Control Structure (While Loop)



WEEK

KEYWORDS:

While condition

LAB EXERCISE:

Program 1:

Type the following program in the editor of the C++ environment. Compile the program and run it.

```
#include<iostream>
using namespace std;
int main()
{
    int a=1;
    while(a <= 10)
    {
        cout << a << endl;
        a++;
    }

    cout << endl;
    system("PAUSE");
    return 0;
}</pre>
```

```
Output:

1
2
3
4
5
6
7
8
9
10
```

Program 2:

Type the following program in the editor of the C++ environment. Compile the program and run it.

```
#include<iostream>
using namespace std;
int main()
      int number;
                                    //variable to store the number
      int sum = 0;
                                    //variable to store the sum
      int count = 0;
                                     //variable to store the total
      cout <<"Line 1: Enter integers greater than 0 "<< endl;</pre>
      cin >> number;
      while (number > 0)
            sum = sum + number;
           count++;
            cin >> number;
      }
      cout <<"Line 7: The sum of the "<< count <<" numbers is"<< sum <<</pre>
      endl;
      if (count != 0)
            cout <<"Line 9: The average is "<< sum / count << endl;</pre>
      else
            cout <<"Line 11: No input."<< endl;</pre>
      cout << endl;</pre>
      system("PAUSE");
      return 0;
}
```

Output:

```
Line 1: Enter integers greater than 0

1

2

3

4

0

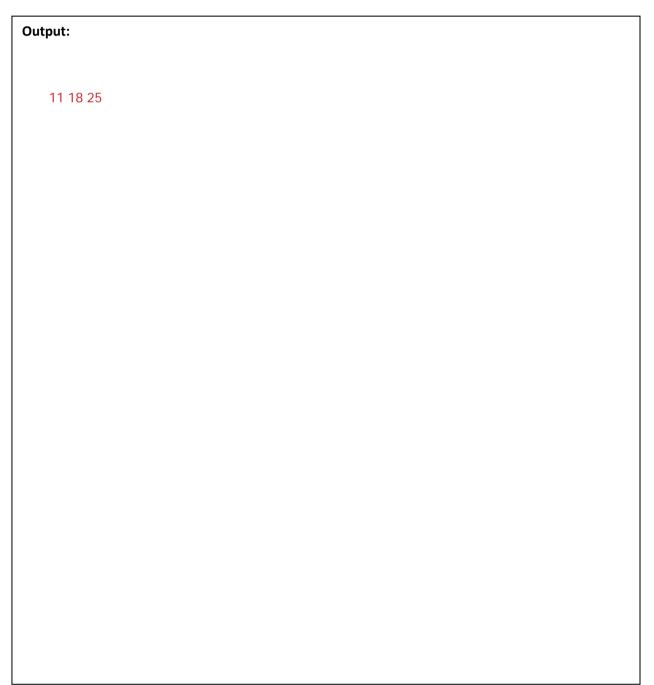
Line 7: The sum of the 4 numbers is10

Line 9: The average is 2
```

Question 1: What is the output of the following program?

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

int main()
{
    int x, y, z;
    x = 4; y = 5;
    z = y + 6;
    while(((z - x) % 4) != 0)
    {
        cout << z << " ";
        z = z + 7;
    }
    cout << endl;
    return 0;
}</pre>
```



Question 2: Suppose that the input is:

```
58 23 46 75 98 150 12 176 145 -999
```

What is the output of the following program?

```
#include <iostream>
using namespace std;
int main()
{
   int num;
   cin >> num;
   while (num != -999)
   {
      cout << num % 25 << " ";
      cin >> num;
   }
   cout << endl;
   return 0;
}</pre>
```

```
Output:
     8
     23
     21
     0
     23
     0
     12
     1
     20
```

Question 3: With the help of for, while loop generate the following series

- a. Natural numbers from 1 to 100
- b. Even numbers between 1 and 50.

```
while loop: Print 1 to 100
     int main() {
      int num = 1;
      while (num <= 100) {
       cout << num << endl;
       num++;
      return 0;
    }
while loop: Print even numbers between 1 to 50
       #include <iostream>
       using namespace std;
       int main() {
       int num = 1;
       while (num <= 50) {
         if (num \% 2 == 0) {
            cout << num << endl;
          }
         num++;
       }
       return 0;
       }
```

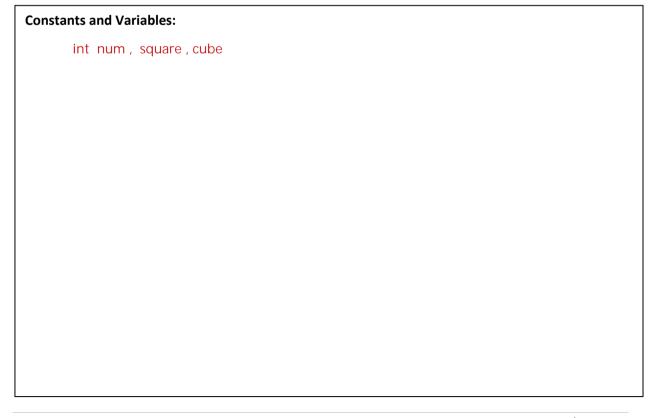
put and Output:			
Sum is : 5050			
nstants and Variables:			
int sum , num			

Flowchart:	

```
Code:
        #include <iostream>
       using namespace std;
       int main() {
        int num = 1, sum = 0;
        while(num <= 100){
               sum =sum + num;
               num++;
        }
        cout << "The sum is: " << sum << endl;</pre>
        return 0;
       }
```

Question 5: Write a program to print the square and the cube of a series of numbers (1,2,3 ..5), but it displays the output in a table of three columns. The first column presents the numbers; the second column presents the square of the numbers while the third column presents the cubic of the same number.

Input and C	Output:	
Number	Square	Cube
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125



Flowchart:	

```
Code:
   #include <iostream>
   using namespace std;
   int main() {
    int num=1;
    int square;
    int cube;
    cout << "Number Square Cube" << endl;</pre>
          while(num \leq 5){
                 square = num * num;
          cube = num * num * num;
         cout << num << " " << square << " " << cube << endl;
                 num++;
           }
   return 0;
  }
```

