Objectives

The purpose of this document is to list tests that we will perform to ensure our project has met the features and requirements we set out in our scope and user stories. Most of the tests listed below, are not code related, but rather ask "*does feature x exist?*", and "*is it accurate, displayed well, and informative?*".

Document References

Requirements Analysis Document (Epic & Scope)
Skills and Resources Audit
Risk Register
User Stories/Intermediate Acceptance Criteria

The tests listed in this document are based off the functions of the system outlined in the Requirements Analysis document, as well as the features that are described in the User Stories document.

Test Summary

System functions

- Secure Login
- Query the tabular database hosted on AWS cloud database service
- Implement tools to visualise the data
- Simple user interface

Tests

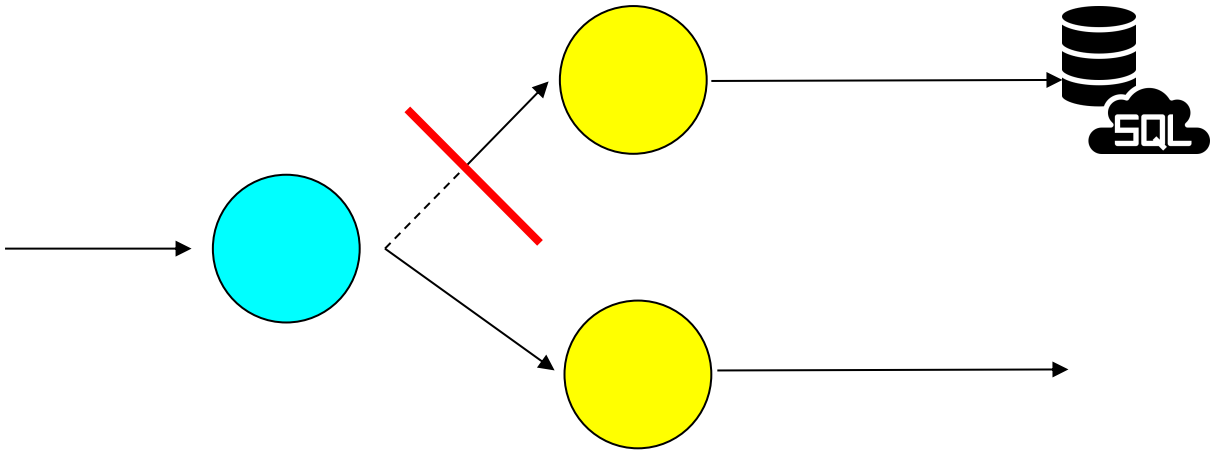
- Secure login test
- Visualise data test
- Display data test
- Mobile compatibility test
- Humphrey eye diagram test

These tests are further defined below.

