Project Diary - Minutes

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| Date: | Event: | Notes: |
| Thurs 3rd Oct | Email Clarksons | Sent an email to James and Nesh at Clarksons to get consent to use their data and permission for project to commence. |
| Fri 4th Oct | Research Methods | Started researching different programming languages I could use, as well as data visualisation tools, rival applications and also how to store my project on a web server. |
| Thurs 10th Oct | Submit Proposal | The ethics form and project proposal now submitted. Have proposed the idea of CRSL Football Dashboard system, |
| Sat 12th Oct | C# and Git | I have started to create a C# solution for my project, as well as uploading the basic winform application onto GitHub. I have also done some research on how to manage my project, and a good solution may be to have the installation files for the application on the Brighton.Domains web server for people to install the application. Any code changes that I make will be published onto GitHub. |
| Mon 14th Oct | Requirements Gathering | I have sent an email to James and Nesh at Clarksons outlining what requirements they have for the system. I explained the different types of requirements; business, user, functional and non-functional, as well as the priority of MUST, SHOULD, COULD. |
| Wed 16th Oct | Interim Planning | Started looking at what was required for the interim planning report. Started to create a Gantt chart to schedule the research and planning events which should take me to mid-November time. I also started to look at potential risks of the project. |
| Thurs 24th Oct | Interim Planning Report | Today I continued compiling the Interim Planning report by filling out some of the different categories. I finished the deliverables section which includes things such as the source code, user manual and the report. I also amended the Gantt chart based on Jennies advice to include actual duration. |
| Mon 28th Oct | Brighton.Domains subdomain | As a central location for readers to access additional files to this project, I have created a subdomain from my primary one to allow remote access. I have added my Gantt chart which can be downloaded from there. |
| Tues 29th Oct | Design Wireframes | Using a website called MockFlow, I have started designing some wireframes for the different components of my system. This includes the home pages, player profile page and log in screen. It is a very user-friendly UI with lots of drag-and-drop functionality, making it easy to construct a design. |
| Thurs 31st Oct | Scrum Burndown Chart | Started planning the scrum burndown chart for the Agile software development method using the gathered requirements so far. Each sprint is 2 weeks, however need to clarify each iteration. Am I having meetings? Am I scrum master? Does that need to be included? |
| Fri 1st Nov | Source Data and PHP | I sent an email to Clarksons today requesting their source data with all the stats they have collected so far. This came in an Access database. I also started researching how to use PHP to connect the database to HTML file. Need to ask Jennie if this can be done on Brighton.Domains. |
| Wed 6th Nov | Power Bi | Jennie and I received an email from the IT department saying Power Bi had been installed on the lectern in C206 – and although it was installed, it didn’t work as we require some form of licensing to use the software. In the meantime, I have researched alternatives and most software’s come with a free trial and then need to pay. Waiting to hear back from IT and the University. |
| Thurs 7th Nov | Source data | Today I started to input the source data provided by Clarksons, from an Access file to .csv. This would then allow me to input easily into SQL server. I have ensured the decode table is used so that no real names can be identified within the company. The username is the primary key in tbl\_User. |
| Mon 11th Nov | Requirements *(UR12)* | Received an email from James asking to have an ‘in-form chart’ on the home page for users to be able to see their performance based on the past 5 games. I have amended my list of requirements accordingly, as a must. |
| Tues 12th Nov | Entity Relationship Diagram | Today I started to plan the design of the database - which tables, fields and their data type would be included. I used draw.io, an online tool very helpful for creating diagrams as such. The one issue I had was resolving tbl\_User and tbl\_Match as this was a many-to-many relationship (i.e. one player can play many matches, and one match can have many players). Therefore, I created a link table to have two one-to-many relationships. |
| Fri 15th Nov | Website | I have made some more progress with the website, focusing on the menu and making the page responsive. When the screen shrinks, the menu will fall below the title and expand across the screen; whereas when the screen gets bigger, the menu will lie on the same line as the title.  I have also created a basic form for logging in.  Next stage: need to link this to database to try and test log ins. |
