Bahria University, Islamabad

Department of Software Engineering

Computer Programming Lab

(Fall-2023)

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Enrollment : 01-131232-065

Lab Journal: x

Date: 30/10/2023

Task No:	Task Wise Marks		Documentation Marks		Total Marks (20)
	Assigned	Obtained	Assigned	Obtained	
1	3		5		
2	3				
3	3				
4	3				
5	3				

Comments:

Signature

LAB

Lab No: 5 - <Introduction to C++ Programming>

Introduction

- Taking Input from a User
- Printing or showing output in various ways

Tools Used

Visual studio

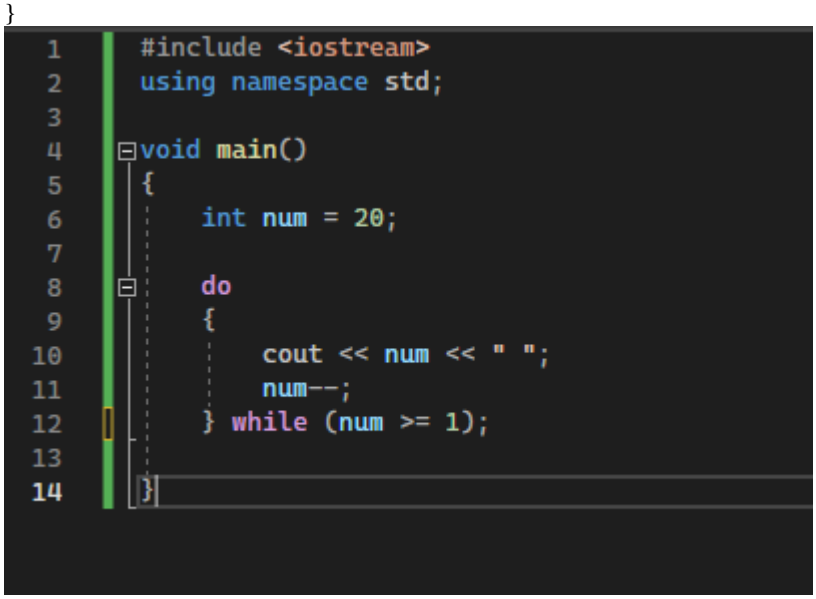
PROBLEM #1:

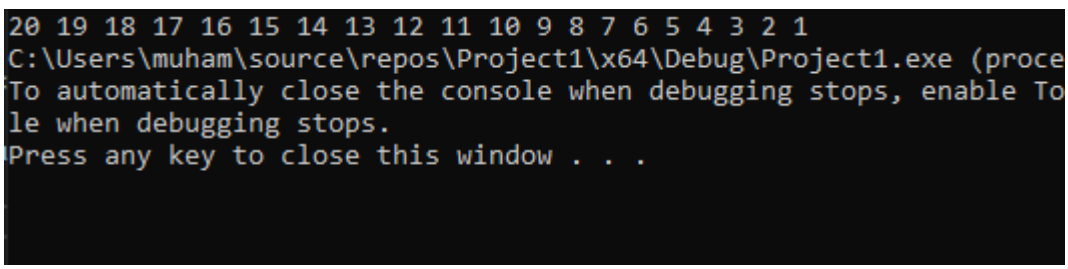
Print numbers in descending order.

Procedure: (3 marks) Write a program to print in the descending order first twenty natural numbers on the computer screen by using “do-while” loop

PROGRAM:

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

void main()
{
   int num = 20;

   do
   {
      cout << num << " ";
      num--;
   } while (num >= 1);

