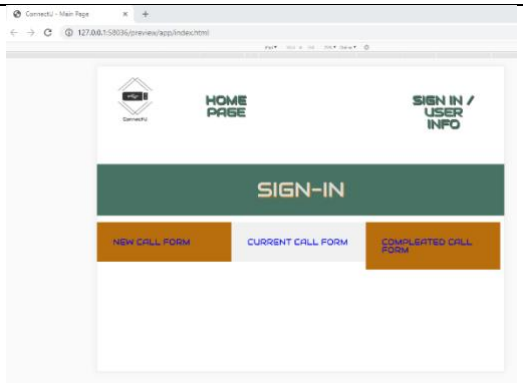
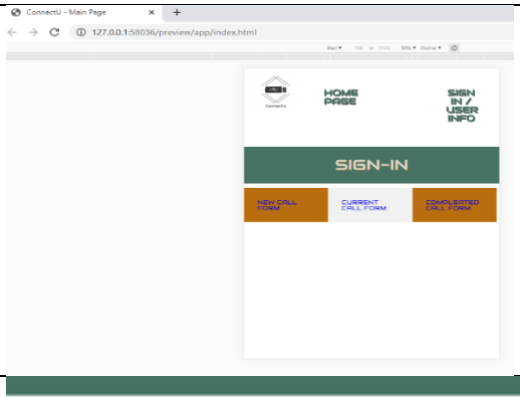
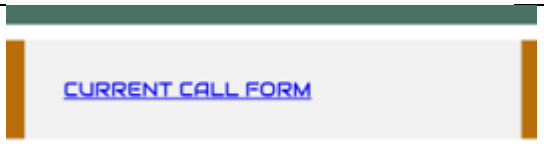
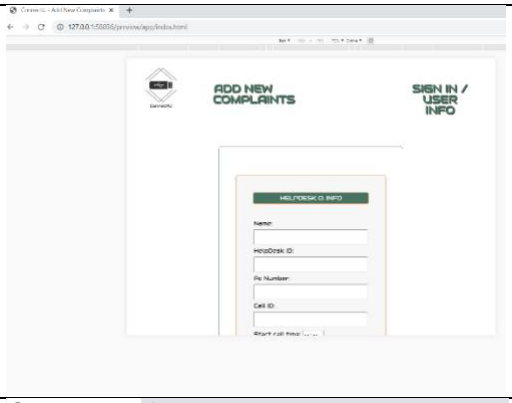
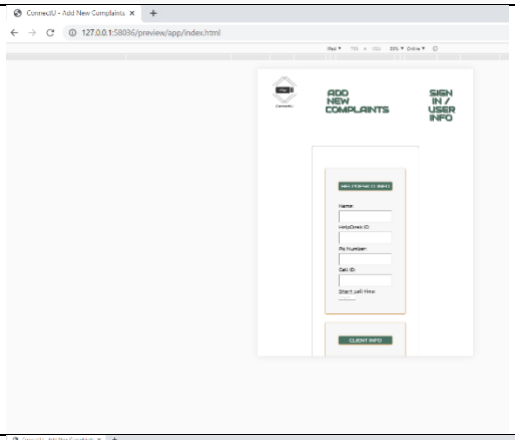
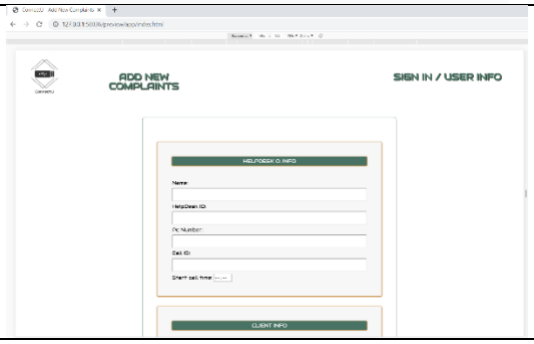