| Mon 18th Nov | Power Bi | Discussed with Jennie the progress on Power Bi installation. I suggested it would be a good idea to have the software installed on one of the computers, rather than just the lectern in 206 so that I can begin making progress with using the software. |
| Wed 20th Nov | Connecting MySQL to website using PHP | I spoke to Jennie who provided some insight into connecting MySQL database to my website. I created a test database with a test login table where I was able to read what was being inputted by the user. The next stage is being able to authenticate a user by reading the hashed password from the database. I will also need to create a sign-up form to allow passwords to be stored in hash form. |
| Wed 4th | Login/Sign up form | Today I worked on creating the log in and sign up forms. This required a JS file to show the different id selectors at runtime, and PHP file to connect to the MySQL database. Challenges I found were connecting to the database from the HTML file, being able to display the different forms upon button clicks and finally passing the data to the database. |
| Tues 10th Dec | Import tables and data from SQL Server to MySQL | Having realised that access to cssql server over the Christmas break wouldn’t be possible, I have undertaken a DBMS selection and decided to migrate the tables to MySQL. This will allow me to work on the project over Christmas and get the back end working. |
| Wed 18th Dec | Get log in form to work with MySQL database | I have now managed to connect the log in form with MySQL database, which now reads the username using a simple SELECT statement. The next stage is to encrypt/hash the passwords in the back-end to enforce integrity to the system. |
| Sat 28th Dec | Send email if you forget password | Today I worked on getting the PHP file which will send an email to the user with a newly generated password. |
| Sun 29th Dec | Encrypt passwords | Managed to hash passwords with a salt and store them in the MySQL database. Issue now is to decrypt the salted password and match it to what the user enters in the front end. Will need to use in-built verification function in PHP to try and do this. Will also need to combine the PHP files into one, to ensure the same hashed password is being read; therefore, create functions in the PHP files. |
| Thurs 9th Jan | Continue working on input stats form | Based on meeting yesterday, added some basic validation checks to the form, such as not being able to enter a minus number of goals by having a drop down of integers. Also need to amend CSS to make the form wider. |
| Fri 10th Jan | Input stats form | Finished styling the form to input the stats for a new match. Now need to code the submit button to input the data to MySQL database. |
| Tues 21st Jan | Finished Login/Registration forms | Users can now sign up or log in the system using their 3-letter code and Clarksons email address. Passwords are stored securely on the database using MD5 hashing. Now need to use sessions to remain logged in whilst using the system. |
| Wed 22nd Jan | Possible alternatives to Power Bi | Having had a brief discussion with Jennie about alternatives to using Power Bi, there are some avenues to explore such as HTML5 Canvas and Google Charts. Still waiting to hear from IT regarding re-installation of Power Bi and fixing the issue of being able to publish to web. |
| Sat 25th Jan | PHP Sessions | Today I managed to get the sessions working throughout the website, enabling users to remain logged in whilst navigating through different pages. The ‘login’ button now changes to ‘logout’ when there is a logged in user. |
| Thurs 30th Jan | Edit profile | The functionality for users to view their own profile and make relevant amendments now works. The front-end acts as a form for the data entry which gets updated in the MySQL database. Next, I need to incorporate functionality to edit a user’s profile picture. Then, the finalised profile will need to be added to the gallery for other users to view. |
| Thurs 6th Feb | Power Bi Update | The current situation stands at…. You can connect to SQL Server via DirectQuery which means the data is being referenced live from the data source. Positives are that the data is current and up-to-date with no additional refresh needed, however this causes security issues when accessing the live data, as well as performance issues when publishing to the website. The current issue is that a gateway is needed to connect the Server to Power Bi, so I have email Charles to request this.  The alternative is to connect to MySQL but this requires MySQL Installer to be downloaded onto the local PC at the university, which I have also emailed Charles about too. |
| Fri 7th Feb | Profile Gallery | Today I spent some time working on getting the functionality for the profile gallery working. This means that once users have entered/edited the information on their profile with things such as their preferred position, favourite player; they are then able to publish this to the gallery for everyone else to see. Profiles are only added to the gallery if the user submits to do so, else their information remains hidden. The layout for the gallery is grid-like using CSS and responsive techniques to allow for different screen sizes. |
