Heaven’s light is our guide

Rajshahi University of Engineering & Technology

Department of Computer Science & Engineering

Lab Report

Course Code : CSE 1204

Course name : Object Oriented Programming Sessional

Lab No : 01

Lab Subject : Module 1 (Program to process Gym Data)

Submitted by	**Submitted to**
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Module 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 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

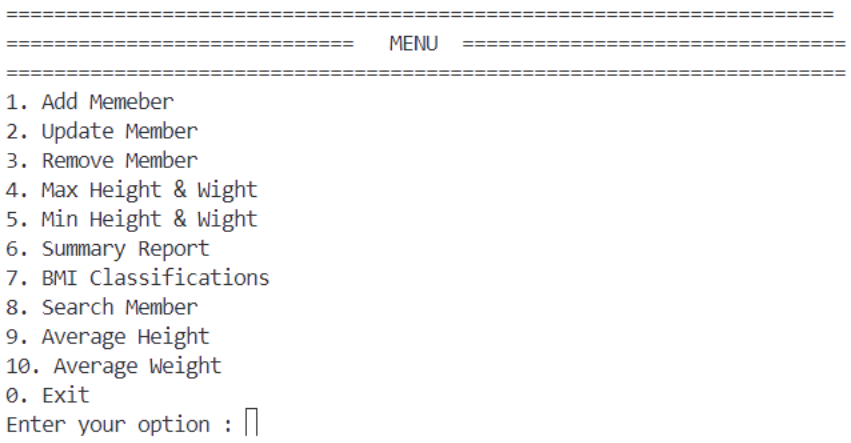
vi. Calculate average Weight of the members

vii. Calculate Max Height and Weight

viii. Calculate Min Height and Weight

ix. Display BMI classification of a given member (use following table)

Main Menu:



```
======================================================================
=============================   MENU   ================================
=======================================================================
1. Add Memeber
2. Update Member
3. Remove Member
4. Max Height & Wight
5. Min Height & Wight
6. Summary Report
7. BMI Classifications
8. Search Member
9. Average Height
10. Average Weight
0. Exit
Enter your option :
```

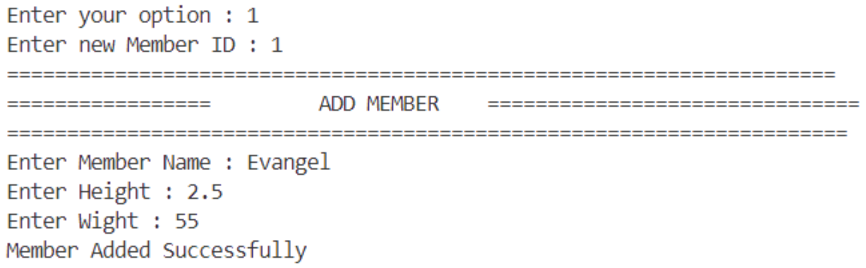
Code:

```
#include <bits/stdc++.h>
using namespace std;
```

```
class Member{
  int mid[1000];
  string name[1000];
  float height[1000];
  float weight[1000];
  float bmi[1000];
  int total = 0;

  public:
    int check(int y){
      for (size_t i = 0; i < total; i++){
        if(mid[i] == y){
          return i;
        }
      return -1;
     }

    void addMember(){
      int x,i;
      cout << "Enter new Member ID : ";
      cin >> x;
      i = check(x);
      cout << "===========================" <<endl;
      cout << "=====  ADD MEMBER  ========" <<endl;
      cout << "===========================" <<endl;
      if(i == -1){
        // Not Duplicate
        mid[total] = x;
        cout << "Enter Member Name : ";
        cin >> name[total];
        cout << "Enter Height : ";
        cin >> height[total];
        cout << "Enter Wight : ";
        cin >> weight[total];

        bmi[total] = weight[total]/(height[total]*height[total]);
        // myfile << mid[total],name[total], height[total];
        total++;
        cout << "Member Added Successfully" << endl;
      }else{
        // Duplicate
```

```
            cout << "Sorry Duplicate Memeber Id" << endl;
            }
        }
```

