Liam Courtney

Dundee and angus college  1625542

Simply rugby development

Table of Contents

[Test Plan 2](#_Toc165026763)

[Business Model 2](#_Toc165026764)

[Unit Testing 2](#_Toc165026765)

[Integration Testing (Database) 7](#_Toc165026766)

[View Model 14](#_Toc165026767)

[Functionality Testing 14](#_Toc165026768)

[Usability Testing 33](#_Toc165026769)

[New Libraries or Concepts References 35](#_Toc165026770)

[Microsoft Azure (SQL Server): 35](#_Toc165026771)

[WinUI3 (Windows App SDK): 35](#_Toc165026772)

[.NET8 (Newest Version of .NET): 35](#_Toc165026773)

[EntityFramework (Object Relational Mapping): 35](#_Toc165026774)

[BCrypt (Password Hashing Library): 36](#_Toc165026775)

[EmailValidation (Library): 36](#_Toc165026776)

[ProfanityDetector (Library): 36](#_Toc165026777)

[User Documentation 36](#_Toc165026778)

[Project Plan 36](#_Toc165026779)

[Changes From Original Plan 36](#_Toc165026780)

[References 38](#_Toc165026781)

# Test Plan

The test plan for this project included four main types: ‘Unit Tests’, ‘Functionality Testing’, ‘Usability Testing', and a basic ‘Integration Test’. ‘Unit Tests’ were used as an automated type of testing to test the individual methods of each object; this was done through ‘MSTest’ within ‘Visual Studio’. As I couldn’t test the methods interacting with the database with ‘Unit Tests’ without affecting live data, I had to use a basic ‘Integration Test’ done manually by checking the expected data compared to the actual data pushed to the database. ‘Functionality Testing’ was done to verify that any data that required user input worked as expected. A table was created to document each data entry point. Predefined entries simulated normal, extreme, and exceptional data. Normal data is what is usually expected from users, extreme data is one number, character, or day outside what is expected, and exceptional data is something that should not be accepted, like a word or special character for a number. Finally, ‘Usability Testing’ was used to check if the user interface was designed effectively. They checked if predefined tasks were intuitive for users with different rugby and technical backgrounds. Users documented their experience in an observed session, and recommendations were given where necessary.

## Business Model

### Unit Testing

The standalone models of this application will be tested using unit testing. Properties such as a name or date of birth will be checked to see if they retain the correct information, as well as calculated properties such as the result of a match to check if the output was correct. Navigational properties such as a team, player, match, or session will also be checked to see if they work as expected.

The following models will be tested using unit testing (indentation shows inheritance):

* Team
* Match
  + Half
* Training Session
* Member
  + Coach
  + Player
  + Junior Player
* Skills
* Kicking
* Passing
* Tackling
* Position
* Doctor
* Next of Kin
  + Guardian
* Account
  + Admin Account
  + Coach Account

#### Results

##### Failed Tests

The following table shows any failed tests, the issue that caused the failed test, how the issue was resolved, and the final passed test.

|  |  |  |
| --- | --- | --- |
| **Failed Test** | **Passed Test** | **Issue/Fix** |
| A computer screen shot of a program  Description automatically generated | A screenshot of a computer  Description automatically generated | **Logic Error:** **Used ‘||’ instead of ‘&&’.**  Changed to ‘&&’. |
| A screenshot of a computer program  Description automatically generated | A screenshot of a computer  Description automatically generated | **Logic Error:** **Divided by an integer instead of a double.** Changed to a double. |
| A screenshot of a computer  Description automatically generated | A computer screen shot of a program  Description automatically generated | **Validation Error: Doctor’s name couldn’t contain a period.** Fixed validation to allow a period. |

##### Passed Tests

The following screenshots show that all the written tests for both valid inputs and invalid inputs have passed, as well as any additional methods to be tested. *(See attached testing project for full testing code and supporting documentation).*

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

#### Results (Updated Models)

##### Failed Tests

The following table shows any failed tests, the issue that caused the failed test, how the issue was resolved, and the final passed test.

|  |  |  |
| --- | --- | --- |
| **Failed Test** | **Passed Test** | **Issue/Fix** |
| A screenshot of a computer  Description automatically generated |  | **Logic Error:** **Issue with written test, didn’t set the date played.**  Set date played. |

##### Passed Tests

The following screenshots show that all the written tests for both valid inputs and invalid inputs have passed, as well as any additional methods to be tested. *(See attached testing project for full testing code and supporting documentation).* ***Note the 3 errors in the top right corner have nothing to do with the models or tests. Ran the tests on the original test project again and had the same errors which didn’t appear before.***

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

###### Original Test Re-Run

The same 3 errors appeared in the re-run of the original test project.