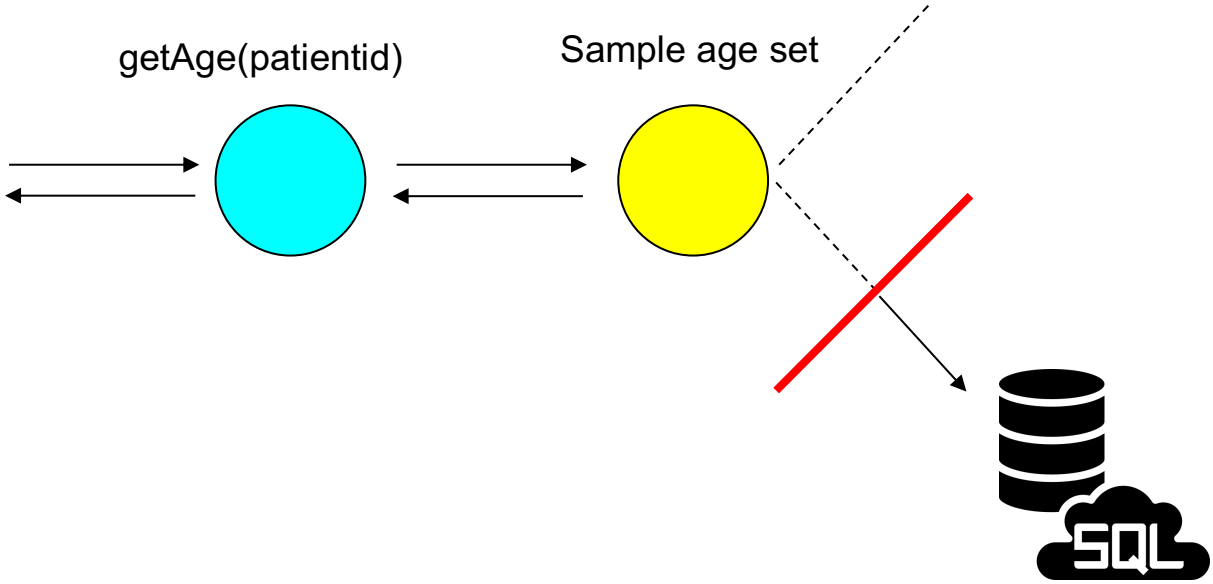
Testing Strategy

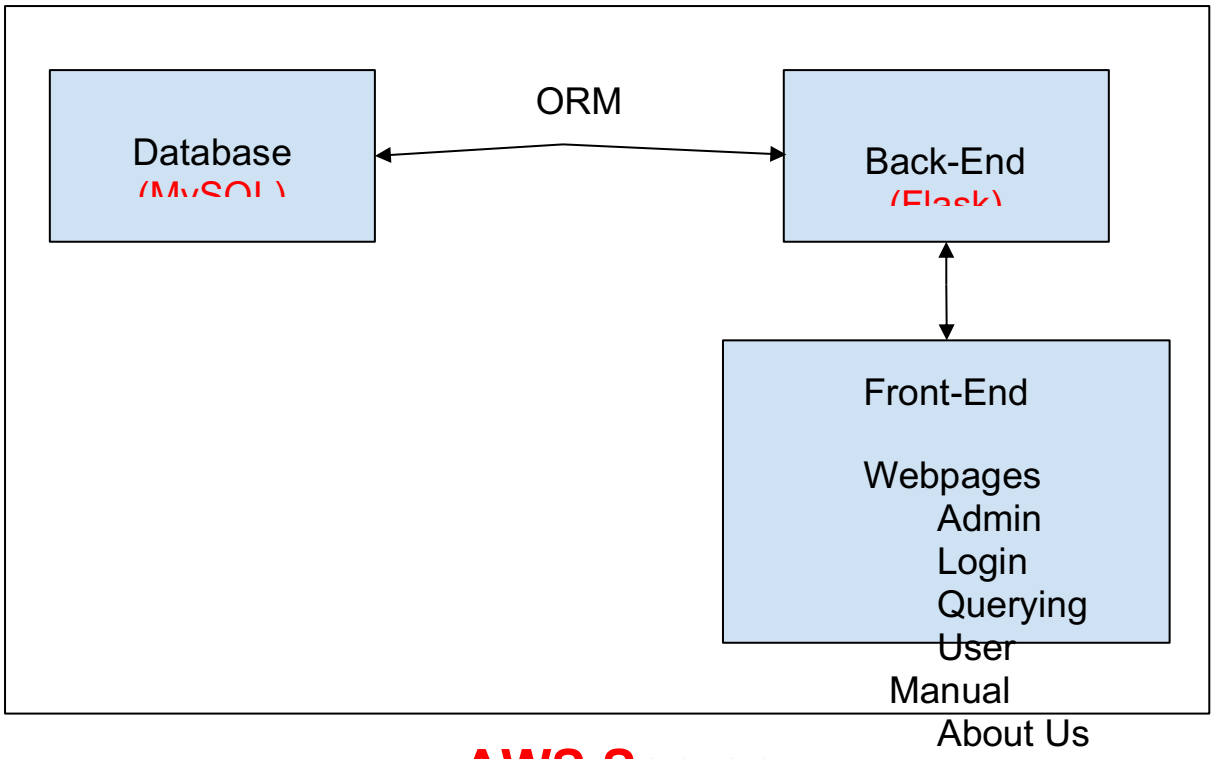
The testing strategy outlined in this document covers all the system functions and requested features as described in the Requirements Analysis and User Stories documents. Our strategy revolves mainly around integration tests which are accomplished by combinations of 'fakes' or 'stubs' as pictured below. Secure login test is done through a unit test testing the single login function which will call upon built in flask authentication modules, while the mobile compatibility test is done through a system test on various systems.

Fake



Stub





Testing Schedule

Tests to be completed in this order (with estimated time frames):

- Secure login test - Wk 8
- Display data test - Wk 9
- Visualise data test - Wk 10
- Humphrey eye diagram test - Wk 10
- Mobile compatibility test - Wk 11

Secure Login Test (Unit test):

Test Specification

Our project handles sensitive data that must be kept private and secure. The client has asked for a web front to display this data, such that doctors and research students can view it. The login page of our website , therefore, needs to be secure such that the data in question can only be viewed by these people and not by the general public. To do this we will need to prevent users supplying incorrect login information, from logging on to the website and implement a maximum of 5 incorrect login attempts before a user is locked out of logging in again for 24 hours.

