Assignment – 24

1. Define a function to check whether a given number is a Prime number or not.

```
#include<iostream>
#include<math.h>
using namespace std;
int prime(int n)
{
    int i;
    for(i=2;i<=sqrt(n);i++)
    {
        if(n%i==0)
        {
            return 0;
        }
    }
    return 1;
}
int main()
{
    int n;
    cout<<"Enter Number :";
    cin>>n;
    if(prime(n))
    {
        cout<<n<<" is Prime Number";
    }
    else
    {
        cout<<n<<" is not a Prime Number";
    }
    return 0;
}
```

2. Define a function to find the highest value digit in a given number.

```
#include<iostream>
using namespace std;
int high(int n)
{
    int a,max=0;
    while(1)
    {
        a = n%10;
        if(a>max)
            max = a;
        n = n/10;
        if(n<=0)
            return max;
    }
}
int main()
{
    int n;
    cout<<"Enter Number :";
```

```
    cin>>n;
    cout<<high(n)<<" is highest digit in "<<n;
    return 0;
}
```

3. Define a function to calculate x raised to the power y.

```
#include<iostream>
using namespace std;
int power(int n,int p)
{
    int i,a=n;
    for(i=1;i<p;i++)
    {
        a = a*n;
    }
    return a;
}
int main()
{
    int n,p;
    cout<<"Enter Base Number :";
    cin>>n;
    cout<<"Enter Power of Number :";
    cin>>p;
    cout<<"Answer : "<<power(n,p);
    return 0;
}
```

4. Define a function to print Pascal Triangle up to N lines.

```
#include<iostream>
using namespace std;
void print(int r)
{
    int i,j,k;
    for(i=0;i<r;i++)
    {
        int val = 1;
        for(j=0;j<(r-i);j++)
            cout<<" ";
        for(k=0;k<=i;k++)
        {
            cout<<" "<<val;
            val = val * (i-k)/(k+1);
        }
        cout<<endl;
    }
}
int main()
{
    int r;
    cout<<"Enter Number of Rows :";
    cin>>r;
    print(r);
    return 0;
}
```

5. Define a function to check whether a given number is a term in a Fibonacci series or not.

```
#include<iostream>
using namespace std;
int check(int n)
{
    int a=0,b=1,next;
    while(n>=a)
    {
        if(a==n)
            return 1;
        next=a;
        a=b;
        b=next+b;
    }
    return 0;
}
int main()
{
    int n;
    cout<<"Enter Number : ";
    cin>>n;
    if(check(n))
        cout<<n<<" is term of Fibonacci series";
    else
        cout<<n<<" is not a term of Fibonacci series";
    return 0;
}
```

6. Define a function to swap data of two int variables using call by reference.

```
#include<iostream>
using namespace std;
void swap(int &a,int &b)
{
    int temp = a;
    a = b;
    b = temp;
}
int main()
{
    int a,b;
    cout<<"Enter Two Number : ";
    cin>>a>>b;
    cout<<"Number before swap : "<<a<<" "<<b<<endl;
    swap(a,b);
    cout<<"Number after swap : "<<a<<" "<<b;
    return 0;
}
```

7. Write a function using the default argument that is able to add 2 or 3 numbers.

```
#include<iostream>
using namespace std;
int add(int a,int b,int c=0)
{
    return a+b+c ;
```

```
}
int main()
{
    int a,b,c;
    cout<<"Enter two numbers : ";
    cin>>a>>b;
    cout<<"Addition of "<<a<<" "<<b<<" is : "<<add(a,b);
    cout<<endl;
    cout<<"Enter three numbers : ";
    cin>>a>>b>>c;
    cout<<"Addition of "<<a<<" "<<b<<" "<<c<<" is : "<<add(a,b,c);
    return 0;
}
```

8. Define overloaded functions to calculate area of circle, area of rectangle and area of triangle.

```
#include<iostream>
using namespace std;
float area(float r)
{
    return 3.14*r*r;
}
int area(int l,int w)
{
    return l*w;
}
float area(float h,float b)
{
    return 0.5*b*h;
}
int main()
{
    float r;
    cout<<"Enter radius of Circle : ";
    cin>>r;
    cout<<"Area of Circle is "<<area(r)<<endl;
    int l,w;
    cout<<"Enter Length and width of rectangle : ";
    cin>>l>>w;
    cout<<"Area of Rectangle is "<<area(l,w)<<endl;
    float h,b;
    cout<<"Enter base and height of Triangle : ";
    cin>>b>>h;
    cout<<"Area of Triangle is "<<area(b,h)<<endl;
    return 0;
}
```

9. Write functions using function overloading to find a maximum of two numbers and both the numbers can be integer or real.

```
#include<iostream>
using namespace std;
float max(float a,float b)
{
    if(a>b)
        return a;
    else
```

```
        return b;
}
int main()
{
    float a,b;
    cout<<"Enter two number : ";
    cin>>a>>b;
    cout<<"Max number is "<<max(a,b);
    return 0;
}
```

10.Write functions using function overloading to add two numbers having different data types.

```
#include<iostream>
using namespace std;
float add(float a,float b)
{
    return a+b;
}
float add(float a,int b)
{
    return a+b;
}
float add(int a,float b)
{
    return a+b;
}
int add(int a,int b)
{
    return a+b;
}
int main()
{
    int a,b;
    cout<<"Enter two int number : ";
    cin>>a>>b;
    cout<<"Addition is "<<add(a,b)<<endl;
    float c,d;
    cout<<"Enter two float number : ";
    cin>>c>>d;
    cout<<"Addition is "<<add(c,d)<<endl;
    cout<<"Enter one int and one float number : ";
    cin>>c>>d;
    cout<<"Addition is "<<add(c,d)<<endl;
    return 0;
}
```