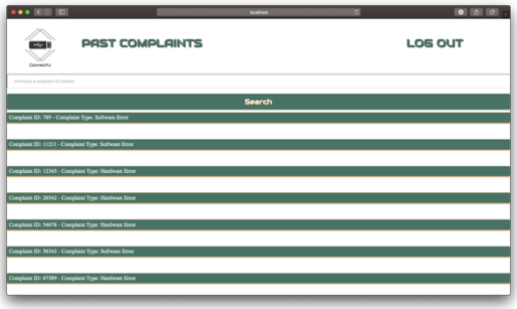
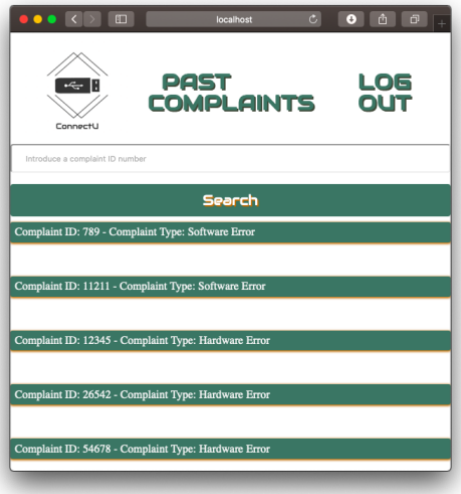
Figure 14-Pablo's planned and real time sprint

Testing of the system

To ensure that the implementation of the design fits the requirements of the system in relation to its functionality, ease of use and robustness testing has been conducted, and amendments have been implemented to attempt to rectify any issues found.

Test Num	Testing Description	Working Outcome	Image/description of final outcome
1	HTML Links are working correctly	When clicked on each page they load the correct corresponding page to the link displayed	As shown in project presentation
2	The system loads the GUI correctly on opening the application.		As shown in project presentation
3	Responsive design media queries work to display page correctly to iPad dimensions, both horizontally on index page	Displaying correctly in horizontal layout	

4	Responsive design media queries work to display page correctly to iPad dimensions, both vertically on index page	Displaying correctly in vertical layout	
5	The hover styling over all links work correctly	Link becomes bold and underlined when cursor is hovered on the link	
6	Responsive design media queries work correctly on “new complaints” page to horizontal iPad dimension	Scales down in proportion	
7	Responsive design media queries work correctly on “new complaints” page to vertical iPad dimension	Scales down in proportion	
8	Responsive css scales up to large screens successfully	Scales up in proportion	

9	Responsive css scales up to large screens the “Complete calls forms” page	Scales up in proportion	
10	Responsive css scales up to large screens the “Complete calls” page	Scales down in proportion	
11	The login allows a user to login to their account	The login is successful.	As shown in project presentation
12	The login declines access when login details are incorrect.	The system doesn’t allow not registered users.	As shown in project presentation
13	A logged in Manager has access to all information stored within the database	This role can access to everything.	As shown in project presentation
14	Logged in user with IT help-desk credentials has the agreed access permissions within the system	This role has a restricted access.	As shown in project presentation
15	Logged in data analyst has access to the agreed data within the system.	This role has a restricted access.	As shown in project presentation
16	The IT specialists have access to the agreed data within the system	This role has a restricted access.	As shown in project presentation
17	The logged in Manager can create a help desk complaint with the system and edit a current one.	They can create complaints.	As shown in project presentation
18	The logged in help-desk colleague can create or edit a live complaint on the system	They are able to create and edit complaints.	As shown in project presentation
19	The IT specialist can edit or assign another specialist to a	They can edit the process of the	As shown in project presentation

	live complaint within the system	complaint, but they cannot make changes in other fields.	
20	The data entries within “”””””””” write to the correct entry field within the database	The writing process of the complaint works correctly.	As shown in project presentation
21	The search engine allows the user to find a complaint	The engine works perfectly.	As shown in project presentation
22	The search engine respects the permissions.	The user must only find complaints that they can access to.	As shown in project presentation
23	The user cannot access restricted areas with forcing the system.	If the user tries to access a restricted area manually, the system will not allow them.	As shown in project presentation

Conclusion

The finished project has established both the functional and non-functional requirements set out in the design and creates the intended solution to the problems found within the current manual processes used to communicate and track IT issues within the workplace. Through testing, errors have been found and amended to ensure a robust, efficient and user-friendly system. The system does not require in-depth staff training as it has been designed and produced to be as clear and self-explanatory as possibly. Security within the system has been established including specific access permissions and password encryption methods to ensure all personal and sensitive data is safe and only accessible to those in which it is pertinent to their job role. All the expected objectives and functionalities have been covered and the overall result is optimal.

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