Test Description

- Where: Project website login page (still in development)
- **Sample data set:**
    - Username: “NoelNobody” password “lonely123”
- Procedure:
    - Enter manually “Peter Parker” as Username and “password123” as password.
    - Press Submit
    - Repeat this 5 times.
- Expected Output:
    - Incorrect Login Information, Login attempt (x/5) - where x represents the number of failed login attempts. On 5th failed attempt, system should display “Incorrect Login Attempt (5/5), You have been locked out for 24 hours” and prevent user from attempting to login again for roughly 24 hours.

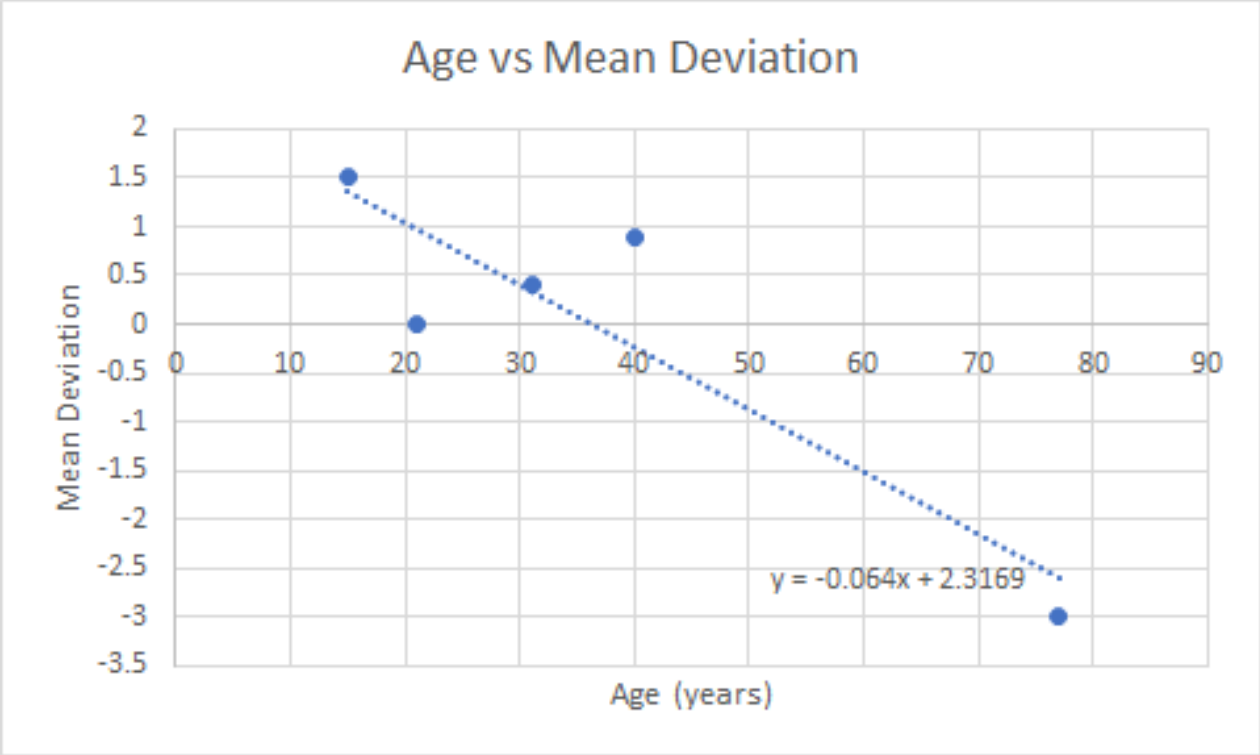
Visualise data test (Integration test):

Test Specification:

The initial dataset contains approximately 44000 Humphrey tests and 96 columns. Doctors want to be able to visualise different measures on x-axis and y-axises to see different correlations in the data. This data must be represented clearly, error-free and informative.

Test Description:

- **Where:** Aggregated data page:
- **Inputs:** x axis: age, y axis: mean deviation, submit
- **Sample set** to visualize: age to mean deviation
    - 31, 0.4
    - 40, -0.9
    - 21, 0
    - 77, -3
    - 15, 1.5
- **Expected Output:**



Test Material:

- Front end
- Sample set
- Back end

Display Data test (Integration test):

Test Specification:
Website must display data from a database on the website.