A screenshot of a computer

Description automatically generated

### Integration Testing (Database)

During functionality testing dummy data was inputted into the application to be sent to the database. After testing adding, updating, and deleting data from the database the following results match the expected results.

#### Accounts

A screenshot of a computer

Description automatically generated

#### Team

A screenshot of a computer

Description automatically generated

#### Match

A screenshot of a computer

Description automatically generated

#### Training Session

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

#### Member/Coach/Player

The member table is shared by the different types of members, some columns are only used by certain types of members.

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

##### Skills

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

##### Positions

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

##### Doctor

**Redundant MemberID column**, unable to remove it due to EntityFramework.

A screenshot of a computer

Description automatically generated

##### Next of Kin/Guardian

**Redundant MemberID column**, unable to remove it due to EntityFramework.

A screenshot of a computer

Description automatically generated

#### Results

## View Model

### Functionality Testing

#### Results

##### Account

###### Username

The account’s username can be between 5 and 20 characters and can only contain letters or numbers.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | LiamCourtney | Valid | Valid |  |
|  | Dave2 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | LiamC | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | -\_- | Not Valid | Not Valid |  |
|  | abcdefghijklmnopqrstu | Not Valid | Not Valid |  |

###### Password

The account’s password can be between 8 and 20 characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 12345678 | Valid | Valid |  |
|  | TestPassword | Valid | Valid |  |
| *Extreme (Edge of Limits)* | password | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | -\_- | Not Valid | Not Valid |  |
|  | abcdefghijklmnopqrstu | Not Valid | Not Valid |  |

###### First Name

The account’s first name can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Liam | Valid | Valid |  |
|  | Dave | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Jo | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Last Name

The account’s last name can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Courtney | Valid | Valid |  |
|  | O’Neill | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Yi | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Email

The account’s email is validated through a 3rd party library called EmailValidator, it checks if the email follows email address standards.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | liam@gmail.com | Valid | Valid |  |
|  | test@outlook.co.uk | Valid | Valid |  |
| *Extreme (Edge of Limits)* | N/A |  |  |  |
|  | N/A |  |  |  |
| *Exceptional (Invalid)* | test@email | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Add Button

Testing the functionality of the add button, ensuring that valid inputs are added and invalid inputs aren’t added.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Account | Account Added | Account Added |  |
|  | Invalid Account | Not Valid | Not Valid |  |

###### Update Button

Testing the functionality of the update button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Account | Account Updated | Account Updated |  |
|  | Invalid Account | Not Valid | Not Valid |  |
| *Update to Admin* | New User Account | Admin Account | Admin Account |  |
| *Update to Coach* | New User Account | Coach Account | Coach Account |  |
| *Update to Admin* | Coach Account | Admin Account | Admin Account |  |
| *Update to Coach* | Admin Account | Coach Account | Coach Account |  |

###### Reset/Change Password Button

Testing the functionality of the reset/change password button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Password as Admin | Password Updated | Password Updated |  |
|  | Invalid Password as Admin | Not Valid | Not Valid |  |
|  | Valid Password as Coach | Password Updated | Password Updated |  |
|  | Invalid Password as Coach | Not Valid | Not Valid |  |

###### Delete Button

Testing the functionality of the delete button, ensuring that accounts are deleted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Delete Account | Account Deleted | Account Deleted |  |

##### Team

###### Name

The team’s name can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Dundee | Valid | Valid |  |
|  | Arbroath | Valid | Valid |  |
| *Extreme (Edge of Limits)* | DD | Valid | Valid |  |
|  | Glasgow’s East Boy’s | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | John’s Super Duper Awesome Rugy Team :) | Not Valid | Not Valid |  |

###### Level

The team’s level is chosen through a dropdown, the only options are ‘Junior’ or ‘Senior’. The only other option is to leave the option blank.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Junior | Valid | Valid |  |
|  | Senior | Valid | Valid |  |
| *Extreme (Edge of Limits)* | N/A |  |  |  |
|  | N/A |  |  |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | N/A |  |  |  |

