Requirement Elicitation of the Health Tracker Project

- 1. **Authentication**: User authentication shall be done via *username* and *password* couple.
  - 1.1. Editing profile information requires authentication. Following information is the whole section of updates that require user authentication.
    - 1.1.1. Updating weight.
      - 1.1.1.1. With an option to be in metric (kg) or imperial (lbs) selection.
    - 1.1.2. Updating height.
      - 1.1.2.1. With an option to be in metric (m) or imperial (ft) selection.
    - 1.1.3. Updating previous food intake.
    - 1.1.4. Updating user activity level.
    - 1.1.5. Updating user gender.
    - 1.1.6. Updating password.
  - 1.2. Some information user provided during **Registration**(See: 2.x.x) is read only and can not be editable afterwards. Those are:
    - 1.2.1. Username should be read-only.
    - 1.2.1. Passwords should be masked and can only be changed upon **Reset Password** (See: x.x.x) request.
- 2. **Features available to all users (registered and non-registered)** : Some features of the application should be available to all users whether they are registered or not. Those are:
  - 2.1. Calculating *Body-Mass Index* (See: 7.x.x)
  - 2.2. Querying food-calorie and food-nutrition information, making a food-search (See 4.1)
  - 2.3. Querying activity -> Estimated calories information. (See: 9.1)
  - 2.4. Registration has no constraints. Any user shall register. (See: 3.x.x)
- 3. **Registration** : This process should be available to all users. There should be a link on top of every page in the web application to enable user to navigate to registration interface.
  - 3.1. **Registration Info** Registration info are gathered during registration process. Some of them are editable afterwards, some are not. (See: 1.x.x) Required informations are:
    - 3.1.2. User weight.
    - 3.1.3. User height.
    - 3.1.4. User nick-name.
    - 3.1.5. User password.
    - 3.1.6. User gender.
    - 3.1.7. User activity-level. Pre-defined user activity levels help calculating user basal metabolic rate which is going to be stored for further version calculations (See: 9.3.) Pre-defined activity levels are:
      - 3.1.7.1. None (stay in bed all day)
      - 3.1.7.1. Sedentariness (very little)
      - 3.1.7.1. Light (1 to 3 days per week)
      - 3.1.7.1. Moderate (3 to 5 days per week)
      - 3.1.7.1. Hard (6 days per week)

- 3.1.7.1. Non-Stop (You are Energizer Bunny.)
- 4. **User food intake**: User food intake is the interface where user can add his/her food intake with *amount* and *name* parameters. Specification of these parameters are:
  - 4.1. **Query Paramters** : *Amount* and *Name of the food* parameters are needed.
    - 4.1.1. **Name** parameter is **required**. The system shall search through *implemented APIs* (See: 4.3.) to find out the exact food that the user has eaten.
    - 4.1.2. **Amount** parameter is **not-required** for some food-types, **required** for some other food-types. Completely dependant on *implemented APIs* (See: 4.3.) architecture.
  - 4.2. **Food consume time**: Being completely **optional**, gives user an idea to see *when* he/she consumed that food. Those are the available **optional** time-stamps for the food-intake for every dish:
    - 4.2.1. Breakfast
    - 4.2.2. Lunch
    - 4.2.3. Dinner
    - 4.2.4. Snack
    - 4.2.5. Mid-night
    - 4.2.6. **Number of dishes for each time**: There is no limit. User can add all dishes he/she had for any specific time, ie: User may have eaten all dishes on breakfast and had eaten anything else during the day. The system should be **flexible** enough to allow user distributing dishes he/she eat.
  - 4.3. **Food Selection API** Names of the dishes and their nutrition information is going to be fetched from <u>USDA Food Composition Database</u> via REST API
  - 4.4. **API Caching** There is no specification about caching, however some level of caching might help to reduce query times. There should be a second level cache before requesting from *USDA Food Composition Database*
  - 4.5. **Preview Previous Food Intakes** : Users should be able to see their previously consumed foods along with their total calories. There must be graphical charts and numerical values regarding to their past activities.
  - 4.6. **Food Intake Log**: Those logs are saved **only for registered users**. Unregistered users can only *query* to see food->nutrition analysis. (See: 4.1)
  - 4.7. **How old the system should keep user food intakes**: All activity persistence will be determined by the requirement 6.x.x. Please refer.
- 5. **User Activities**: *Registered users* shall be able to log their activities on daily basis or about past.
  - 5.1. **Unregistered Users** : Those users shall be able to query activity -> calorie spent with query parameters (See: 5.3.1)
  - 5.2. **Registered Users** : Registered users shall be able to query and *log* (See: 5.4.x) their activities.
  - 5.3. **Querying Activities** : Users shall query an activity info with following parameters:
    - 5.3.1. Activity Name -> Describing name of the activity, the system shall be complete the query if matching solution is found.
    - 5.3.2. Activity Duration -> Describing the duration of the activity.
  - 5.4. **Logging Activities** : *Registered Users* shall be able to log their previous activities. They shall query and find the activity they did and *log* it into system's database.