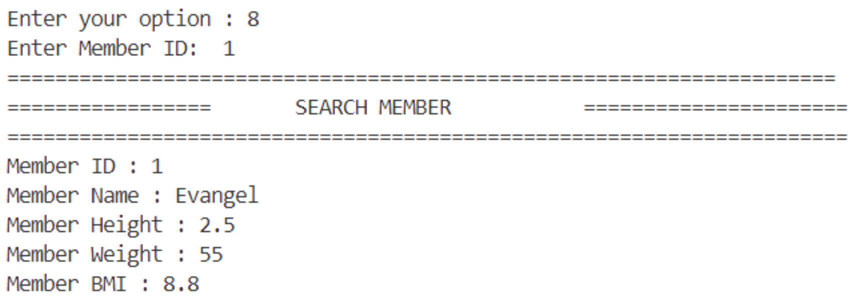
// Add Member Window



```
Enter your option : 1
Enter new Member ID : 1
=====================================================================
=================         ADD MEMBER    ===============================
======================================================================
Enter Member Name : Evangel
Enter Height : 2.5
Enter Wight : 55
Member Added Successfully
```

```
    void searchMember(){
      int x;
      cout << "Enter Member ID:  ";
                cin >> x;
      int index = check(x);
      cout << "=================================" <<endl;
      cout << "===========SEARCH MEMBER ========" <<endl;
      cout << "==================================" <<endl;
      if(index != -1){
        // Member FOund
        cout << "Member ID : " << mid[index] << endl;
        cout << "Member Name : " << name[index] << endl;
        cout << "Member Height : " << height[index] << endl;
        cout << "Member Weight : " << weight[index] << endl;
        cout << "Member BMI : " << bmi[index] << endl;

      }
      else{
        // Member Not Found
        cout << "Member Not Found" << endl;
      }
    }
```

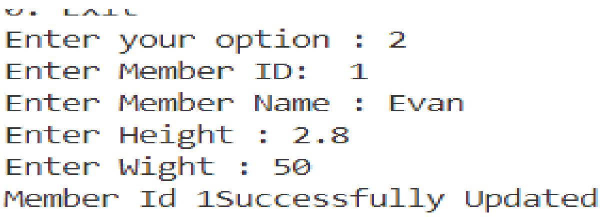
// Search Member



```
Enter your option : 8
Enter Member ID:  1
======================================================================
=================       SEARCH MEMBER          ======================
======================================================================
Member ID : 1
Member Name : Evangel
Member Height : 2.5
Member Weight : 55
Member BMI : 8.8
```

```
void updateMember(){
        int x;
        cout << "Enter Member ID:  ";
        cin >> x;
        int index = check(x);
        if(index != -1){
          // Member FOund
          cout << "Enter Member Name : ";
          cin >> name[index];
          cout << "Enter Height : ";
          cin >> height[index];
          cout << "Enter Wight : ";
          cin >> weight[index];
          bmi[index] = weight[index]/(height[index]*height[index]);

          cout << "Member Id " << mid[index] << "Successfully Updated\n";
        }
        else{
          // Member Not Found
          cout << "Member Not Found" << endl;
        }
      }
```

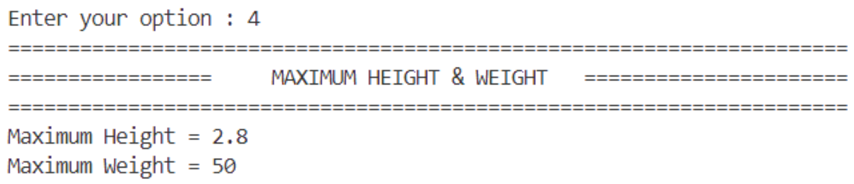
// UPDATE MEMBER



```
 0. Exit
Enter your option : 2
Enter Member ID:  1
Enter Member Name : Evan
Enter Height : 2.8
Enter Wight : 50
Member Id 1Successfully Updated
```