###### Add Button

Testing the functionality of the add button, ensuring that valid inputs are added and invalid inputs aren’t added.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Team | Team Added | Team Added |  |
|  | Invalid Team | Not Valid | Not Valid |  |

###### Update Button

Testing the functionality of the update button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Team as Admin | Team Updated | Team Updated |  |
|  | Valid Team as Coach | Team Updated | Team Updated |  |
|  | Invalid Team as Admin | Not Valid | Not Valid |  |
|  | Invalid Team as Coach | Not Valid | Not Valid |  |

###### Delete Button

Testing the functionality of the delete button, ensuring that teams are deleted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Delete Team as Admin | Team Deleted | Team Deleted as well as players, coaches etc. but player’s doctors and skills don’t delete | Needs a rework of the DBContext, no critical errors only some leftover data not accessible in the UI. This is okay for now, if this causes any issues in further testing, this can be fixed |
|  | Delete Team as Coach | Team Deleted | Error | Wasn’t removing coach accounts attached to the team. Now fixed |

##### Match

###### Opponent

The match’s opponent can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Glasgow | Valid | Valid |  |
|  | Edinburgh | Valid | Valid |  |
| *Extreme (Edge of Limits)* | DD | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Date Played

The match’s date played can only be a date in the past year or a year in the future, any time is valid.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 25/01/2023 | Valid | Valid |  |
|  | 01/01/2024 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Year in Past from Tomorrow | Valid | Valid |  |
|  | Year in Future from Yesterday | Valid | Valid |  |
| *Exceptional (Invalid)* | 31/01/1900 | Not Valid | Not Valid |  |
|  | 10 Years in Future | Not Valid | Not Valid |  |

###### Location

The match’s location can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Home | Valid | Valid |  |
|  | Away | Valid | Valid |  |
| *Extreme (Edge of Limits)* | DC | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

\*UPDATED\*

The match’s location was changed to a selection between ‘Home’ and ‘Away’ after noticing in the usability testing that it was only meant to have 2 options.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Home | Valid | Valid |  |
|  | Away | Valid | Valid |  |
| *Extreme (Edge of Limits)* | N/A |  |  |  |
|  | N/A |  |  |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | N/A |  |  |  |

###### Team Score (REMOVED)

The team’s score can only be a whole number between 0-99. This was removed, and changed to a calculated result after usability testing.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 4 | Valid | Valid |  |
|  | 10 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0 | Valid | Valid |  |
|  | 99 | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | Dave \*-\* | Not Valid | Not Valid |  |

###### Opponent Score (REMOVED)

The opponent’s score can only be a whole number between 0-99. This was removed, and changed to a calculated result after usability testing.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 4 | Valid | Valid |  |
|  | 10 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0 | Valid | Valid |  |
|  | 99 | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | Dave \*-\* | Not Valid | Not Valid |  |

###### Add Button

Testing the functionality of the add button, ensuring that valid inputs are added and invalid inputs aren’t added.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Match as Admin | Match Added | Match Added |  |
|  | Invalid Match as Admin | Not Valid | Not Valid |  |
|  | Valid Match as Coach | Match Added | Match Added |  |
|  | Invalid Match as Coach | Not Valid | Not Valid |  |

###### Update Button

Testing the functionality of the update button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Match as Admin | Match Updated | Match Updated |  |
|  | Invalid Match as Admin | Not Valid | Not Valid |  |
|  | Valid Match as Coach | Match Updated | Match Updated |  |
|  | Invalid Match as Coach | Not Valid | Not Valid | Match didn’t update but never displayed the error message, now fixed. |

###### Delete Button

Testing the functionality of the delete button, ensuring that matches are deleted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Delete Match as Admin | Match Deleted | Match Deleted |  |
|  | Delete Match  As Coach | Match Deleted | Match Deleted |  |

##### Half

###### Team Score

The team’s score can only be a whole number between 0-99.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 4 | Valid | Valid |  |
|  | 10 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0 | Valid | Valid |  |
|  | 99 | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | Dave \*-\* | Not Valid | Not Valid |  |

###### Opponent Score

The opponent’s score can only be a whole number between 0-99.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 4 | Valid | Valid |  |
|  | 10 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0 | Valid | Valid |  |
|  | 99 | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | Dave \*-\* | Not Valid | Not Valid |  |

