**50:198:211:01 C&UNIX SYSTEMS PROG**

**Midterm (Fall 2021) Instructor: Dr. Iman Dehzangi**

First name: Last name:  
ID number: Date:

You have 1:10 hours (2:00pm – 3:10pm).

It is a time-restricted exam. Hence, please make sure that you manage your time properly to answer all the questions.

Q1: (Arithmetic, Largest Value and Smallest Value) Write a program that inputs unknown number of positive floating-point numbers (each smaller than 100 and greater than -100) from the keyboard, then prints the number of input numbers, sum, the average, the product, the smallest and the largest of these numbers.

The screen dialogue should appear as follows:

Number of Input Numbers;  
Sum is:  
Average is:  
Product is:  
Smallest is:  
Largest is:

Q2: (Body Mass Index Calculator) The body mass index (BMI)can be calculated using the following formula:

BMI = (WeightInPounds \* 703) / (HightsInInches \* HeightsInInches)

or

BMI = (WeightInKiloGram) / (HightsInMeters \* HightsInMeters)

Create a BMI calculator application that reads the user’s weight in pounds and height in inches  
(or, if you prefer, the user’s weight in kilograms and height in meters), then calculates and displays  
the user’s body mass index.

Also, the application should display if a person is Underweight, Normal, Overweight, or obese. The following information from the Department of Health and Human Services/National Institutes of Health (NIH) determines the following ranges for each of those categories:

Underweight: less than 18.5  
Normal: between 18.5 and 24.9  
Overweight: between 25 and 29.9  
Obese: 30 or greater

Please Enter weight in (specify if it is in kg or pounds):

Please Enter height in (specify if it is in inches or meters):

Your program should print:

BMI VALUES is:

Considering the NIH guidelines, you are considered as:

Q3: Assume that we have a series that is find as follows:

K1=1

K2=1

K3=2

K4=2\*K1+3\*K2+K3

...

K(n) = 2\*K (n-1) + 3\*K(n-2) + K(n-3)

Here is the sequence:

1, 2, 3, 8, 23, ...

Write a code to print the Kth number in this sequence (not greater than 30) that is collected from the input (user will input a number smaller or equal to 30 and the program produce the entry in the series for that number).

Ex:

Inter an integer less than 50: 5

Output: 23

Q4: Write a program in C to find the sum of the series:

1^3/1+2^3/2+3^3/3+4^3/4+5^3/5

for a given input n using the function.

*Expected Output*:

Inter an integer less than 50: 5

The sum of the series is: 55

Q1. 25  
Q2. 25  
Q3. 25  
Q4. 25  
  
 Total /100

Thanks & Good Luck