

Department of Software Engineering  
Mehran University of Engineering and Technology, Jamshoro

Course: AI-112 – Programming Fundamentals

<b>Instructor</b>	Engr. Fahama Barakzai	<b>Practical/Lab No.</b>	05
<b>Date</b>		<b>CLOs</b>	3
<b>Signature</b>		<b>Assessment Score</b>	01 Mark

<b>Topic</b>	Working with Control Structures (Iteration statements/ Loops)
<b>Objectives</b>	<ul style="list-style-type: none"><li>- To become familiar with Control Structures (Iteration Statements).</li><li>- To get familiar with Loops – for, while, do-while.</li><li>- Nested loops.</li></ul>

**Lab Discussion: Theoretical concepts and Procedural steps**

**TOOLS: TURBOO C++/ DEV C++/ VS-CODE/ CODE BLOCKS**

**Lab Tasks**

1. Rebuild a series of Odd numbers and Even numbers using **for** and **while** loop.

```
#include <iostream>
using namespace std;
Pieces: Comment | Pieces: Explain
int main () {
    int number , even =1;
    cout<<"Enter Number : ";
    cin>>number;
    cout<<"Odd Numbers UpTo "<<number<<endl;
    for ( int odd = 1;odd<=number;odd++)
    {
        if (odd%2!=0)
            cout<<odd<<endl;
    }
    cout<<"Even Numbers UpTo"<<number<<endl;
    while (even<=number)
    {
        if (even%2==0)
            cout<<even<<endl;
            even++;
    }
    return 0;
}
```

```
Enter Number : 6
Odd Numbers UpTo 6
1
3
5
Even Numbers UpTo6
2
4
6
```

2. Try to create a program that prints the table of number 5 up to 15.  
(i.e. 1\*5=5 ..... 15\*5=75)

```
1  #include <iostream>
2  using namespace std;
   Pieces: Comment | Pieces: Explain
3  int main(){
4      for(int i =1; i<=15 ; i++)
5      {
6          cout<<i<<"*"<<"5="<<i*5<<endl;
7      }
8      return 0;
9  }
```

```
1*5=5
2*5=10
3*5=15
4*5=20
5*5=25
6*5=30
7*5=35
8*5=40
9*5=45
10*5=50
11*5=55
12*5=60
13*5=65
14*5=70
15*5=75
```

3. Try to generate alphabets from A to Z. (**Hint:** ASCII code for A=65 and Z=90).

```

#include <iostream>
using namespace std;
Pieces: Comment | Pieces: Explain
int main(){
char alphabet;
for (int i = 65; i <=90 ; i++)
{
    alphabet = char(i);
    cout<<alphabet<<" ";
}
return 0;
}

```

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

4. Rebuild a C++ program which checks whether a number is prime or not.

```

Pieces: Comment | Pieces: Explain
3 ~ int main(){
4     int num;
5     cout<<"Enter The Number :";
6     cin>>num;
7     bool isprime = true;
8 ~     if (num<=1)
9     {
10        isprime = false;
11 ~     }else{
12 ~         for(int i = 2; i*i <= num; i++)
13         {
14 ~             if (num%i == 0)
15             {
16                 isprime = false;
17                 break;
18             }
19         }
20     }
21 ~     if (isprime)
22     {
23         cout<<num<<" is a prime number! ";
24 ~     }else{
25         cout<<num<<" is not a prime number! ";
26     }
27     return 0;
}

```

Enter The Number :2  
2 is a prime number!

5. Rebuild a C++ program that takes an integer as an input and prints its factorial.

```
#include <iostream>
using namespace std;
Pieces: Comment | Pieces: Explain
int main(){
    int number,result=1;
    cout<<"Enter a number: ";
    cin>>number;
    for(int i =number; i>=1 ; --i)
    {
        result*=i;
    }
    cout<<number<<"! is = "<<result;
    return 0;
}
```

```
Enter a number: 5
5! is = 120
```