###### Comments

The comments can be between 0 and 280 characters (Twitter’s Tweet length (Twitter, 2024)), and cannot contain consecutive spaces.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | The team played very well. | Valid | Valid |  |
|  | Opponent outmanoeuvred us on many occasions. | Valid | Valid |  |
| *Extreme (Edge of Limits)* | ‘blank’ | Valid | Valid |  |
|  | ‘280 characters’ | Valid | Valid |  |
| *Exceptional (Invalid)* | John Smith played well . | Not Valid | Not Valid |  |
|  | ‘281 characters’ | Not Valid | Not Valid |  |

##### Training Session

###### Date

The session’s date can only be a date in the past year or a year in the future, any time is valid.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 25/01/2023 | Valid | Valid |  |
|  | 01/01/2024 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Year in Past from Tomorrow | Valid | Valid |  |
|  | Year in Future from Yesterday | Valid | Valid |  |
| *Exceptional (Invalid)* | 31/01/1900 | Not Valid | Not Valid |  |
|  | 10 Years in Future | Not Valid | Not Valid |  |

###### Location

The session’s location can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Douglas | Valid | Valid |  |
|  | Lochee | Valid | Valid |  |
| *Extreme (Edge of Limits)* | DC | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Skills/Activities

The skills/activities can be between 0 and 280 characters (Twitter’s Tweet length (Twitter, 2024)), and cannot contain consecutive spaces.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Standard Passing | Valid | Valid |  |
|  | Defence vs attack | Valid | Valid |  |
| *Extreme (Edge of Limits)* | ‘blank’ | Valid | Valid |  |
|  | ‘280 characters’ | Valid | Valid |  |
| *Exceptional (Invalid)* | Rear Tackling | Not Valid | Not Valid |  |
|  | ‘281 characters’ | Not Valid | Not Valid |  |

###### Injuries/Accidents

The injuries/accidents can be between 0 and 280 characters (Twitter’s Tweet length (Twitter, 2024)), and cannot contain consecutive spaces.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | John Smith got hurt | Valid | Valid |  |
|  | Dave broke his leg | Valid | Valid |  |
| *Extreme (Edge of Limits)* | ‘blank’ | Valid | Valid |  |
|  | ‘280 characters’ | Valid | Valid |  |
| *Exceptional (Invalid)* | John Smith got hurt | Not Valid | Not Valid |  |
|  | ‘281 characters’ | Not Valid | Not Valid |  |

###### Add Button

Testing the functionality of the add button, ensuring that valid inputs are added and invalid inputs aren’t added.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Session as Admin | Session Added | Session Added |  |
|  | Invalid Session as Admin | Not Valid | Not Valid |  |
|  | Valid Session as Coach | Session Added | Session Added |  |
|  | Invalid Session as Coach | Not Valid | Not Valid |  |

###### Update Button

Testing the functionality of the update button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Session as Admin | Session Updated | Session Updated |  |
|  | Invalid Session as Admin | Not Valid | Not Valid |  |
|  | Valid Session as Coach | Session Updated | Session Updated |  |
|  | Invalid Session as Coach | Not Valid | Not Valid |  |

###### Delete Button

Testing the functionality of the delete button, ensuring that sessions are deleted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Delete Session as Admin | Session Deleted | Session Deleted |  |
|  | Delete Session  As Coach | Session Deleted | Session Deleted |  |

##### Member

###### First Name

The member’s first name can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Liam | Valid | Valid |  |
|  | Dave | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Jo | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Last Name

The member’s last name can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Courtney | Valid | Valid |  |
|  | O’Neill | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Yi | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Date of Birth

The member’s date of birth can only be a date in the past 100 years and cannot be in the future.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 01/01/2000 | Valid | Valid |  |
|  | 25/01/1980 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 01/01/1924 | Valid | Valid |  |
|  | Today’s Date | Valid | Valid |  |
| *Exceptional (Invalid)* | 31/01/1900 | Not Valid | Not Valid |  |
|  | Tomorrow’s Date | Not Valid | Not Valid |  |

###### SRU Number

The member’s SRU number can only be a whole number between 0 and the maximum value for an integer (2147483647).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 54 | Valid | Valid |  |
|  | 1107 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0 | Valid | Valid |  |
|  | 2147483647 | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* Hi | Not Valid | Not Valid |  |

