CL-1002
Programming Fundamentals
Lab # 7

Objectives:
- Practice and understanding on basic c++ programs

Note: Carefully read the following instructions (*Each instruction contains a weightage*)

1. There must be a block of comments at start of every question's code by students; the block should contain brief description about functionality of code.
2. Comment on every function about its functionality.
3. Use understandable name of variables.
4. Proper indentation of code is essential.
5. Write a C++ statement(s) for each of the following task one after the other, in the same order.
6. Make a Microsoft Word file and paste all of your C++ code with all possible screenshots of **every task output in MS word and submit .cpp file with word file**.
7. Make separate .cpp files for all tasks and use this format **23F-1234_Task1.cpp**.
8. First think about statement problems and then write/draw your logic on copy.
9. After copy pencil work, code the problem statement on MS Studio C++ compiler.
10. At the end when you done your tasks, attached C++ created files in MS word file and make your submission on Google classroom. (Make sure your submission is completed).
11. Please submit your word file in this format **23F-1234_L1.docx**
12. Do not submit your assignment **after the deadline**.
13. **Do not copy code from any source otherwise you will be penalized with negative marks.**

Problem: Write c++ code of following programs

1. Add and display three numbers without using variable.
2. Write a program, which ask user to input a number. Then display it0
3. Finding the average of three numbers.
4. Write a program to display the following output using a single cout statement
   Subject   Marks
   Mathematics   80
   Computer   77
   Physics   70
5. Write a program, which displays the value of "π", then input the radius of a circle from the user and displays its area and circumference.
   Note: You will have to declare a variable for "π" named as "**pi**" yourself and initialize it the value 22/7.
   Area = πr^2

Circumference = **2πr**

6. Write a program to calculate the area and perimeter of square.
7. Write a program to calculate the interest of the bank deposit
    (formula interest= amount*years*rate/100).
8. Write a program to input/get a number of float type from the user and then show this number as both float with decimal points and integer without decimal points.
9. Write a program, which asks the user to enter a character, takes this character and displays its ASCII value.
    Hint: Use (int)var for converting character to integer
    You may check the ascii values of character using provided link
    https://www.w3schools.com/charsets/ref_html_ascii.asp#:~:text=ASCII%20is%20a%207%2Dbit,Z%2C%20and%20some%20special%20characters.
10. Write a program, which asks the user to enter an ASCII number and shows the character stored against it.
    Hint: Use int variable to store and show character **ASCII**
11. Write a program, which asks the user to enter two numbers, and then output them after swapping their values using **third** variable.

```
Enter the variable "a":5
Enter the variable "b":6

Before swapping
Value in the variable "a":5
Value in the variable "b":6

After swapping
Value in the variable "a":6
Value in the variable "b":5
Press any key to continue . . .
```

12. Write a program to swap the value of two variables without using a third variable.
    Hint: Use arithmetic operators such as **division '/' and multiplication *** or **addition +** and **subtraction -.**
13. Write a statement (or comment) to accomplish each of the following (assume that using directives have been used for cin, cout and endl):
    a) State that a program calculates the product of three integers.
    b) Declare the variables x, y, z and result to be of type int (in separate statements).
    c) Prompt the user to enter three integers.
    d) Read three integers from the keyboard and store them in the variables x, y and z.
    e) Compute the product of the three integers contained in variables x, y and z, and assign the result to the variable result.
    f) Print "The product is " followed by the value of the variable result.
    g) Return a value from main indicating that the program terminated successfully
14. Write a program to Convert Temperature from Fahrenheit (℉) to Celsius (℃) (formula C=5/9*(F-

32))

15. Write a program to calculate quotient and remainder. Use proper names of variables
    a.   divisor
    b.   dividend
    c.   quotient
    d.   remainder

16. *(Digits of an Integer)* Write a program that inputs a five-digit integer, separates the integer into its digits and prints them separated by three spaces each. [*Hint:* Use the integer division and modulus operators.] For example, if the user types in 42339, the program should print:

```
4    2    3    3    9
```

17. *(Order of Evaluation)* State the order of evaluation of the operators in each of the following C++ statements and show the value of x after each statement is performed. Also explain with each instruction that how the compiler computing the values.
    o   x = 7 + 3 * 6 / 2 - 1;
    o   x = 2 % 2 + 2 * 2 - 2 / 2;
    o   (3 * 9 * (3 + (9 * 3 / (3))));
    o   y = a * x * x + b * x + c;
    o   z= p * r % q + w / x - y;
    o   z = pr%q + w/x – y

18. Identify and correct the errors in each of the following statements (assume that the statement using std::cout; is used)

```
a) if ( c < 7 );
        cout << "c is less than 7\n";
b) if ( c => 7 )
        cout << "c is equal to or greater than 7\n";
```

19. Write a program that obtains marks in entry test. If obtained marks are greater than 80 then display "You can get admission is Fast" otherwise "Sorry you did not get admission. Please try next time"

    Note: Use if else without curly brackets.

20. Suppose there is a cricket match between Pakistan and India. India played first and gave a target of 300 runs to Pakistan. Now write a program that obtains a cricket match score and remaining wickets from user. If the user is greater than 300 outputs a message indicating "Pakistan win the match by X wickets" while X are remaining wickets. Otherwise shows a message how many remaining runs required to win with X wickets in hand. Use single if-else statement. If the score is 300 with 0 wickets in hand, then display match is draw.

    Note: Score and wickets are not less than zero

Proper text alignment and screenshots will hold extra marks!

Best of luck   😎

You are done with your exercise, submit to the classroom at given time.