# Evaluation

## Objective Analysis

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| No | Objective | To what extent has it been met |
| 1 | **Logging In** | This objective is met, the user can use their login details: email address and password to log in. |
| 2 | **Registering** | Users can access a register page from the log in page, where they are provided with a form. This objective has been met to an extent, because if the details are entered correctly the data is stored in the database, with sensitive data such as the password encrypted with a salt.  However, this can be improved: in a scenario where a user inputs the form wrongly, (e.g inputs his password incorrectly), instead of removing all the already inputted data, it should retain the correctly inputted data. |
| 3 | **Security of password**   * Hashing * Secure Database | Using a hash function, the password is successfully hashed before it is stored in the database along with the salt.  Database is secured using a password, which is required before connecting to it. |
| 4 | **No unnecessary personal information (Data Protection Act)**   * **Secure Database, password protected** * **No unnecessary data** | This objective has been achieved, no unnecessary data has been stored about the user. In addition to this, the database is secured with a password. |
| 5 | **Data Redundancy**  (data stored only at one place where necessary) | The database has been fully normalised, to the third normal form, ensuring that data is atomic, no repeating attributes, no redundant data, no partial or no-non-key dependencies. Normalising the database covers these 2 objectives as it ensures that data is stored only once, and the data which is stored is meaningful and correct. No data, that can be calculated, for example dates, average ratings are stored. These objectives are therefore fully achieved. |
| 6 | **Data integrity**  (data is correct, no calculated fields, must input in run time) |
| 7 | **Allow user to create a personalised profile, by adding a profile picture** | This objective has been achieved, the user can update their profile picture. To improve this objective, the user should be given a default photo which will be present when there is no profile picture. |
| 8 | **Allow user to change password** | This objective is achieved to an extent, if the user is logged in and correctly enters his old password, along with the new password twice, the system will change their password. However, this can be improved by allowing the system to check the strength of their new password, such as making sure length is at least 8 characters. |
| 9 | Allow user to create a workout by adding exercises from a list, and choosing reps , sets and time. | This objective has been achieved, the system successfully outputs several forms: firstly, the user inputs the name and number of exercises, after that has been successfully inputted, another form is generated with the corresponding number of rows, where each row provides a dropdown list of exercises, reps, sets and rest period. This can be improved by allowing the user to select a muscle group for each row, then showing the corresponding exercises. This will improve the ease and efficiency of creating a routine. |
| 10 | Allow the routine to be outputted in a organised manner with appropriate inputs to take in feedback. | This objective has been achieved, each routine consists of a set of exercises, with each exercise having: An image, title and description. This has been made more user friendly through colour co-ordination, so users can tell the difference between 2 exercises easier. In addition, the feedback system is such that it disables the feedback for previously inputted sets, preventing double entry of the same set. |
| 11 | Able to store workout in data base | Workouts are successfully in the database into 3 tables: routine, exercise2routine (link table), exercise. Data is stored such that it conforms to third normal form. |
| 12 | Allow user to search for and retrieve a workout from data base / Allow all users to search for a workout, using filters. | This has been achieved to an extent, the system searches the list of routines in the database based on the search parameters: muscle group, name of routine or name of creator. In addition, this can be sorted by rating or date performed, through bubble sort. As bubble sort has time complexity O(N2) it is not the most efficient sorting algorithm, to further improve this the system should use merge sort or binary sort, with time complexity O(nlogn) and O(logn) respectively. |
| 13 | Display information belonging to a routine in the timetable, e.g day of the week, name of routine, muscles trained, and whether the user has completed the routine. | This objective has been successfully achieved: when the user access their timetable, the routines on each day, that they have assigned to, is shown with details including: name, muscles trained, time routine is to be started, average rating and whether it has been completed. |
| 14 | Allow user to input routines into weekly timetable | In the timetable page, the user has a form allowing them to add a routine by selecting the name of the routine, time and day. Defensive programming has been implemented, to prevent user from entering a routine into a day with a routine or removing a routine from a day without. To further improve this, the user should have an option to select the type of muscle they want to train, which would then show a corresponding list of routines. |
| 15 | Allow user to remove routines from timetable | This has been successfully achieved, a routine can be removed from timetable. To improve this, this feature should be disabled for instances where routines have been performed, as this would prevent accidental removal of performed routines. |
| 16 | Allow user to access a definition and an image of each exercise in a routine | This is achieved to an extent; the definition and image is provided for each exercise in the routine. To further extend this, the system should allow the user to directly access the information relating to individual exercises through a search system, like that of searching for a routine. |
| 17 | Allow user to keep a log of previous routines | This objective has been achieved, a table displaying the date, rating, and name of routine is displayed when the user enters their log page. |
| 18 | Allow user to input feedback: Easy, Challenging, Too difficult | The system provides the user 3 options when providing feedback for each set, in turn this data along with their weight would suggest a new weight for the next set or the next time the routine is performed. This objective is met: 3 options are provided through a drop-down list. |
| 19 | Allow routine to suggest an increased weights if feedback is too easy | This objective is met to an extent: when the user inputs “too easy”, if the rep range is 6 or below, +5kg is added to their suggested weight, whereas if rep range is above 6, +2.5kg is added. To further improve this objective, the system should be able to increase intensity of each exercise through other means , such as increasing the reps, or recommending different exercises, based on the difficulty of each exercise; however, this would require further data-entry as users would need to rank each exercise based on difficulty. |
| 20 | Allow routine to suggest an decrease weights if feedback is too challenging | This objective is met: a decrease of 2.5kg is suggested if the feedback is too challenging. These 2 objectives (19 and 20) are taken further in objective 21, which takes into account of the previous feedback. |
| 21 | Allow users who have done the routine before in the last 31 days, to have suggested starting weights which take account their previous feedback | This objective has been met successfully, given that the routine has been performed by the user within the last 31 days, (this is to ensure that the feedback given by the user is not outdated due to reversibility in fitness), the system will taken into account of each set of feedbacks per exercise. The system will then generate a starting suggested weight for the user. The system takes “Challenging” feedback is highest priority, in which the system looks for the highest challenging weight and sets that as the starting weight. However, if that is not possible the system will create a range using “Too Difficult” and “Too Easy”, whereby the highest “Too Easy” weight is set as the lower limit and lowest “Too Difficult” weight is set as the upper limit. |
| 22 | Allow user to change password when password is forgotten using email | The system sends the user’s email a 6-number recovery code, which if entered correctly, allows the user to change their password. This objective has been achieved to an extent, it works for situations when a user has forgotten their password. To further extend this, the system should be able to give the user tips on their password, such as a safety question, which would be provided during the registration page. This extra bit of functionality will mean that users are less likely to keep changing passwords, and hence forgetting passwords, allowing to better ease and usage of the system. |