###### Email

The member’s email is validated through a 3rd party library called EmailValidator, it checks if the email follows email address standards.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | liam@gmail.com | Valid | Valid |  |
|  | test@outlook.co.uk | Valid | Valid |  |
| *Extreme (Edge of Limits)* | N/A |  |  |  |
|  | N/A |  |  |  |
| *Exceptional (Invalid)* | test@email | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Address

The member’s address can be between 2 and 35 characters, and can only contain letters, numbers, single spaces, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 123 Main Street | Valid | Valid |  |
|  | 64B New Road | Valid | Valid |  |
| *Extreme (Edge of Limits)* | DC | Valid | Valid |  |
|  | 1234567890abcdefghijklmnopqrstuvwxy | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Post Code

The member’s post code can be between 6 and 8 characters, and can only contain letters or numbers. It also cannot be null or contain special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | DD12BC | Valid | Valid |  |
|  | AB12MNO | Valid | Valid |  |
| *Extreme (Edge of Limits)* | MC12NC | Valid | Valid |  |
|  | LDN123CY | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\*\_\*-\* | Not Valid | Valid | Logic Error: used && instead of ||. Now Not Valid |

###### Telephone Number

The member’s telephone number can be between 10 and 11 digits and can only contain numbers. The telephone number can be null.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 01382123456 | Valid | Valid |  |
|  | ‘null’ | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0123456789 | Valid | Valid |  |
|  | 01234567890 | Valid | Valid |  |
| *Exceptional (Invalid)* | One2three | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Mobile Number

The member’s mobile number can only be 11 digits and can only contain numbers. The telephone number can be null.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | ‘null’ | Valid | Valid |  |
|  | 07123456789 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 07123456789 | Valid | Valid |  |
|  | 07987654321 | Valid | Valid |  |
| *Exceptional (Invalid)* | One2three | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Add Button

Testing the functionality of the add button, ensuring that valid inputs are added and invalid inputs aren’t added.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Member | Member Added | Member Added |  |
|  | Invalid Member | Not Valid | Not Valid |  |

###### Update Button

Testing the functionality of the update button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Member | Account Member | Member Updated |  |
|  | Invalid Member | Not Valid | Not Valid |  |

###### Delete Button

Testing the functionality of the delete button, ensuring that members are deleted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Delete Member | Member Deleted | Member Deleted |  |

##### Coach

The coach is a type of member so the same tests from member were used and had the exact same outcome, the only difference between a coach and a member is a coach has a CoachAccount. Assigning a coach account is handled with the update account button and works as expected.

###### Add Button

Testing the functionality of the add button, ensuring that valid inputs are added and invalid inputs aren’t added.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Coach | Coach Added | Coach Added |  |
|  | Invalid Coach | Not Valid | Not Valid |  |

###### Update Button

Testing the functionality of the update button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Coach | Coach Updated | Coach Updated |  |
|  | Invalid Coach | Not Valid | Not Valid |  |

###### Delete Button

Testing the functionality of the delete button, ensuring that coaches are deleted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Delete Coach | Coach Deleted | Coach Deleted |  |

##### Player

The player is a type of member so the same tests from member were used and had the exact same outcome, the only difference between a player and a member is a player has health conditions, guardians/next of kin, doctor, and positions. These will be tested in their own section.

###### Health Conditions

The comments can be between 2 and 50 characters and can only contain letters or spaces but cannot contain consecutive spaces.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | ‘null’ | Valid | Valid |  |
|  | Asthma | Valid | Valid |  |
| *Extreme (Edge of Limits)* | ‘blank’ | Valid | Valid |  |
|  | ‘50 characters’ | Valid | Valid |  |
| *Exceptional (Invalid)* | Bad leg. | Not Valid | Not Valid |  |
|  | ‘51 characters’ | Not Valid | Not Valid |  |

###### Add Button

Testing the functionality of the add button, ensuring that valid inputs are added and invalid inputs aren’t added.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Player as Admin | Player Added | Player Added |  |
|  | Invalid Player as Admin | Not Valid | Not Valid |  |
|  | Valid Player as Coach | Player Added | Player Added |  |
|  | Invalid Player as Coach | Not Valid | Not Valid |  |

