Fundamentals of programming I

Lab 3

Exercises

- Write a C++ program that built simple calculator(+,-,*,/) using Switch case statement. Any other operator is an error.

- Write C++ program to check whether a character is lowercase or an uppercase using switch case statement.

- Write a C++ program that calculates sum of positive numbers entered by the user until user enters a negative number or zero using while loop.

- Write a C++ program that gets two positive integers numbers X and Y and calculates X^y Use only the addition and the multiplication , using while loop.

- Write a C++ program that prints the factorial of a positive integer number using for loop.

- Write five C++ statements to print the asterisk pattern as shown below

```
*****

****
***
**
*
```

Code 1

```cpp
#include <iostream>
using namespace std;
int main() {
    char oper;
    float num1, num2;
    cout << "Enter an operator (+, -, *, /): ";
    cin >> oper;
    cout << "Enter two numbers: " << endl;
    cin >> num1 >> num2;

    switch (oper) {
        case '+':
            cout << num1 << " + " << num2 << " = " << num1 + num2;
            break;
        case '-':
            cout << num1 << " - " << num2 << " = " << num1 - num2;
            break;
        case '*':
            cout << num1 << " * " << num2 << " = " << num1 * num2;
            break;
        case '/':
            cout << num1 << " / " << num2 << " = " << num1 / num2;
            break;
        default:

            cout << "Error! The operator is not correct";
            break;
    }
    return 0;
}
```

Code 2

```
#include<iostream>
using namespace std;
int main()
{
    char ch;
    cout<<" ENTER a character"<<endl;
    cin>>ch;
    switch(ch)
    {
        case  'A'...'Z':
            cout<<"character "<<ch<<" is uppercase character";
            break;
            case 'a'...'z':
                cout<<"character "<<ch<<" is lowercase character";
                break;
                default:
                    cout<<"invalid character";
                    break;
    }
    return 0;
}
```

Code 3

```
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      int sum=0, number;
6      cout<<"Please Enter a Number\n";
7      cin>>number;
8      while (number > 0)
9      {
10         sum = sum + number; // OR sum + = number
11         cout<<"Please Enter a Number\n";
12         cin>>number;
13     }
14     cout<< "The Sum is : " << sum;
15
16     return 0;
17 }
18
```

Code 4

```
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      int x =0, y=0,power =1,counter =1;
6      cout<<"Please Enter a Number \n";
7      cin>>x;
8      cout<<"Please Enter a Power you want \n";
9      cin>>y;
10     while (counter <= y)
11     {
12         power = power*x;
13         counter = counter+1;
14     }
15     cout<<x<<" Power "<<y<<" = "<<power<<endl;
16     return 0;
17 }
18
```

practice.cpp | Untitled-1

practice.cpp > main()

```cpp
#include <iostream>
using namespace std;
int main()
{
    int x = 0, y = 0, p = 1;

    cout << "Enter x = ";
    cin >> x;
    cout << "Enter y = ";
    cin >> y;
    while (y > 0)
    {
        p = p * x;
        --y;
    }
    cout << p;

    return 0;
}
```

PROBLEMS TERMINAL ... Code

```
PS E:\Education\Semester 2\Fundamentals of Programming 1> cd "e:
\Education\Semester 2\Fundamentals of Programming 1\" ; if ($?)
{ g++ practice.cpp -o practice } ; if ($?) { .\practice }
Enter x = 2
Enter y = 3
8
PS E:\Education\Semester 2\Fundamentals of Programming 1>
```

Code 5

```
1   #include <iostream>
2   using namespace std;
3   int main()
4   {
5       int num, fact=1;
6       cout<<" Please Enter a number: ";
7       cin>>num;
8
9       for(int counter=1; counter <= num; counter++)
10      {
11          fact = fact * counter;
12      }
13      cout<<fact;
14
15      return 0;
16  }
17
```

practice.cpp > main()

```cpp
#include <iostream>
using namespace std;
int main()
{
    int x = 0, f = 1, counter = 1;

    cout << "Enter x = ";
    cin >> x;
    while (counter <= x)
    {
        f = f * counter;
        counter++;
    }
    cout << f << endl;

    return 0;
}
```

Code 6

```
1   #include <iostream>
2   using namespace std;
3   int main()
4   {
5       for(int count=1;count<=5;count++){
6       for(int j=5;j>=count;j--){
7        cout<<"*";
8       }
9      cout<<endl;
10      }
11       return 0;
12  }
13
```

practice.cpp | Untitled-1

practice.cpp > main()

```cpp
#include <iostream>
using namespace std;
int main()
{
    for (int i = 1; i <= 5; i++) // i=1
    {
        for (int j = 5; j >= i; j--) // j=5
        {
            cout << "*";
        }
        cout << endl;
    }
    return 0;
}
```

PROBLEMS OUTPUT TERMINAL ... Code

```
PS E:\Education\Semester 2\Fundamentals of Programming 1> cd "e:
\Education\Semester 2\Fundamentals of Programming 1\" ; if ($?)
{ g++ practice.cpp -o practice } ; if ($?) { .\practice }
*****
****
***
**
*
PS E:\Education\Semester 2\Fundamentals of Programming 1>
```

Thank You !