| Sun 9th Feb | Restructured back-end | Having got to the stage where a lot of the front-end is functional and allows for data to be inputted to the database, it is important to refine and ensure the structure of the database is robust. I therefore edited the original ERD to include some additional tables such as tbl\_Gallery and tbl\_Session to track each time a user logs in, and who’s profile should be being displayed in the gallery. |
| Tues 11th Feb | CSS grid layout | I have now transformed the profile page, profile gallery and main index page to have a CSS grid layout, as opposed to the tables layout originally implemented. This provides a much greater flexibility and responsiveness on the webpage, allowing for different screen sizes. |
| Fri 14th Feb | Code tidy-up | As the number of web pages is growing, the code is slowing becoming increasingly difficult to maintain. As the code for the header of each web page remains the same, it makes little sense to have it repeating each time. I therefore created a navigation page, and using JavaScript, reference it on each web page. This therefore means that the code is only written once and reduces the amount of code duplication. This is a far neater and more comprehensible way of strutting the website. |
| Mon 17th Feb | Basic layout and front-end design for Admin pages | Today I started work on creating the admin pages to allow new matches to be created and the results to be inputted. The ‘new match’ page provides the chance for admin to select the date of the upcoming match, the pitch number and chose the teams from a list of generated players. Each player will have their performance index, along with two radio buttons to determine which team to go on. I am still waiting to hear back from Clarksons about their spreadsheet which calculates the performance index. All this data is also being displayed in a CSS grid layout.  The results page will display a similar table, except this time the teams will already be known and the input will be the number of goals per player. The final score is calculated based on the number of goals scored per team, using JavaScript. Next phase is to implement the SQL to interact with the database. |
| Sun 23rd Feb | Get gallery working | Today I was able to fix the gallery so that it displays each relevant profile with the correct data. Before, it would display the correct number of profiles (those who have given permission to do so) but repeat the data for the first profile. Therefore, I fixed the SQL, created a view so that the data was generated server-side, and then fixed the for loop to go through each profile. |
| Mon 24th Feb | HashMap for Player : Team | When creating a new match, the radio buttons for each player are associated to either the yellow or orange team. Therefore, I tried to implement a hash map that would store each player as a key (unique) and their associated value would be which team they are assigned to. I had difficulty implementing this as JavaScript traditionally does not have any in-built features for this, meaning you have to create your own hashing object. Although this allows greater control of indexing, it does mean a lot more time and research into being able to implement this.  So far, I have been able to click on a radio button and the correct player is displayed in the correct team for the live preview. The next stage will be to read the selected teams (i.e. who is playing in what team) and then submit this to the database. |
| Wed 4th Mar | Performance Index | Having finally received the spreadsheet from Clarksons detailing how they calculate each player’s performance index; I could begin working on the functionality for this. I started by added two new columns in the tbl\_UserGame table for team goals and team goals conceded. I then created new views to display this data and amended the front-end to display this on user’s profiles.  The main part is now being able to calculate a player’s performance index by factoring in the weightings and adding the points for the games played, goals scored as well as team performances. This will take some time to figure out an implement. |
| Fri 6th Mar | Implement performance index | Today I implemented the functionality to calculate each player’s performance index. This aggregated figure is an accumulation of win points, goal points, appearance points, team goal points and team goals conceded. To do this, the maximum value of each variable has to be calculated through a simple SQL statement, and acts as the denominator when working out the percentage difference. Using a mixture of back-end queries and PHP calculations, provided the means of working out a player’s index which is visible only their unique profile page. |
| Sat 7th Mar | Populating Database | Today I spent some time populating the database with dummy, decoded data from the original spreadsheet provided by Clarksons. Populating the login table, enabled each user to have data populated in the statistics table and therefore allowed aggregation of overall data such as win ratios and overall goals conceded. This will also help when it comes to creating the data visualisations to present data of all players. |