###### Update Button

Testing the functionality of the update button, ensuring that valid inputs are updated and invalid inputs aren’t updated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Valid Player as Admin | Player Updated | Player Updated |  |
|  | Invalid Player as Admin | Not Valid | Not Valid |  |
|  | Valid Player as Coach | Player Updated | Player Updated |  |
|  | Invalid Player as Coach | Not Valid | Not Valid |  |

###### Delete Button

Testing the functionality of the delete button, ensuring that members are deleted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Delete Player as Admin | Player Deleted | Player Deleted, but skills and doctor remain in database. | Needs a rework of the DBContext, no critical errors only some leftover data not accessible in the UI. This is okay for now, if this causes any issues in further testing, this can be fixed |
|  | Delete Player as Coach | Player Deleted | Same as above | Same as above |

##### Junior Player

The junior player is a type of player so the same tests from player were used and had the exact same outcome, the only difference between a junior player and a player is a junior player has a consent form option.

###### Has Consent Form

The junior player’s consent form is chosen through a dropdown, the only options are ‘Yes or ‘No. The only other option is to leave the option blank.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Yes | Valid | Valid |  |
|  | No | Not Valid (The user needs to have this option, but a junior player cannot be added without a consent form) | Not Valid |  |
| *Extreme (Edge of Limits)* | N/A |  |  |  |
|  | N/A |  |  |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | N/A |  |  |  |

##### Skills

All the skills have the exact same validation and logic so they will all be tested together using the same information in the same table to avoid repeated tables. Any unexpected results will be noted and if it was an individual or collective error.

###### Skill Value

The skill’s value can only be a whole number between 0-99.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 3 | Valid | Valid |  |
|  | 4 | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 1 | Valid | Valid |  |
|  | 5 | Valid | Valid |  |
| *Exceptional (Invalid)* | 100 | Not Valid | Not Valid |  |
|  | Dave \*-\* | Not Valid | Not Valid |  |

###### Comments

The comments can be between 0 and 100 characters and cannot contain consecutive spaces.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Great skill. | Valid | Valid |  |
|  | Could be better. | Valid | Valid |  |
| *Extreme (Edge of Limits)* | ‘blank’ | Valid | Valid |  |
|  | ‘100 characters’ | Valid | Valid |  |
| *Exceptional (Invalid)* | Good skill. | Not Valid | Not Valid |  |
|  | ‘101 characters’ | Not Valid | Not Valid |  |

##### Position

The position’s only value of name is predefined with initial values when the database is created, there is no way for the user to change the name. This could be an additional feature added later if required.

##### Doctor

###### Name

The doctor’s name can be between 2 and 40 characters (to allow for first and last name), and can only contain letters, single spaces, apostrophes, periods, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Dr. Liam Courtney | Valid | Valid |  |
|  | Dave | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Dr | Valid | Valid |  |
|  | aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Telephone Number

The doctor’s telephone number can be between 10 and 11 digits and can only contain numbers. The telephone number can be null.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 01382123456 | Valid | Valid |  |
|  | ‘null’ | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0123456789 | Valid | Valid |  |
|  | 01234567890 | Valid | Valid |  |
| *Exceptional (Invalid)* | One2three | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

##### Next of Kin

###### First Name

The next of kin’s first name can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Liam | Valid | Valid |  |
|  | Dave | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Jo | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Last Name

The next of kin’s last name can be between 2 and 20 characters, and can only contain letters, single spaces, apostrophes, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Courtney | Valid | Valid |  |
|  | O’Neill | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Yi | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Telephone Number

The next of kin’s telephone number can be between 10 and 11 digits and can only contain numbers. The telephone number can be null.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 01382123456 | Valid | Valid |  |
|  | ‘null’ | Valid | Valid |  |
| *Extreme (Edge of Limits)* | 0123456789 | Valid | Valid |  |
|  | 01234567890 | Valid | Valid |  |
| *Exceptional (Invalid)* | One2three | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

##### Guardian

The guardian is a type of next of kin so the same tests from next of kin were used and had the exact same outcome, the only difference between a guardian and a next of kin are a guardian has a relationship, address, and post code.