}
```



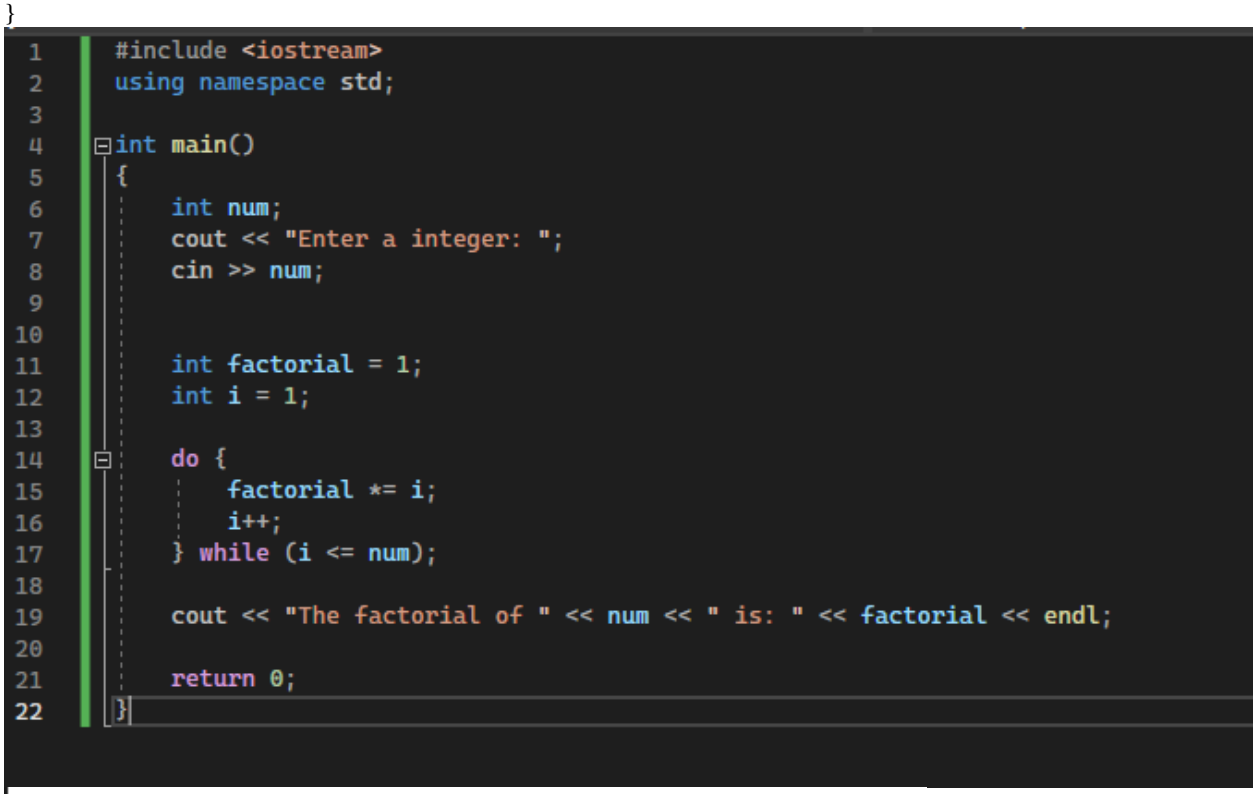


PROBLEM #2: Program to compute factorial of the given number.

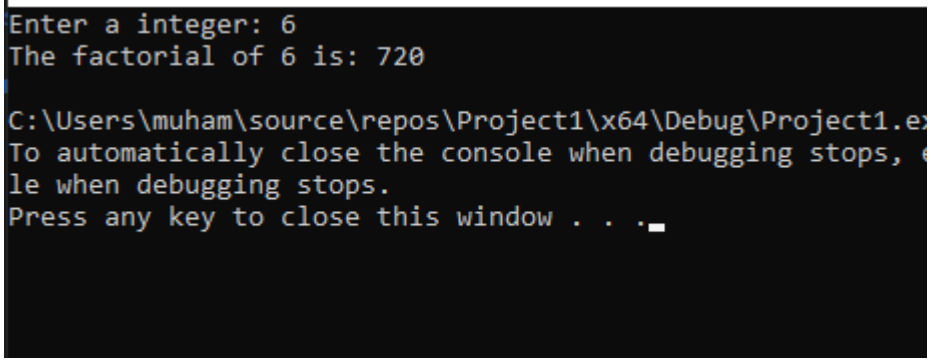
Procedure: (3 marks) Write a program to compute and print the factorial of the given number using the "do-while" loop.

PROGRAM:

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

int main()
{
   int num;
   cout << "Enter a integer: ";
   cin >> num;


   int factorial = 1;
   int i = 1;

   do {
      factorial *= i;
      i++;
   } while (i <= num);

   cout << "The factorial of " << num << " is: " << factorial << endl;

   return 0;
}
```