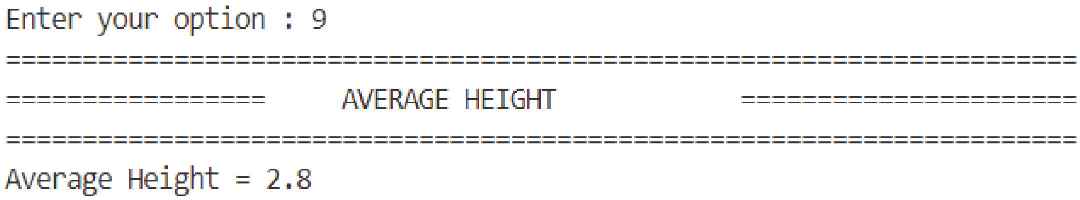
```
    void maxHeight(){
      float maxH = height[0];
      for (size_t i = 1; i < total; i++)
      {
        if(height[i] > maxH){
          maxH = height[i];
        }
      }
      int maxW = weight[0];
      for (size_t i = 1; i < total; i++)
      {
        if(weight[i] > maxW){
          maxW = weight[i];
        }
      }
      cout << "==================================" <<endl;
      cout << "=== MAXIMUM HEIGHT & WEIGHT ====" <<endl;
      cout << "==================================" <<endl;

      cout << "Maximum Height = " << maxH << endl;
      cout << "Maximum Weight = " << maxW << endl;
    }
```

// MAXIMUM HEIGHT & WEIGHT



```
Enter your option : 4
======================================================================
=================     MAXIMUM HEIGHT & WEIGHT   ======================
======================================================================
Maximum Height = 2.8
Maximum Weight = 50
```

```
    void minHeight(){
      float minH = height[0];
      for (size_t i = 1; i < total; i++)
      {
        if(height[i] < minH){
          minH = height[i];
        }
      }
      int minW = weight[0];
      for (size_t i = 1; i < total; i++)
      {
        if(weight[i] < minW){
          minW = weight[i];
        }
      }
      cout << "====================================" <<endl;
      cout << "====== MINIMUM HEIGHT & WEIGHT======" <<endl;
      cout << "====================================" <<endl;
      cout << "Minimum Height = " << minH << endl;
      cout << "Minimum Weight = " << minW << endl;
    }
        // AVERAGE HEIGHT
```

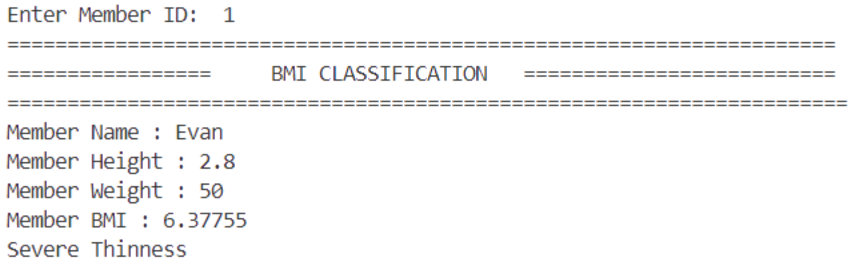


```
Enter your option : 9
======================================================================
=================     AVERAGE HEIGHT            ======================
======================================================================
Average Height = 2.8
```

```
    void avgHeight(){
      cout << "==============================" <<endl;
      cout << "==========AVERAGE HEIGHT======" <<endl;
      cout << "==============================" <<endl;

      float sum = 0;
      for (size_t i = 0; i < total; i++)
      sum += height[i];
      }

      cout << "Average Height = " << (sum)/total << endl;

    }
void avgWeight(){
      cout << "============================" <<endl;
      cout << "========AVERAGE WEIGHT======" <<endl;
```

```
        cout << "=============================" <<endl;

        float sum = 0;
        for (size_t i = 0; i < total; i++)
        {
          sum += weight[i];
        }

        cout << "AVERAGE WEIGHT = " << (sum)/total << endl;

      }
```

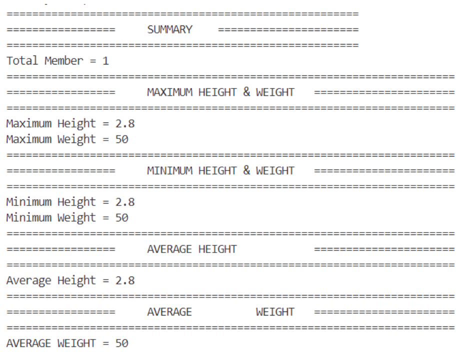
// BMI CLASSIFICATION



```
Enter Member ID:  1
=====================================================================
=================     BMI CLASSIFICATION   ==========================
======================================================================
Member Name : Evan
Member Height : 2.8
Member Weight : 50
Member BMI : 6.37755
Severe Thinness
```

```
      void bmi_classi(){
         int x;
        cout << "Enter Member ID:  ";
        cin >> x;
        int index = check(x);
        cout << "===================================" <<endl;
        cout << "=====   BMI CLASSIFICATION ======" <<endl;
        cout << "===================================" <<endl;
        if(index != -1){
          // Member FOund
          cout << "Member Name : " << name[index] << endl;
          cout << "Member Height : " << height[index] << endl;
          cout << "Member Weight : " << weight[index] << endl;
          cout << "Member BMI : " << bmi[index] << endl;
          if(bmi[index] < 16 ){
            cout << "Severe Thinness" << endl;
          }
          else if(bmi[index] >= 16 && bmi[index] <= 17){
            cout << "Moderate Thinness \n";
```