###### Relationship

The guardian’s relationship can be between 2 and 20 characters, and can only contain letters, single spaces, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | Father | Valid | Valid |  |
|  | Mother | Valid | Valid |  |
| *Extreme (Edge of Limits)* | Da | Valid | Valid |  |
|  | abcdefghijklmnopqrst | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Address

The guardian’s address can be between 2 and 35 characters, and can only contain letters, numbers, single spaces, or hyphens. It also cannot be null or contain continuous spaces or special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | 123 Main Street | Valid | Valid |  |
|  | 64B New Road | Valid | Valid |  |
| *Extreme (Edge of Limits)* | DC | Valid | Valid |  |
|  | 1234567890abcdefghijklmnopqrstuvwxy | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\* | Not Valid | Not Valid |  |

###### Post Code

The guardian’s post code can be between 6 and 8 characters, and can only contain letters or numbers. It also cannot be null or contain special characters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Input** | **Expected Output** | **Actual Output** | **Change/New Result** |
| *Normal (Expected)* | DD12BC | Valid | Valid |  |
|  | AB12MNO | Valid | Valid |  |
| *Extreme (Edge of Limits)* | MC12NC | Valid | Valid |  |
|  | LDN123CY | Valid | Valid |  |
| *Exceptional (Invalid)* | ‘null’ | Not Valid | Not Valid |  |
|  | \*-\*\_\*-\* | Not Valid | Valid | Logic Error: used && instead of ||, same as Member. Now Not Valid |

### Usability Testing

#### Results

The following testers were selected to reach all ranges of rugby and technical knowledge. One tester is technically knowledgeable but has no knowledge of rugby, while one has limited knowledge of either, and a tester from the target audience, who’s opinion has more priority. This method of selecting testers allows for different perspectives based on each individual’s experience.

|  |  |  |  |
| --- | --- | --- | --- |
| **Task** | **Tester 1** | **Tester 2** | **Tester 3** |
| *Name* | Carys | Pam | Steve |
| *Age* | 21 | 55 | 56 |
| *Technical Knowledge* | Good | Novice | Little |
| *Rugby Knowledge* | None | None | Great (ex-player and ex-coach) |
| *Target Audience* | No | No | Yes |
| *Create an account* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Login with the new account* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *View and update account details* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Update one of the accounts to an admin* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Create both a senior and junior team* | Clear and obvious how to do it. Error message was helpful | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *View and update one of the teams* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Create a member* | Clear and obvious how to do it. Error message was helpful | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *View and update the member* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Create a coach for each team* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *View and update one of the coaches* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Create a player for both teams* | Position’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Position’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Position’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. |
| *View and update both players* | Position’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Position’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Position’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. |
| *View and update one of the player’s skills* | Comments need a title of some sort to show what the box is for; player skill min and max should be clear | Comments need a title of some sort to show what the box is for; player skill min and max should be clear | Comments need a title of some sort to show what the box is for; player skill min and max should be clear |
| *Create a match for each of the teams* | Clear and obvious how to do it. | Clear and obvious how to do it. | Full time, 1st half, and 2nd half scores are a bit confusing. |
| *View and update one of the matches* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Create a training session for both teams* | Player’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Player’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Player’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. |
| *View and update one of the training sessions* | Player’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Player’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. | Player’s dropdown wasn’t clear. Would be helpful to show selected positions outside of box. |
| *Delete a training session* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Delete a match* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Delete a player* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Delete a coach* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Delete a member* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Delete both teams* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Logout* | Clear and obvious how to do it. | Clear and obvious how to do it. | Clear and obvious how to do it. |
| *Overall* | Overall, it was clear how to use the application. After the first use of the application, everything was clear, and would be able to use the application on a weekly basis without any issues. | Overall, it was clear how to use the application. After the first use of the application, everything was clear, and would be able to use the application on a weekly basis without any issues. | Overall, it was clear how to use the application. After the first use of the application, everything was clear, and would be able to use the application on a weekly basis without any issues. |
| *Updated Version* | All issues fixed. | All issues fixed. | All issues fixed. |

#### Insights

* The player and position drop downs aren’t very clear but after figuring it out, it was straightforward. **FIXED** added user feedback when selecting players or positions. It was decided after a discussion with the testers, that displaying the selected players/positions would make the page too long, especially if a team of 15+ players all attended a session.
* Player skills’ values and comments could be clearer, the minimum and maximum values could be displayed, and the comments box should state what it is for. **FIXED** added some titles to UI and changed the values to 1/5, 2/5 etc.
* The full-time result of the match is a bit redundant if the first and second half scores are inputted, this could change to only being used for displaying matches. **FIXED** removed full time result from the add match page, and made it a read only calculated result in the view page.