## User Feedback

**Did the system meet your requirements?**

The system performed just as the users would have expected, the users were satisfied with the functionality provided, and the simplicity of making their own profile allowed them to access all the features of the system.

Client 1 and Client 2, both of whom are beginners – intermediate, said that the system met their requirements: it provided them a useful tool to plan workouts, record progress and develop a basic training regime for them to follow. The array of routines provided by other users allowed them to try new routines, in addition the feedback system implemented into the system allowed them to choose their weight and apply progressive overload, while reducing the risk of injury.

Client 3, a more advanced user, said that the system had its success and drawbacks. He said that creating routines and allowing other users to use them has helped him along with his peers to perform and share different fitness regimes. In addition, he said that the template of the routine and the feedback system was clear and easy to use. The timetable was simple, in that it showed only the routines present on the current week, and the log page allowed him to see his past performed routines. He recommended that there should be a timer placed in the app to allow the count down of rest periods.

In conclusion, most of the user’s requirements were met by this system. It provided the full functionality of a working gym planner, allowing them to plan and build a disciplined workout regime.

**How did you find using the system?**

The clients had varying success in using the system, whilst most found it straight forward, it took a while for some of them to be accustomed to navigating their way through the system. However, the system is made such that users should not be more than 3 clicks from any page. Once accustomed to the system, all clients could add routines to their timetable, forming their own weekly training plan. Users were able to create their own workouts, with minimal errors, due to defensive programming and error checking. In addition, when performing the routine the users were able to fill out the form correctly.

Users were however restricted to only a small number of routines, as the user-base of the system is still very small, hence not a lot of routines have yet been created. This system can support more users, and the features of the system is such that it improves user experience as the number of users grow.

**What criticisms would you have of the system, and if so what extra functionality or improvements would you like to have seen?**

Client 1 suggested that the profile page of the system, should be extended to allow more customisation, more than just the profile picture. Client 2 would have like to see more variation in progressive overload techniques, such that instead of only increasing/decreasing weight he wanted the system to also allow a change in reps or exercise to train that muscle.

Client 3 wanted more focus on monitoring change: he wanted extra functionality that would allow him to track his weight and bmi. Client 3 also suggested adding a timer to help track rest periods.

## Analysis of User Feedback

The overall feedback based on the 3 clients was such that they thought the system was complete and filled its main purpose, however small extensions to functionality could have further improved their experience.

I believe client 1 and client 2 feedback was a good representation of users, who are new to gym training. Their feedback allowed me to see how my gym planner has helped meet their fitness goals, but how the system lacks in some areas. Client 3, provided me a good idea of more advanced gym goers, who would be able to utilise the system more effectively and hence I could create more advanced features to benefit these kinds of users.

The fact that the system was easy to use, and all the clients eventually understood how to utilise all the features meant that the system was a success. The clients did enjoy using the software however suggested improvements to the system, which will be discussed further below.

I believe therefore all my primary objectives have been met, due to the generally positive feedback by the users.

## Possible Extensions

One of the main features that I believe I could extend is the way in which progressive overload was implemented. I could allow users to have a choice of increasing weight, rep range, type of activity or even type of sets (drop sets / supersets). However, this would require a significant amount of increased complexity and more user input. An example would be to take in an input of the difficulty of each exercise at a certain weight, and this difficulty would then be used to help other users find new exercises. Drop sets, sets that decrease progressively in weight but increase in reps, and super sets, sets that have different exercises performed consecutively, are different training techniques which can also be used for muscular hypertrophy. The system can be improved such that users can be allowed to add such type of training techniques, by adding a new column in the create section of the system.

As suggested by the users, I could implement a timer using java script, this would require increase in complexity but would increase the user’s satisfaction.

One final improvement which I believe is suitable could be the increase in personalisation of a user’s profile. I could add a form that allows users to track their weight and bmi, along with their favourite workouts etc. This functionality can be added to the profile page. In addition, this system could develop in such a way that it allows increased socialisation of users, for example, I could create a common area, where I can display the user’s public stats such as greatest weight loss or muscle gain, highest rated routines, most performed routines. I believe these interesting statistics would allow user’s to not only enjoy the app more, but also improve user experience as the user-base increases in size.