Heaven's Light is Our Guide
Rajshahi University of Engineering & Technology
Department of Computer Science & Engineering

Lab Manual

Course Code: **CSE 1204**
Course Title: Sessional based on CSE 1203

Module 1: (for Week 1)

Problem Statement: Want to feel better, have more energy and even add years to your life? Just exercise. Joining a gym can help you stay motivated to exercise consistently. This is a great way to build muscle, lose weight, lower blood pressure, boost mental focus, and more. Over time, you can look better, feel better, and accomplish things you never thought possible!

It is important to know your BMI (Body Mass Index) for the good health. (for more read below)

Write a C/C++ program to the process the Gym data using the following constraints:

i. Store ID, Height and Weight of each member
ii. A member can be added/removed/updated
iii. The program should be menu operated
iv. Define a structure with data members ID, Height and Weight.
v. Calculate average Height of the members
vi. Calculate average Weight of the members
vii. Calculate Max Height and Weight
viii. Calculate Min Height and Weight
ix. Display BMI classification of a given member (use following table)

a.The Structure of the member is

```
struct Member{
 //Declare data members
};
```

b. BMI Calculation

BMI=(Weight in Kg)/(Height in m)^2

Classification	BMI range - kg/m^2
Severe Thinness	< 16
Moderate Thinness	16 - 17
Mild Thinness	17 - 18.5
Normal	18.5 - 25
Overweight	25 - 30
Obese Class I	30 - 35
Obese Class II	35 - 40
Obese Class III	> 40

c.The menu look like :

```
********** Main Menu ********

   1. Add Member
   2. Update Member
   3. Remove Member
   4. Max Height & Weight
   5. Min Height and Weight
   6. Average Height and Weight
   7. BMI Classification
   8. Exit
      Enter Your option(1-8):_
```

d. Few Snapshots:

1. Add a member

```
Enter your option(1-8):1 <enter>
Enter Member ID: 12678 <enter>
Enter Height (m): 1.78 <enter>
Enter Weight (Kg): 77 <enter>
Successfully Added
Press any key go to main menu.....
```

2. Display BMI Classification

```
Enter your option(1-8):7 <enter>
Enter Member ID: 12678 <enter>
BMI = 24.3
Classification: Normal
Press any key go to main menu.....
```

BMI introduction

BMI is a measurement of a person's leanness or corpulence based on their height and weight, and is intended to quantify tissue mass. It is widely used as a general indicator of whether a person has a healthy body weight for their height. Specifically, the value obtained from the calculation of BMI is used to categorize whether a person is underweight, normal weight, overweight, or obese depending on what range the value falls between. These ranges of BMI vary based on factors such as region and age, and are sometimes further divided into subcategories such as severely underweight or very severely obese. Being overweight or underweight can have significant health effects, so while BMI is an imperfect measure of healthy body weight, it is a useful indicator of whether any additional testing or action is required.

Risks associated with being overweight

Being overweight increases the risk of a number of serious diseases and health conditions. Below is a list of said risks, according to the Centers for Disease Control and Prevention (CDC):

- High blood pressure
- Higher levels of LDL cholesterol, which is widely considered "bad cholesterol," lower levels of HDL cholesterol, considered to be good cholesterol in moderation, and high levels of triglycerides
- Type II diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis, a type of joint disease caused by breakdown of joint cartilage
- Sleep apnea and breathing problems
- Certain cancers (endometrial, breast, colon, kidney, gallbladder, liver)
- Low quality of life
- Mental illnesses such as clinical depression, anxiety, and others
- Body pains and difficulty with certain physical functions
- Generally, an increased risk of mortality compared to those with a healthy BMI

Therefore keep your BMI in normal range