Additionally, after observing these sessions, it was noticed that the match’s location is an input box, when it should be a selection of ‘Home’ or ‘Away’. **FIXED** changed to a selection box containing ‘Home’ and ‘Away’.

# New Libraries or Concepts References

## Microsoft Azure (SQL Server):

* <https://learn.microsoft.com/en-us/azure/azure-sql/database/azure-sql-dotnet-entity-framework-core-quickstart?view=azuresql&tabs=visual-studio%2Cservice-connector%2Cportal>
* <https://youtu.be/6joGkZMVX4o?si=AIQ2T9t_926dHWts>

## WinUI3 (Windows App SDK):

* <https://learn.microsoft.com/en-us/windows/apps/winui/winui3/>
* <https://learn.microsoft.com/en-us/windows/apps/design/controls/listview-and-gridview>
* <https://learn.microsoft.com/en-us/windows/apps/design/controls/navigationview>
* <https://learn.microsoft.com/en-us/windows/windows-app-sdk/api/winrt/?view=windows-app-sdk-1.5>

## .NET8 (Newest Version of .NET):

* <https://learn.microsoft.com/en-us/dotnet/core/whats-new/dotnet-8/overview>
* <https://stackoverflow.com/questions/77506248/after-updating-to-net8-reference-the-system-windows-controls-in-the-xaml-edito/77507023#77507023>
* <https://learn.microsoft.com/en-us/dotnet/standard/datetime/converting-between-datetime-and-offset>

## EntityFramework (Object Relational Mapping):

* <https://learn.microsoft.com/en-us/ef/core/>
* <https://learn.microsoft.com/en-us/azure/azure-sql/database/azure-sql-dotnet-entity-framework-core-quickstart?view=azuresql&tabs=visual-studio%2Cservice-connector%2Cportal>
* <https://youtu.be/qkJ9keBmQWo?si=biv9_lCn01hWderS>
* <https://youtu.be/rWy-s_yf664?si=ooYi1_d_AEvL7iIp>
* <https://youtube.com/playlist?list=PLdo4fOcmZ0oX7uTkjYwvCJDG2qhcSzwZ6&si=fp_J6vbADxqssGwP>
* <https://youtu.be/1g79ZbeEeL8?si=_FydX2ztNM44Rz-I>

## BCrypt (Password Hashing Library):

* <https://github.com/BcryptNet/bcrypt.net>
* <https://code-maze.com/dotnet-secure-passwords-bcrypt/>

## EmailValidation (Library):

* <https://github.com/jstedfast/EmailValidation>

## ProfanityDetector (Library):

* <https://github.com/stephenhaunts/ProfanityDetector>

# User Documentation

*See attached PDF for user guide.*

# Project Plan

All the project tasks are completed, the only remaining task is the project evaluation.

A screenshot of a computer

Description automatically generated

# Changes From Original Plan

Removed the **home page**, the login page is now the loading page. The user guide made this page redundant and added extra pages in the navigation when it wasn’t necessary.

Changed **skills/activities** and **injuries/accidents** to strings to be more in-line with the original paper forms. After preliminary usability testing by myself and others, it was found that selecting individual members, skills etc. then adding user input made it more complicated than it needed to be.

Changed the **designs** of the **view pages** to match the add pages. During the same preliminary usability testing it was found that it made it simpler for the user, especially for editing fields as they remained in the same place.

Changed **which data was shown in the view pages**, every page only shows the data associated with it, this was most noticeable in the view team page. Again, during the same preliminary usability testing it was found that it kept it simpler for the user to match the design of the add pages.

Changed the **design of the player skills page** because an oversight in the planning, forgot to add an area for comments for skills. This required a rework of the design in the same format of the rest of the pages.

Added an option to **reset the password** for the user’s account, and the ability for an admin to reset any user’s password. This was added for obvious reasons, in the likely event of a user forgetting their password, also for security purposes, if a password is compromised elsewhere.

# References

Twitter, 2024. *Counting characters when composing Tweets.* [Online]   
Available at: https://developer.twitter.com/en/docs/counting-characters  
[Accessed 19 04 2024].