| Sun 8th Mar | Match Day | Today I spent some time working on the match day page, which displays data of the upcoming fixture and the previous game played. This allows users to see who is playing in the next game (booked by the admin) and also who scored in previous games. I’ve had no difficulty retrieving the data from the database, however, displaying it in a nice tabular format without using HTML tables is tricky. I’ve been able so far to display the yellow team in each row, and then the orange team in each row, but not succinctly in a table. |
| Thurs 12th Mar | Power Bi or alternatives? | Having established Power Bi to be a difficult option in terms of installation, I discussed with Jennie some alternative solutions. The main one being to try and get as much done on my laptop as possible, using SQL Server and Power Bi and try and show the results of this as a secondary website. This will allow comparison between SQL Server and MySQL, and Power Bi and Google Chart. |
| Mon 16th Mar | Sort players by name or performance index | For admin users, when creating a new match and they need to select who is playing on what team, they can now filter the table by their name or performance index. Using a combination of PHP and AJAX, the web page is able to communicate with the web server to dynamically change the contents of the table. This is a small UI enhancement to improve the user-experience. |
| Tues 17th Mar | Auto generate teams | Today I spent some time on a ‘could’ functional requirement which auto selects the teams. So far, the algorithm generates a series of random number between 0 and the number of players, divides the array into two; the first half get assigned to the yellow team and the second half to the orange team. By selecting this option, the radio buttons become selected and background colour changes for the user to see. So far, the live preview feature does not work with this. |
| Fri 20th Mar | COVID-19 | As of today, the university is now shut due to the outbreak of coronavirus. This therefore means any plans to use the server ‘cssql’ on SQL Server at the university is now unavailable. As a result, I will need to use a local server on my laptop, as well as MySQL to generate and display the range of data. |
| Sat 21st Mar | Creating Power Bi charts | Today I spent some time creating charts in Power Bi by importing the data from my local server in SQL Server. This does mean that the data could potentially be out-of-date as it is not being queried directly from the database. To do that, additional features and installations are required which still do not seem to work on my laptop. The import version however allows QR codes to be generated, which are compatible for mobile devices. |
| Tues 24th Mar | QR Codes | Today I managed to implement the functionality to display different QR codes from a drop-down list on the home page. This enables mobile compatibility, an additional feature that is suitable for this project. |
| Thurs 26th Mar | Google Charts | Today I spent some time creating more Google Charts and exploring the different range of available graphs. I was able to create bar charts, pie charts and area charts for different statistics such as appearances by department as well as website usage points. I now need to figure out how to display the different prototypes. |
| Sat 28th Mar | Screenshots | Today I looked into the different ways to present the different data visualisations including Power Bi and Google Charts. As Power Bi has caused a whole range of problems, there is no way to embed the code from the Cloud of Power Bi as the university does not have the licence to do so. A solution to this has been to screenshot the interactive charts and display them in a prototype version to show the capabilities. |
| Tues 31st Mar | Create new match | After weeks of trying to complete this feature, and following advice from Jennie of taking a step back and thinking about the overall system’s architecture, I finally was able to combine JavaScript and PHP to retrieve the player’s details and submit a new match to the database. |
| Wed 1st Apr | Results | Submitting the results of a match has a similar structure to that of creating a new match. Therefore, implementing this feature took significantly less time compared to yesterday as most of the code was recycled. |
| Thurs 2nd Apr | Testing | The project is now in a stage of final completion and user testing needs to occur. I have created a test script and emailed several users with this for them to complete over the next week or so. There are two end users at Clarksons who will be testing, along with a fellow Computer Science student and an external user; which covers most basis. |
| Mon 13th Apr | MD5 algorithm to Bcrypt algorithm | Having done some investigating into the security of storing passwords, it seems as though MD5 is vulnerable to rainbow table attacks. Therefore, I have opted to using a more secure hashing algorithm, Bcrypt, and therefore boost the security of the system. |

Project Meetings

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| Date: | Topic: | Notes: |