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

int main()
{
    int num;
    cout << "Enter a integer: ";
    cin >> num;


    int factorial = 1;
    int i = 1;

    do {
        factorial *= i;
        i++;
    } while (i <= num);

    cout << "The factorial of " << num << " is: " << factorial << endl;

    return 0;
}
```



```
Enter a integer: 6
The factorial of 6 is: 720

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To automatically close the console when debugging stops, e
le when debugging stops.
Press any key to close this window . . .
```
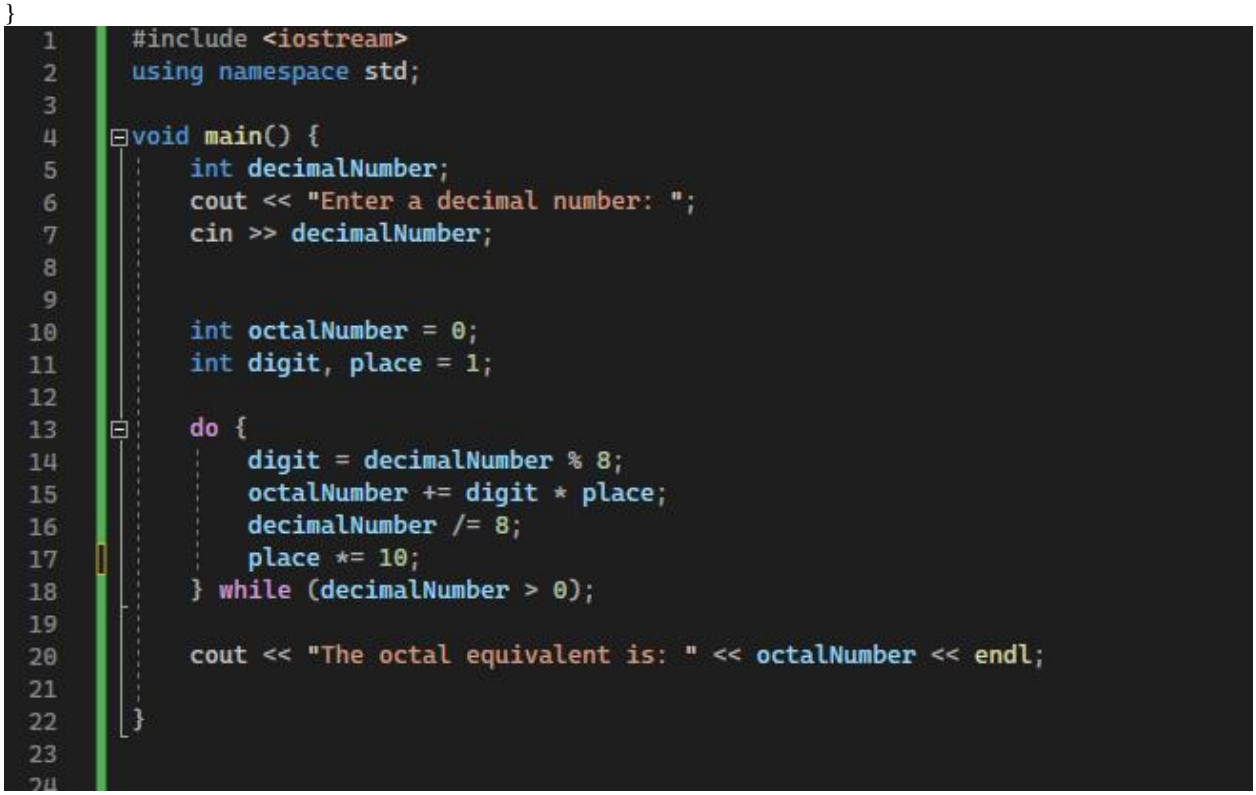
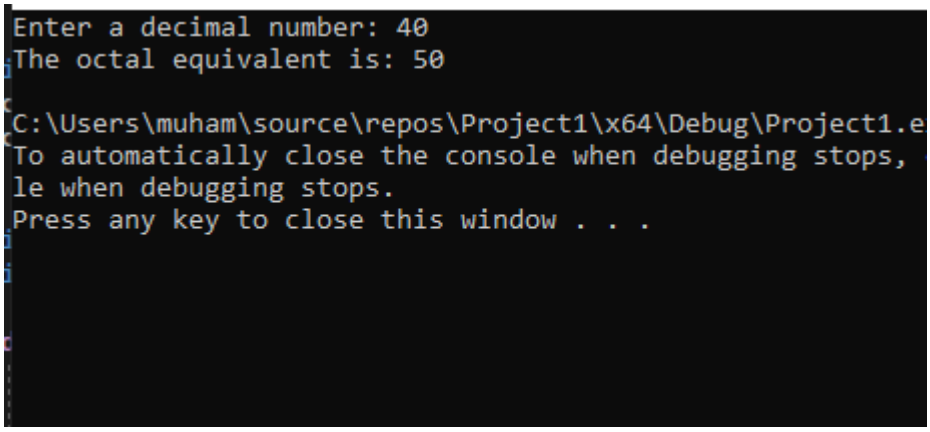

PROBLEM #3: Conversion from decimal to octal number.

Procedure: (5 marks) Write a program to convert the given decimal number into octal number using the “do-while” loop.

PROGRAM:

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

void main() {
    int decimalNumber;
    cout << "Enter a decimal number: ";
    cin >> decimalNumber;


    int octalNumber = 0;
    int digit, place = 1;

    do {
        digit = decimalNumber % 8;
        octalNumber += digit * place;
        decimalNumber /= 8;
        place *= 10;
    } while (decimalNumber > 0);

    cout << "The octal equivalent is: " << octalNumber << endl;

}
```