Test Description:

- **Where:** Patient-Specificage
- **Sample set:**
    - Reliability: “Good”
    - Reliability colour: “Green”
    - Name: “Billy Billyson”
    - EyeDefect: 1
- **Expected Output:**
    - Reliability: “Good”
    - Reliability colour: “Green”
    - Name: “Billy Billyson”
    - EyeDefect: 1

Test Material:
- Front end
- Sample set
- Back end

Mobile Compatibility Test (System test):

The client (Doctors) have expressed that they want to be able to access the website on mobile devices and various browsers (firefox, google chrome, internet explorer).

Test Specification:

This test is crucial as we will likely be developing the web app in the same system/browser settings and consequently will be unaware of any cross-platform errors. Hence, this check should be implemented regularly to ensure consistent cross-platform compatibility.

Test Description:

- **Where:**
    - Intend to test the entirety of the website: navigation, interaction, visualisation and performance.
- **Sample set:**
    - Browsers:
        - Firefox, google chrome, internet explorer, safari
    - Devices:
        - Apple iPhone, Apple iPad, Android mobile, Android tablet.

- **Expected Output:**

- Consistent formatting and UI behaviour across devices and platforms.
- Consistent query and data display performance.

- **Test Material:**
  - The browsers and devices described in “sample set”.

Humphrey eye diagram test: (Integration test)

Test Specification:

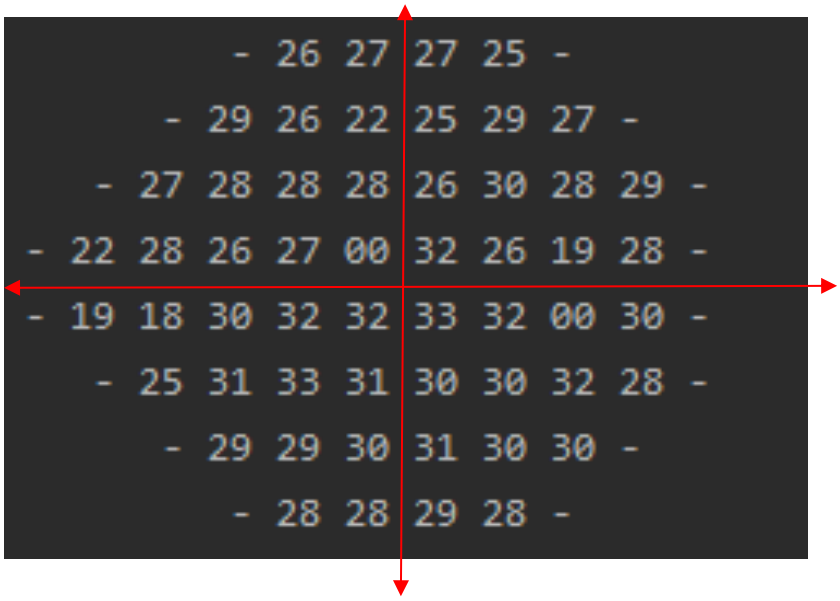
Doctors want to see humphrey eye diagram from a specific test. It needs to be accurate, informative and clear.

Test Description

Where: Test Specific data page:
Inputs: testID:1, eyeTested:1

```
right_eye_dict = {22: '28', 6: '26', 7: '27', 12: '29', 13: '26', 14: '22', 20: '27', 21: '28',
                  23: '28', 29: '22', 30: '28', 31: '26', 32: '27', 33: '00', 25: '30', 8: '27',
                  9: '25', 15: '25', 16: '29', 17: '27', 24: '26', 26: '28', 27: '29', 34: '32',
                  35: '26', 36: '19', 37: '28', 55: '30', 44: '33', 45: '32', 46: '00', 47: '30',
                  54: '30', 56: '32', 57: '28', 63: '31', 64: '30', 65: '30', 70: '29', 71: '28',
                  52: '33', 39: '19', 40: '18', 41: '30', 42: '32', 43: '32', 50: '25', 51: '31',
                  53: '31', 60: '29', 61: '29', 62: '30', 68: '28', 69: '28'}
```

Expected output:



Testing Materials:

- Website and sample data set with sample humphry eye data as described above

Test Analysis Report

To be completed once the tests described above are ready to be implemented. The goal of the test analysis report is to convey the function, performance and data measures of each test in a way that is representable of the aims that each test has been set up to achieve.

Impact of discovered errors/deficiencies

To be completed once the tests described above have been carried out and noteworthy errors and deficiencies have been detected and consequent action has been taken.