- 5.5. **Viewing Previous Activities** : *Registered Users* shall see their previous activities. How long their activities will be stored ? Please refer 6.x.x

- 6. **Activity Persistence Interval** : This section only concerns *registered users*. Non-register user activities shall never be persisted.
  - 6.1. **Activity Start Time** : All registered users shall be able to enter activities (both *food consumption* and *exercise activity* See 4.x.x and 5.x.x) back until *the time they registered*.
  - 6.2. **De-active Users** : Even if any **Registered User** stops using the application, their data will be stored until end of time. (yes, *end of time*)

- 7. **Body-Mass Index Calculations** : All users (both *registered* and *un-registered*) shall be able to calculate their BMI.
  - 7.1. **BMI Calculation Method** : The System shall calculate BMI with <u>given method</u> in the <u>project description document</u>
  - 7.2. **BMI Logging** : **Registered Users** shall be able to see their BMI changes against timeline. A graph indicating changes based on the time interval shall be presented.

- 8. **Calorie Balance Calculations** : The system shall calculate user calorie balance on daily basis and *custom* selected basis (See: 8.2.x).
  - 8.1. **Daily Calorie Calculations** : The system shall calculate total calorie difference based on the food intake (See: 4.x.x) and exercise calorie output (See: 5.x.x)
  - 8.2. **Custom Calorie Calculations** : User shall search calorie balance for custom timeline. For instance, user shall be able to see calorie difference for the last 4 days.
  - 8.3. **Presenting User Calorie Balance** : *Registered Users* shall be able to see his/her calorie balance on their profile info. Ease of access is needed.

- 9. **Registered User Optional Requirements** : Following are the optional functional requirements the system shall meet.
  - 9.1. **Reset Password**: The system shall prompt user to set a new password by asking previous password and new password duple.
  - 9.2. **User Food Intake Query Recommendation** : Inspecting user's food consumption, the system shall recommend options based on the previous consumptions to help fast querying.
  - 9.3. **User Food Consumption Recommendation** : The system shall analyze user's food consumption and analyzing what she likes and what she does not, system shall recommend food consumption options based on user's profile and basal metabolic rate.

- 10. **System Input Constraints**: Following are the constraints the system shall set against user input.
  - 10.3. **User Weight Constraints**: Minimum weight can be 40 kg (and corresponding lbs) and maximum weight is 180 kg (and corresponding lbs)
  - 10.4. **User Height Constraints**: Minimum height can be 120 cm (and corresponding ft) and maximum height is 250 cm (and corresponding ft)

- 11. **System Security Constraints**: Following are the constraints the system shall satisfy.
  - 11.1. **Password Constraints**: Password minimum size is 6 characters and there is no other constraint regarding to its security.
  - 11.2. **Username Constraints** : Username minimum size is 3 characters and must be unique.
  - 11.3. **Incorrect Credentials Attempt**: If a user fails to enter her credentials 5 times in a row, each new request must wait for 30 seconds.