# Assignment #01 (Functions)
# Programming Fundamental - Lab

**Due Date: 23rd March 2020**

Total Marks: 10

A note of warning: Start work on assignments as soon as they are given. Do not underestimate the demanding nature of this course. Expect the system to crash the night before your program is due. Aim to have it done the day before.

Submit the assignment on **slate**. Do not email me assignments after due date. It will not be accepted in any case. Students are required to submit actual content written in MS word or Pdf. Hand written/ Scanned assignments will not be accepted.

**Note:** Name of the file should start with your Roll number followed by your Name and at the end assignment number (**p190001NameAssign01)**

1. The cost to become a member of a fitness center is as follows: (a) Senior citizens discount is 30%, (b) If membership is bought and paid for 12 or more months, the discount is 15%, (c) If more than five personal training sessions are bought and paid for, the discount on each session is 20%. Write a program that determines the cost of a new membership. Your program must displays the general information about the fitness center and its charges; ask all of the necessary information from the user to determine the membership cost; and determine the membership cost

2. Check whether a year is leap year or not? write a function isLeap has an integer formal parameter, year, determines whether the year is a leap year, and returns the Boolean value true if the year is a leap year and false if it is not.A year is a leap year if it is divisible by 4, but is not divisible by 100 except when divisible by 400. (The year 2000 was a leap year.)

3. Celsius to Fahrenheit and vice versa

Write a program to enter temperature in Celsius and convert it into Fahrenheit and vice versa. Write functions to convert the value

$$°F = \left(°C * \frac{9}{5}\right) + 32 \qquad °C = (°F - 32) * \frac{5}{9}$$

4. Your state is in a process of creating a weekly lottery. Once a week, five distinct random integers between 1 to 40 (inclusive) are drawn. If a player guesses all of the numbers correctly, the player wins a certain amount.

   Write a program that does the following:

   a. Write a function that generates five distinct random numbers between 1 and 40 (inclusive) and store it an array.

   b. Write a function to Sorts the array containing the lottery numbers.

   c. Prompts the player to select five distinct integers between 1 and 40 (inclusive) and stores the numbers in an array. The player can select the numbers in any order, and the array containing the numbers need not be sorted.

   d. Determines whether the player guessed the lottery numbers correctly. If the player guessed the lottery numbers correctly, it outputs the message ‘‘You win!’’; otherwise it outputs the message ‘‘You lose!’’ and outputs the lottery numbers.

**Your program should allow a player to play the game as many times as the player wants to play. Before each play, generate a new set of lottery numbers.**

5. The following table contains earthquake magnitude ranges on the Richter scale and their descriptors:

| Magnitude | Descriptor |
|---|---|
| Less than 2.0 | Micro |
| 2.0 to less than 3.0 | Very minor |
| 3.0 to less than 4.0 | Minor |
| 4.0 to less than 5.0 | Light |
| 5.0 to less than 6.0 | Moderate |
| 6.0 to less than 7.0 | Strong |
| 7.0 to less than 8.0 | Major |
| 8.0 to less than 10.0 | Great |
| 10.0 or more | Meteoric |

Write a function that reads a magnitude from the user and displays the appropriate descriptor as part of a meaningful message. For example, if the user enters 5.5 then your program should indicate that a magnitude 5.5 earthquake is considered to be a moderate earthquake.

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