| Mon 30th Sep | First meeting with Jennie | Met with Jennie to discuss different ideas for the project and went through pros and cons of each one. I now need to do some further research in these agreed areas. |
| Tues 1st Oct | Meeting with Robin | Met with Robin to get a second opinion on the Clarksons Football Dashboard idea. Discussed comparing different front ends such as C# a website in HTML. He advised that one really good system would be better than two mediocre systems. |
| Mon 7th Oct | Meeting with Jennie | Discussed further how to approach the project. How will the project be stored; web server, public repository? Emailed Jarod regarding how he uses C# with web servers and advised Azure was the main platform to publish from Visual Studio. |
| Mon 21st Oct | Meeting with Jennie | Today we discussed the interim planning report, including Gantt charts and risk assessment. Jennie advised that the Gantt chart should include an estimate duration and actual duration, as opposed to the estimate effort required. She also suggested to include a range of risks such as human and technology factors. Sprints should include some Must and some Could haves, as opposed to all Must and not completing the sprint. We also sent an email to IT Support regarding access to Power Bi Desktop in the university, to be able to integrate my C# application with the data visualisations. |
| Mon 4th Nov | Meeting with Jennie | We discussed progress with the Interim planning report. I questioned whether I needed a specific focal point for my project and Jennie informed me this would come from the Viva, where the second reader would be able to judge the depth of the project. Jennie also suggested trying MDN to learn the basics of PHP to help with the server-side scripting of the application. Finally, Jennie suggested I add any requirement dependencies to my Gantt chart and list of requirements as this will help the agile development process. |
| Wed 6th Nov | Power Bi | Jennie and I received an email from the IT department saying Power Bi had been installed on the lectern in C206 – and although it was installed, it didn’t work as we require some form of licensing to use the software. In the meantime, I have researched alternatives and most software’s come with a free trial and then need to pay. Waiting to hear back from IT and the University. |
| Tues 19th Nov | Viva | In Stelios’ absence, Panagiotis stepped in as the second reader. He advised me to do some research using d3.js, an open-source JavaScript library for manipulating data based on data. This could be an alternative to Power Bi. We discussed the Hybrid methodology and how the ‘waterfall’ planning may not necessarily be apt, as requirements would change; thus, Agile is the way forward. He also advised the fact that the website should be accessible for all users, i.e. ensure colours are not too bright and cater for people with disabilities. We also talked about user testing and ensuring enough time is left for it. In other words, speak with James/Nesh to make sure they are able to test it. |
| Mon 9th Dec | Meeting with Jennie (catch up before Christmas) | I felt like I needed some inspiration before the Christmas period to set some goals and targets for when I come back. Jennie advised me to layer my project into three sections: the data, processing and front-end. The data and processing side shouldn’t change regardless of the API, so for the next few weeks I need to focus on setting up the backend database. This will involve importing all the tables to MySQL and be able to interact with the database using PHP. |
| Wed 8th Jan | Meeting with Jennie | Discussed progress over Christmas period. Users can log in, sign up and reset their password. Now working on the input new match screen where admin will be able to input new statistics. Also, chased up IT department regarding Power Bi as the free version is installed on PC at the university but there are issues with ‘Publish to Web’ which should be enabled. I’m going to try and use SQL Server on my laptop and try the free version of Power Bi to see if that works. |
| Tues 28th Jan | Meeting with Jennie | Today I met with Jennie to discuss the overall progress of the project, where I demonstrated some of the functionality of the website and she provided some useful advice. Firstly, to overcome the issues of GDPR, I should include some form of checkbox on the sign-up page which enables users to give consent to using their personal information, such as photos.  When resetting a password, she also advised that the account for that user needs to be ‘reset’ in the backend and the new password matches.  When inputting the results of a new match, currently I am using checkboxes which causes some validation issues as a player can be both on the home and away team. Jennie advised that I use radio buttons instead so that only one is selected. As I’ve been having some difficulties with this page, she advised to break it down into different sections and get each one to work individually; firstly, input the date and score, then retrieve the list of players, then create a load of SQL statements to store the data.  Finally, Jennie advised that I don’t use a table to display the charts on the main home page as this can cause display issues on different screen widths, as well as rendering slow when there are large data items. Instead, an alternative could be to use grids in CSS. |
