CL-1002
Programming Fundamentals - Lab
Lab # 9

> **Objectives:**
> - Conditional statements.
> - Switch case
> - Loops – Basics
> - Nested Loops
> - Practice tasks

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

1. Use proper **font family** and **font size** of **heading**, **sub heading** and **normal text**.
2. First think about statement problem then write/draw your logic on copy.
3. Attach the screen shots of your code in word file with execution (cpp project).
4. File (Word) tittle should in proper format (**23F-1001-Lab2**)
5. You have to submit both (**word + Project in zip/archive**) files.
6. **Upload separate word file and archive/zip of your project.**
7. **50% marks would be deducted on wrong formatting.**
8. **After 10 mins of submission deadline, submission portal will be locked.**
9. Do not copy from any source otherwise you will be penalized with negative marks.
10. Complete your lab **within given Time Slot**.

Sample Codes:

```cpp
#include <iostream>
using namespace std;

int main() {

for (int i = 1; i <= 5 ; ++i)
{
        for (int j = 1; j <= 5; ++j)
        cout << "*";
        cout << endl;
}

system("pause");
return 0;
}
```

```cpp
#include <iostream>
using namespace std;

int main() {

for (int i = 1; i <= 5 ; ++i)
```

```
{
        for (int j = 1; j <= i; ++j)
        cout << "*";
        cout << endl;
}
system("pause");
return 0;
        }
```

```
#include <iostream>
using namespace std;

int main() {


for (int i = 5; i >= 1 ; i--)
        {
                for (int j = 1; j <= i; ++j)
                        cout << "*";
                cout << endl;
        }
system("pause");
return 0;
}
```

```
#include <iostream>
using namespace std;

int main()

for ( int i = 1; i <= 5; i++)
{
        for( int j = 1; j <= 10; j++)
                cout << setw(3) << i * j ;
        cout << endl ;
}
system("pause");
return 0;
}
```

Problem: Write C++ code for the following statements

1. Write a C++ code that displays that displays the following patterns: **(Marks 05)**

```
1  2  3  4  5  6  7  8  9 1
2  4  6  8 10 12 14 16 18 2
3  6  9 12 15 18 21 24 27 3
4  8 12 16 20 24 28 32 36 4
5 10 15 20 25 30 35 40 45 5
```
a.

```
*****
****
***
**
*
```
b.

```
*
**
***
****
*****
```
c.

```
1
12
123
1234
12345
```
d.

```
*****
*****
*****
*****
*****
```
e.

2. Write a program that mimics a calculator. The program should take as input two integers and the operation to be performed. It should then output the numbers, the operator, and the result. (For division, if the denominator is zero, output an appropriate message.) Some sample outputs follow: **(Marks 02)**

```
3 * 8 = 24
80 / 10 = 8
```

3. The number -999 at the end of each line acts as a sentinel and therefore is not part of the data. Your task is to find the sum of the numbers in each line and output the sum. **(Marks 03)**

```
65 78 65 89 25 98 -999
87 34 89 99 26 78 64 34 -999
23 99 98 97 26 78 100 63 87 23 -999
62 35 78 99 12 93 19 -999
```

4. Write a program that prompts the user to input an integer and then outputs both the individual digits of the number and the sum of the digits. For example, it should output the individual digits of 3456 as 3 4 5 6 and 18, output the individual digits of 8030 as 8 0 3 0 and

11, output the individual digits of **2345526 as 2 3 4 5 5 2 6** and 27, output the individual digits of **4000 as 4 0 0 0 and 4**, and output the individual digits of **-2345 as 2 3 4 5 and 10.**

(Marks 07)

5. **Write a C++ program that calculates the following series:**   **(Marks 05)**

    1! + 2! + 3! + 4! + 5!......n. **Where n is entered by user.**

6. **Write a program that reads a set of integers and then finds and prints the sum of the even and odd integers**   **(Marks 03)**

    Range of integers depends on the user's choice.

7. **Write a program that prompts the user to input a positive integer. It should then output a message indicating whether the number is a prime number. (Note: An even number is prime if it is 2. An odd integer is prime if it is not divisible by any odd integer less than or equal to the square root of the number)**   **(Marks 03)**

    Best of Luck ☺

    ! false – *It's funny because it's true.*