3.0: Web Service

3.1 Introduction

Web Service defined by World Wide Web Consortium (W3C) as a software system that provides standard means of interoperating different software applications, running in a variety of platform. Our project provides on demand deployment of web service and allows service provider to deploy, compose and invoke web services. Basically, we have three web services in our project which are calories calculator, stock calculator and space mass calculator. In the calories calculator, we can calculate how many calories you can burn in a day. Firstly, we need to calculate the total daily energy expenditure (TDEE) which is the total number of calories that your body expends in 24 hours, including all activities. More accurate method to calculate TDEE is determining basal metabolic rate (BMR). BMR is the total number of calories your body requires for normal bodily functions.

3.2 Formula

There are two formula can be used to calculate calories which are Harris-Benedict formula and Katch-McArdle formula.

1. Harris-Benedict formula (BMR based on total body weight). Factors of this formula are height, weight, age and sex.
   - Men: BMR = 66+(13.7 * wt in kg)+(5 * ht in cm)-(6.8 * age in years)
   - Women: BMR = 655+(9.6 * wt in kg)+(1.8 * ht in cm)-(4.7 * age in years)
   - After you know your BMR, you can calculate TDEE by multiplying your BMR by your activity multiplier from the table below:

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Multiplier</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary</td>
<td>1.2</td>
<td>Little or no exercise, desk job</td>
</tr>
<tr>
<td>Lightly active</td>
<td>1.375</td>
<td>Light exercise, sport 1-3days/week</td>
</tr>
<tr>
<td>Mod. active</td>
<td>1.55</td>
<td>Moderate exercise, sports 3-5 days/week</td>
</tr>
<tr>
<td>Very active</td>
<td>1.725</td>
<td>Hard daily exercise, sports 6-7 days/week</td>
</tr>
<tr>
<td>Extr. active</td>
<td>1.9</td>
<td>Hard daily exercise, sports &amp; physical job or 2X day training</td>
</tr>
</tbody>
</table>

Table 4: Activity Level
2. Katch-McArdle formula (BMR based on lean body weight)
   - Takes into account lean mass and therefore is more accurate than a formula based on total body weight.
   - Men & Women: BMR = 370 + (21.6 * lean mass in kg).

### 3.3 Functions of calories calculator web service

- Calculate how many calories you burn in a day
- Calculate your total daily energy expenditure
- Suggestion from result:
  - Adjust your calories intake according to your goal.
  - To keep your weight in current level, remain in calories intake.
  - To lose weight, you need to create a calories deficit by doing more exercise.
  - To gain more weight, increase your calories intake.

### 3.4 Chapter Summary

This chapter will explain the meaning of web service and formula to calculate calories in calories calculator web service. There are two formula can calculate calories intake which are Harris-Benedict formula and Katch-McArdle formula. In my project, I will only use Harris-Benedict formula. Lastly, the functions of calories calculator will also included.