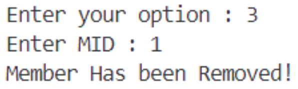
```
    }
    else if(bmi[index] >= 17 && bmi[index] <= 18.5){
      cout << "Mild Thinness \n";
    }
    else if(bmi[index] >= 18.5 && bmi[index] <= 25){
      cout << "Normal \n";
    }
    else if(bmi[index] >= 25 && bmi[index] <= 30){
      cout << "OverWeight \n";
    }
    else if(bmi[index] >= 30 && bmi[index] <= 35){
      cout << "Obese Class I \n";
    }
    else if(bmi[index] >= 30 && bmi[index] <= 35){
      cout << "Obese Class I \n";
    }
    else if(bmi[index] >= 35 && bmi[index] <= 40){
      cout << "Obese Class II \n";
    }
    else if(bmi[index] >= 40){
      cout << "Obese Class III \n";
    }



  }
  else{
    // Member Not Found
    cout << "Member Not Found" << endl;
  }
}

// SUMMARY REPORT
```



```
======================================================
=================     SUMMARY    ======================
======================================================
Total Member = 1
======================================================================
=================     MAXIMUM HEIGHT & WEIGHT   ======================
======================================================================
Maximum Height = 2.8
Maximum Weight = 50
======================================================================
=================     MINIMUM HEIGHT & WEIGHT   ======================
======================================================================
Minimum Height = 2.8
Minimum Weight = 50
======================================================================
=================     AVERAGE HEIGHT            ======================
======================================================================
Average Height = 2.8
======================================================================
=================     AVERAGE         WEIGHT    ======================
======================================================================
AVERAGE WEIGHT = 50
```

```
void summary(){
        cout << "===============================" <<endl;
        cout << "=======     SUMMARY    ========" <<endl;
        cout << "===============================" <<endl;
        cout << "Total Member = " << total << endl;
        maxHeight();
        minHeight();
        avgHeight();
        avgWeight();
        cout << endl;



    }
```

// REMOVE MEMBER



```
Enter your option : 3
Enter MID : 1
Member Has been Removed!
```

```
    void rmvMember(){
      int id;
      cout << "Enter MID : ";
      cin >> id;
      if(check(id) != -1){
        int index = check(id);
        mid[index] = {0};
        name[index] = {0};
        height[index] = {0};
        weight[index] = {0};
        bmi[index] = {0};
        cout << "Member Has been Removed! " << endl;
```

```
            }
        }
    };

    int main()
    {
        int option;
        Member m;
    while(1){
            cout << "======================" <<endl;
            cout << "========= MENU ======" <<endl;
            cout << "=====================" <<endl;
            cout << "1. Add Memeber " << endl;
            cout << "2. Update Member" << endl;
            cout << "3. Remove Member" << endl;
            cout << "4. Max Height & Wight" << endl;
            cout << "5. Min Height & Wight" << endl;
            cout << "6. Summary Report" << endl;
            cout << "7. BMI Classifications " << endl;
            cout << "8. Search Member " << endl;
            cout << "9. Average Height " << endl;
            cout << "10. Average Weight " << endl;
            cout << "0. Exit " << endl;
            cout << "Enter your option : ";
            cin >> option;
            if(option==0) break;
            switch (option)
            {
                case 1 : m.addMember();
                break;
                case 2 : m.updateMember();
                break;
                case 3 : m.rmvMember();
                break;
                case 6 : m.summary();
                break;
                case 4 : m.maxHeight();
                break;
                case 5 : m.minHeight();
                break;
                case 7 : m.bmi_classi();
                break;
                case 8 : m.searchMember();
```

```
         break;
         case 9 : m.avgHeight();
         break;
         case 10 : m.avgWeight();
         break;

      }
   }

}
```