| Wed 29th Jan | Meeting with Charles Lo (IT Support) and Jennie | I did some practical testing with IT Support and Jennie today to try and install and resolve the ongoing issue with Power Bi. The free version is now installed in room 206, however the ongoing issue with not being able to sign in and ‘Publish to Web’ still does not work. We believe this is a software licencing issue, whereby the Microsoft licence held by the university does not include Power Bi. We had a look at prices for a single licence of the Pro version which would cost £7.50 a month. |
| Mon 10th Feb | Meeting with Jennie | Having discussed the progress of the overall project, I briefly showed Jennie my website with its functional and semi-functional features. We discussed how to approach the ‘terms and conditions’ feature to cater for GDPR and ensure permission is granted by users to use their profile pictures. Either way, the user needs to be able to see and optionally read them. We also discussed the idea of comparing how the data could visually differ depending on the choice of DBMS used, whether it be MySQL or SQL Server, and compare it to the type of visualisation tool used whether it be Power Bi or Google Charts. This comparison could be an avenue to explore when it comes to the final report. |
| Wed 12th Feb | Skype Conference call with Nesh (Clarksons) and Jennie | Today I presented a live demo of the website to the customer (Clarksons) to gain some feedback and evaluate the project so far. The meeting consisted of me going through the website and demonstrating the different features; fully functional or not. At each stage, I asked the customer for feedback on the design and their opinion on its functionality; the main features being the log in page, home page, profile page, profile gallery and inputting new stats page.  There were two main outcomes from the meeting. The first being the performance index. Initially, I thought it would be a case of having a fixed table with scores that would map to each player upon playing a game; i.e. a goal gives you 5 points, dropping out loses you 3 points. However, it became apparent that there is a lot more to it as the customer has a spreadsheet which calculates the performance index with weightings, percentages and other discrete data. I have asked for a copy to be emailed over so that I can begin developing this feature. We also agreed, for social reasons, that each player could view their own performance index, but not see other peoples as this could discourage players.  The other main outcome was regarding the inputting new match data feature for Admins. Currently, there is a form with generated player names and the Admin would need to select who played, who scored and who dropped out (if any). A proposed alternative is to create two new match day pages; one for admin and one for players. The idea would be for admin to select the teams playing for that game and allow the results pages to be auto-populated upon completion. They would also be able to see each players performance index allowing them to choose the teams fairly. One stage further than this would be to have an auto-team generator based on performance indexes and create 2 fairly weighted teams. This would mean when it came to completing the results page, the teams would already be defined and admin would only need to enter the goals and/or drop outs. Each player would also be able to see who was playing on what team before the game started on the match-day page.  Overall, the meeting was very productive and provided a lot of informative feedback which will help the development of the website and helped to gather new requirements. |
| Mon 2nd Mar | Meeting with Jennie | Today I caught up with my supervisor to discuss the progress made on my project so far. I demonstrated some of the new functionality for the Admin users where new matches can be created, teams can be selected and results can be entered. Although most of this is currently not functional, Jennie explained it is okay that not all parts of the software will be finished. So, continue to complete sprints and much as possible and explain any non-functional features in the documentation. |
| Fri 20th Mar | COVID-19 | As of today, the university is now shut due to the outbreak of coronavirus. This therefore means any plans to use the server ‘cssql’ on SQL Server at the university is now unavailable. As a result, I will need to use a local server on my laptop, to host my database. This will allow interaction with Power Bi as well as MySQL to generate and display the range of data. |
| Mon 30th Mar | Meeting with Jennie via Teams | Due to the current circumstances, today we had our first Teams meeting to discuss the progress of my project. I demonstrated the different prototypes of visualisations that I have included in the website; including Google Charts, Power Bi and screenshots of the working charts in Power Bi. |