SYSTEM DESIGN ANALYSIS

PROJECT : GYM PROGRAM GENARATOR

***Group 1:***

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***1.Project Description:***

*1.1 . Actor description*

*1.2 . Use Case description*

*1.3 . Use Case extend*

*1.4 . Visualization*

*1.5. Detail description*

**Gym Program Generator let's you fill in your Information so you can check how strong you are according to global standards. After calculating your 1RM's you can generate a popular strength training program based on your numbers by clicking on the "Generate Program" button.**

***1.1 . Actor description:***

|  |  |  |
| --- | --- | --- |
| Num | Actor | Description |
| 1 | User | Weightlifter or anyone who lift weight. Program will track their weight, their change, have some statistics such as chart (weight, height), exercise history |
| 2 | Anonymous User | Input their weight, choose what exercise they want to train, system will not collect these users's data |
| 3 | Website manager | manage user, manage system, respond to user's feedback, basic system diagnosis |

|  |  |  |
| --- | --- | --- |
| Actor | Use case | Description |
| User | Login | User input their username/email and password into login form.  Website verify username/email and password with database. |
| Register | User registered account with their private information.  Website add user’s : Username, email, password, full name, gender to database |
| Edit Profile | User can change their Email, Password, Full Name, Gender.  Website add new information to database. |
| Training Logs/Tracker | User input Weight, Height, Age, Lifted Weight and Reps for each exercise (provided by website).  Website add user’s : Weight, Height, Age, Lifted Weight, 1RM (calculate base on lifted weight and reps) to database.  Website provide :   1. 1RM logs, Lifted weight for each exercise logs by Chart/Graph 2. Strength Level based on Bodyweight base on this paper ([Paper](http://www.catalystathletics.com/articles/downloads/CatalystAthleticsWeightliftingLevels2015.pdf)) |
| Training Program Generator | User request website to generate program based on their provided information.  Website request “lifted weight for each exercises” from database/user.  Website layout these program (calculated based on lifted weight and program template) on the website and pdf file :   1. Stronglift 5x5 2. Starting Strength 3x5 3. Madcow 5x5 4. Texas Method 5. Korte 3x3 6. 5/3/1 7. Sheiko 8. Cube 9. Smolov JR 10. Cowboy Method |
| Calculate 1RM | Website calculate 1RM ([wiki](https://en.wikipedia.org/wiki/One-repetition_maximum)) base on one of these formula :   1. Epley 2. Brzycki 3. Lancer 4. Lombardi 5. Mayhew 6. O’Conner 7. Wathan |
| Calculate Wilks Coefficient | [Wilks Coefficient Formula & Wiki](https://en.wikipedia.org/wiki/Wilks_Coefficient) |
| Calculate Sinclair Coefficient | [Sinclair Coeffiencent Formula & Wiki](https://en.wikipedia.org/wiki/Sinclair_Coefficients) |
| Ticket/Feedback | User send ticket to manager.  Ticket have 2 parts :   1. Title (short description) 2. Content (detailed description)   Website add user ticket to database.  Manager view ticket and respond if needed. |
| Anonymous User | Training Logs/Tracker | User input Weight, Height, Age, Lifted Weight and Reps for each exercise (provided by website).  Website add user’s : Weight, Height, Age, Lifted Weight, 1RM (calculate base on lifted weight and reps) to database.  Website provide :   1. 1RM logs, Lifted weight for each exercise logs by Chart/Graph 2. Strength Level based on Bodyweight base on this paper ([Paper](http://www.catalystathletics.com/articles/downloads/CatalystAthleticsWeightliftingLevels2015.pdf)) |
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| Calculate Wilks Coefficient | [Wilks Coefficient Formula & Wiki](https://en.wikipedia.org/wiki/Wilks_Coefficient) |
| Calculate Sinclair Coefficient | [Sinclair Coeffiencent Formula & Wiki](https://en.wikipedia.org/wiki/Sinclair_Coefficients) |
| Website Manager | Manage User | Manager can change user profile, delete user account |
| Ticket/Feeback | Reply user's request in request form and through email |

