National University of Computer and Emerging Sciences

Lab Manual # 4

Programming Fundamentals

(Section BSE- IA)

Course Instructor	Mr. Raziuddin
Lab Instructor(s)	Ms. Shazia Haque Ms. Sonia Anum
Section	BSE-1A
Semester	Fall 2021

Department of Computer Science

FAST-NU, Lahore, Pakistan

Lab Manual

Objectives

The objectives of this lab are to cover the following:

- Input output
- If else statement
- Nested If else
- Switch statement

I. if / else statement

If else statements in C++ is also used to control the program flow based on some condition, only the difference is: it's used to execute some statement code block if the expression is evaluated to true, otherwise execute else statement code block.

```
if(test_expression)
{
   //execute your code
}
else if(test_expression)//optional
{
   //execute your code
}
Else //optional
{
   //execute your code
}
```

II. Nested If-else

```
if(condition)
{
    //Nested if else inside the body of "if"
    if(condition2)
    {
       //Statements inside the body of nested "if"
    }
    else
    {
       //Statements inside the body of nested "else"
    }
}
else {
    //Statements inside the body of "else"
}
```

III. Switch Statement

A **switch** statement allows a variable to be tested for equality against a list of values. Each value is called a case, and the variable being switched on is checked for each case.

```
switch(expression)
{
   case constant-expression:
    statement(s);
    break; //optional
   case constant-expression:
    statement(s);
    break; //optional

    // you can have any number of case statements.

   default : //Optional
    statement(s);
}
```

Problems

Problem 1: (4 marks)

Take as input your name Initials in capital letters and display its respective ASCII values.

Example:

Input: S A

Output: 83 65

Problem 2: (4 marks)

Write a program that prompts the user to enter a weight of a person in kilograms and output the equivalent weight in pounds. (Note that 1kg = 2.2 pounds)

Problem 3: (5 marks)

Write a C++ program that takes age of user as an input and check accordingly either they are eligible for voting or not i.e. age greater than 18 are eligible to vote.

Problem 4: (5 marks)

Write a C++ program to input any alphabet and check whether it is vowel or consonant (A, E, I, O, U are vowels).

Problem 5: (5 marks)

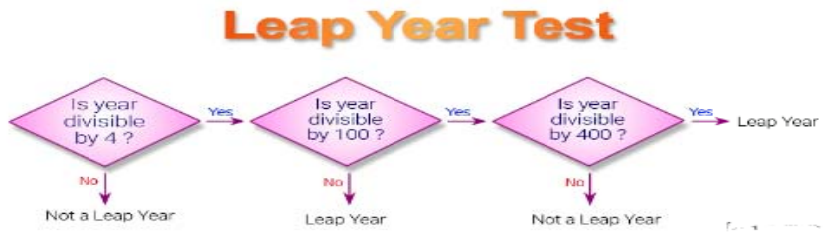
Write a C++ program to assign a letter grade to a student depending on marks obtained out of 100. The program will ask the user to enter the student's marks out of 100 and then determine and display the letter grade as per the following strategy.

Marks	grade
90-100	A+
80-89	A
70-79	B
60-69	C
50-59	D
Less than 50	F

If a student fails, the program must also them that they have failed and needs to enroll again.

Problem 6: (6 marks)

Nested If/else Design a C++ program that takes the year from user as input and prints whether it is a leap year or not.



Problem 7: (6 Marks)
(Switch Structure) Write a program that prompts the user to enter a number from 1 to 7 representing day of week. If a user enters 1 then the output should be "Today is Friday" and so on.
Example:
Input:

"Enter a number from 1 to 7:"

User enters 2

Output:

Today is Saturday