PROBLEM #4:Four-Function Calculator.

(4 marks) Procedure: Create the equivalent of a four-function calculator. The program should request the user to enter a number, an operator, and another number. (Use floating point.) It should then carry out the specified arithmetical operation: adding, subtracting, multiplying, or dividing the two numbers. Use a switch statement to select the operation. Finally, display the result. 31 When it finishes the calculation, the program should ask if the user wants to do another calculation.

The response can be ‘y’ or ‘n’. Some sample interaction with the program might look like this:

Enter first number, operator, and second number: 2*5 Answer = 10 Do another (y/n)? y

Enter first number, operator, and second number: 12 + 100 Answer = 112 Do another (y/n)? n

PROGRAM:

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

int main()
{
   char choice;

   do {
      float num1, num2, result;
      char operation;

      cout << "Enter first number, operator, and second number: ";
      cin >> num1 >> operation >> num2;

      switch (operation) {
      case '+':
         result = num1 + num2;
         break;
      case '-':
         result = num1 - num2;
         break;
      case '*':
         result = num1 * num2;
         break;
      case '/':
            result = num1 / num2;

         break;
      default:
```

```
        cout << "Invalid operator. Please use +, -, *, or /." << endl;
        continue;
    }

    cout << "Answer = " << result << endl;

    cout << "Do another (y/n)? ";
    cin >> choice;
  } while (choice == 'y' || choice == 'Y');

  return 0;
}
```

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

int main() {
    char choice;

    do {
        float num1, num2, result;
        char operation;

        cout << "Enter first number, operator, and second number: ";
        cin >> num1 >> operation >> num2;

        switch (operation) {
        case '+':
            result = num1 + num2;
            break;
        case '-':
            result = num1 - num2;
            break;
        case '*':
            result = num1 * num2;
            break;
        case '/':
                result = num1 / num2;

            break;
        default:
            cout << "Invalid operator. Please use +, -, *, or /." << endl;
            continue;
        }

        cout << "Answer = " << result << endl;

        cout << "Do another (y/n)? ";
        cin >> choice;
    } while (choice == 'y' || choice == 'Y');

    return 0;
}
```