***1.2 Use case description:***

***1.3. Use case extend:***

|  |  |  |
| --- | --- | --- |
| Use Case | Type | Description |
| login | include | verify username |
| include | verify user password |
| register | include | verify valid username (escape special characters) |
| include | verify valid email |
| see statistic | extend | adjust work day |
| extend | change weight |
| extend | See exercise history |
| send feedback |  | |
| get exercise | extend | adjust exercise ,increase weight |
| Training logs/ Tracker | Include | Tracking user training logs |
| extend | Showing their changes by Graph/Chart |
| Training program generator | include | Provide training program based on user training logs |
| extend | Export training program to pdf file |
| profile | extend | edit profile |
| manage user | extend | user's information |
| extend | generate statistics |
| respond user request / feedback | include | improve system base on user's feedback |
| include | review feedback/request |
| include | fix error |
| system diagnosis | include | quickly diagnosis system failure |
| include | recover service after being attack |
| include | backup data regularly |

***1.4 Detail description:***

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| --- | --- | --- | --- | --- |
| Use Case |  | Action | Object | Description (if needed) |
| Login | User | provide | Username/email, password | User input their username/email and password into login form. |
| Website | verify | Username/email, password | Website verify username/email and password with database |
| Register | User | provide | Username, email, password, Full name, Gender | User registered account with their private information |
| Website | add | Username, email, password, full name, Gender | Website add user’s : Username, email, password, full name, Gender to database |
| Edit Profile | User | change | Email, password, full name, gender | User can change their Email, Password, Full Name, Gender |
| Website | add | Email, password, full name, gender | Website add new information to database |
| Training Logs/Tracker | User | provide | Weight, Height, Age, Lifted Weight | User input Weight, Height, Age, Lifted Weight and Reps for each exercise (provided by website) |
| Website | add | Weight, Height, Age, Lifted Weight, 1 RM | Website add user’s : Weight, Height, Age, Lifted Weight, 1RM (calculate base on lifted weight and reps) to database |
| Website | Generate logs | 1 RM logs, Lifted weight for each exercise logs,  Strength Level | Website provide :   1. 1RM logs, Lifted weight for each exercise logs by Chart/Graph 2. Strength Level based on Bodyweight base on this paper ([Paper](http://www.catalystathletics.com/articles/downloads/CatalystAthleticsWeightliftingLevels2015.pdf)) |
| Training Program Generator | User/Anonymous User | request | Website | User request website to generate program based on their provided information |
| Website | request | Lifted weight for each exercises | Website request “lifted weight for each exercises” from database/user |
| Website | Generate program | Program | Website layout these program (calculated based on lifted weight and program template) on the website and pdf file :   1. Stronglift 5x5 2. Starting Strength 3x5 3. Madcow 5x5 4. Texas Method 5. Korte 3x3 6. 5/3/1 7. Sheiko 8. Cube 9. Smolov JR 10. Cowboy Method |
| Calculate 1RM | User/Anonymous User | provide | Lifted weight, Repetition |  |
| Website | calculate | 1 RM | Website calculate 1RM ([wiki](https://en.wikipedia.org/wiki/One-repetition_maximum)) base on one of these formula :   1. Epley 2. Brzycki 3. Lancer 4. Lombardi 5. Mayhew 6. O’Conner 7. Wathan |
| Calculate Wilks Coefficient | User/Anonymous User | provide | Bodyweight, Gender, Lifted weight, Units (kg/lbs) |  |
| Website | calculate | Wilks Coefficient | [Wilks Coefficient Formula & Wiki](https://en.wikipedia.org/wiki/Wilks_Coefficient) |
| Calculate Sinclair Coefficient | User/Anonymous User | provide | Bodyweight, Gender, Lifted weight, Units (kg/lbs) |  |
| Website | calculate | Sinclair  Coefficient | [Sinclair Coeffiencent Formula & Wiki](https://en.wikipedia.org/wiki/Sinclair_Coefficients) |
| Ticket/Feedback | User | send | Manager | User send ticket to manager.  Ticket have 2 parts :   1. Title (short description) 2. Content (detailed description) |
| Website | add | Ticket | Website add user ticket to database. |
| Manager | view | Ticket | Manager view ticket and respond if needed |
| Manage User | Website Manager | change | User account, User profile | Manager can change user profile, delete user account |
| Maintain | Website | backup | Database | Website automatically backup database every 24 hours |

***1.5 Visualization:***

