Higher Diploma in Information Technology

Introduction to Programming (C++)

Year 1 Semester 1 – 2023

Tutorial 05 – Repetition Statements in C++

Lecture Slide Questions:

Practice Question 01: What is the output of the following C++ program?

```cpp
#include <iostream>
using namespace std;
 int main () {
   int i = 0;

   while(i<=20)
   {
      cout<<i<<endl;
      i=i+5;
   }

   return 0;
}
```

```cpp
#include <iostream>
using namespace std;
int main()
{
  int i=15;
  while(i>=1)
    {
     i = i/2;
     cout<<i<<endl;
    }
    return 0;
}
```

Practice Question 02: Write a C++ program to take a number from the user and print the pattern as follows:

```
Sample Output:
Enter number: 3
3 2 1
```

Practice Question 03:

Write a C++ program to prompt the user to enter a set of numbers (only positive numbers), one at a time. User enters a zero to indicate that he has completed entering numbers. Then, the program should display

- the count of odd numbers entered.
- the count of even numbers entered.

Practice Question 04 & 05: What is the output of the following C++ program?

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

for(int i=1;i<10;i*=2)
{
    x++;
    cout<<x;
}
cout<<x;

return 0;
}
```

```cpp
#include <iostream>
using namespace std;
int main()
{
    int i = 0, x = 0;
do
{
    if(i % 5 == 0)
    {
       cout<<x;
       x++;
    }

       ++i;
}while(i<6);

cout<<x;

return 0;
}
```

Practice Question 06: Write a C++ program to read a number and print a pattern as follows:

Use the while, do-while and for loops to write the answer.

```
Sample Output:
Enter number: 3
Output: @@@
```

Practice Question 07 : What is the output of the following C++ program?

```cpp
#include <iostream>
using namespace std;
int main()
{
  for(int i=1;i<=2;i++)
  {
     for(int j=i;j<=2;j++)
         cout<<i<<'@'<<endl;
  }
}
```

Practice Question 08 : What is the output of the following C++ program?

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

int main () {
   int a = 10;

   do {
      cout << "value of a: " << a << endl;
      a = a + 1;
      if( a > 15) {
         break;
      }
   } while( a < 20 );

   return 0;
}
```

Practice Question 09: What is the output of the following C++ program?

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

int main(){

    for(int i=1;i<=5;i++)
    {
        if(i==3)
        {
            continue;
        }
        cout<<i<<endl;
    }

    return 0;
}
```

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

int main(){

    for(int i=1;i<=5;i++)
    {
        if(i==3)
        {
            continue;
        }
        cout<<i<<endl;
    }

    return 0;
}
```

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

int main(){

    for(int i=1;i<=6;i++)
    {
        if(i%2==0)
        {
            continue;
        }
        cout<<i<<endl;
    }

    return 0;
}
```

1. Write a separate C++ program to read a number from the user and print a sequence of numbers (up to that number).

Input	20
Pattern 01	1 8
Pattern 02	1 4 9 16
Pattern 03	1 3 6 10 15
Pattern 04	3 6 9 12 15 18
Pattern 05	2 5 10 17

2. Write a C++ program to read a number and print factorial of the given number.

```
Sample Output:
Enter number: 4
Factorial is: 24
```

The factorial of a nonnegative integer n is written n! and is defined as follows:

n! = n * (n - 1) * (n - 2) * ……1

and

n! = 1 (for n = 0)

For example, 5! = 5 * 4 * 3 * 2 * 1, which is 120

3. Write a C++ program to requests the user to enter two integers as inputs and the print sum of odd square numbers between the given interval.

```
Sample Output:
Enter two integer numbers: 2 6
Sum of odd square numbers: 34
```

4. A program is required to read a number from the user and check whether that number is palindrome or not.

Any number is said to be a palindrome if the original number and the reverse of the original number are the same.

```
Sample Output:
Enter a number: 121
The reverse of the number is: 121
The number is a palindrome.
```

5. Write a C++ program to read a number from the user and print number of digits, sum of digits and product of digits.

```
Sample Output:
Enter number: 1134
The number of digits: 4
The sum of digits is: 9
The product of digits is: 12
```

6. Write a C++ program to input a number from the user and find the number of occurrences is in the entered number similar to the last digit.

```
Sample Output:
Enter number: 1323
The last digit is: 3
The number of occurrences of Last digit in given number: 2
```

7. Write a C++ program to requests the user to enter a number and print a pattern as follows:

```
Sample Output:
Enter number: 3
1
1 2
1 2 3
```

```
Sample Output:
Enter number: 3
3 3 3
2 2
1
```