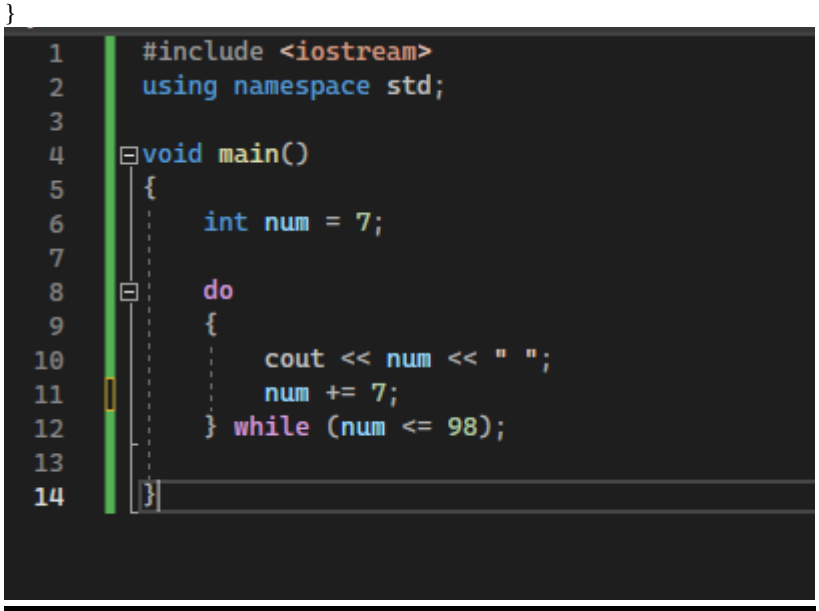
```
Enter first number, operator, and second number: 2+5
Answer = 7
Do another (y/n)? y
Enter first number, operator, and second number: 3*3
Answer = 9
Do another (y/n)? n

C:\Users\muham\source\repos\Project1\x64\Debug\Project1.exe (process 207
To automatically close the console when debugging stops, enable Tools->Op
le when debugging stops.
Press any key to close this window . . .
```

EXTRA TAKS:

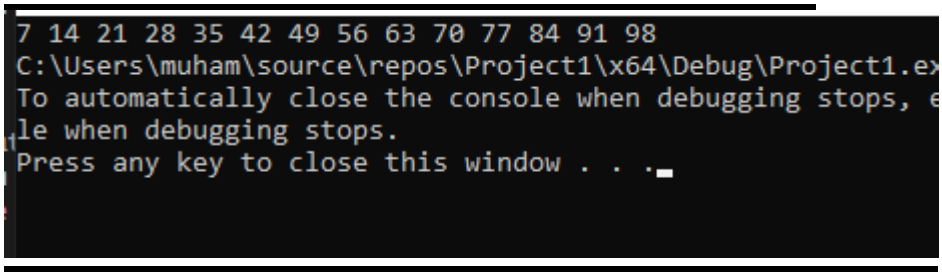
Task 1: It is necessary for the program to display the following sequence of numbers:
7 14 21 28 35 42 49 56 63 70 77 84 91 98

PROGRAM:

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

void main()
{
   int num = 7;

   do
   {
      cout << num << " ";
      num += 7;
   } while (num <= 98);

}
```



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

void main()
{
    int num = 7;

    do
    {
        cout << num << " ";
        num += 7;
    } while (num <= 98);

}
```



```
7 14 21 28 35 42 49 56 63 70 77 84 91 98
C:\Users\muham\source\repos\Project1\x64\Debug\Project1.ex
To automatically close the console when debugging stops, e
le when debugging stops.
Press any key to close this window . . .
```

Task 2: It is necessary to display the following sequence of numbers:
1 2 4 8 16 32 64 128 256 512

PROGRAM:

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

void main()
{
   int num = 1;

   do
   {
```

```
    cout << num << " ";
    num *= 2;
  } while (num <= 512);

}
```

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

void main()
{
    int num = 1;

    do
    {
        cout << num << " ";
        num *= 2;
    } while (num <= 512);

}
```

```
1 2 4 8 16 32 64 128 256 512
C:\Users\muham\source\repos\Project1\x64\Debug\Project1.exe (process 4880)
To automatically close the console when debugging stops, enable Tools->Opt
le when debugging stops.
Press any key to close this window . . .
```