BASIC C++ PROGRAMS

1) C++ program to add two numbers

```
#include <iostream>
using namespace std;
int main()
{
   int firstNumber, secondNumber, sumOfTwoNumbers;
   cout << "Enter two integers: ";
   cin >> firstNumber >> secondNumber;
   // sum of two numbers in stored in variable sumOfTwoNumbers
   sumOfTwoNumbers = firstNumber + secondNumber;
   // Prints sum
   cout << firstNumber << " + " <<  secondNumber << " = " <<
                                                  sumOfTwoNumbers;
   return 0;
}
```

Output:

Enter two integers: 10 20

10 + 20 = 30

2) Maximum of two numbers in C++

```
#include<iostream>
 using namespace std;
 inline int max(int x, int y)
 {
    if (x>y)
```

```
        return x;
    else
        return y;
}
int main()
{
    int a, b;
    cout<<"Enter the first number: ";
    cin>>a;
    cout<<"Enter the second number: ";
    cin>>b;
    cout<<"The maximum number is: "<<max(a,b);
}
```

Output:

Enter the first Number: 5

Enter the second Number: 10

The maximum number is: 10

3) C++ Program for factorial of a number

```
#include <iostream>
using namespace std;
int main()
{
  int i,fact=1,number;
 cout<<"Enter any Number: ";
 cin>>number;
```

```
  for(i=1;i<=number;i++) {
     fact=fact*i;
  }
  cout<<"Factorial of " <<number<<" is: "<<fact<<endl;
  return 0;
}
```

Output:

Enter any Number: 5

Factorial of 5 is: 120

4) C++ program to check whether a number is Prime or not

```
#include <iostream>
using namespace std;
int main()
{
  int n, i, m=0, flag=0;
  cout << "Enter the Number to check Prime: ";
  cin >> n;
  m=n/2;
  for(i = 2; i <= m; i++)
  {
     if(n % i == 0)
     {
        cout<<"Number is not Prime."<<endl;
        flag=1;
        break;
```

```
    }
  }
  if (flag==0)
    cout << "Number is Prime."<<endl;
  return 0;
}
```

Output:

Enter the Number to check Prime: 57

Number is prime.

5) C++ Program for Sum of digits

```
#include <iostream>
using namespace std;
int main()
{
    int n,sum=0,m;
    cout<<"Enter a number: ";
    cin>>n;
    while(n>0)
    {
        m=n%10;
        sum=sum+m;
        n=n/10;
    }
    cout<<"Sum is= "<<sum<<endl;
return 0;
}
```

Output:

Enter a number: 23

Sum is= 5

6) Insertion sort

```
// C++ program for insertion sort
#include <bits/stdc++.h>
using namespace std;

/* Function to sort an array using insertion sort*/
void insertionSort(int arr[], int n)
{
    int i, key, j;
    for (i = 1; i < n; i++)
    {
        key = arr[i];
        j = i - 1;

        /* Move elements of arr[0..i-1], that are
        greater than key, to one position ahead
        of their current position */
        while (j >= 0 && arr[j] > key)
        {
                arr[j + 1] = arr[j];
                j = j - 1;
        }
        arr[j + 1] = key;
    }
}

// A utility function to print an array of size n
void printArray(int arr[], int n)
{
    int i;
    for (i = 0; i < n; i++)
        cout << arr[i] << " ";
    cout << endl;
}

/* Driver code */
int main()
{
    int arr[] = { 12, 11, 13, 5, 6 };
    int n = sizeof(arr) / sizeof(arr[0]);

    insertionSort(arr, n);
    printArray(arr, n);
```

```
        return 0;
    }
```

7) Fibonacci Series

```
// Fibonacci Series up to n number of terms
// C++ program to Display Fibonacci Series
#include<iostream>
using namespace std;
int main()
{
  // declare variables
  int n, i, a=0, b=1, c;

  // take input
  cout << "Enter the number of terms: ";
  cin >> n;

  // display Fibonacci Series
  cout << "Fibonacci Series is: " << endl;
  for (i=a; i<=n; i++)
  {
    cout << a << "  ";
    c=a+b;
    a=b;
    b=c;
  }

  return 0;
}
```

8) Selection sort

```
// C++ program for implementation of selection sort
#include <bits/stdc++.h>
using namespace std;

void swap(int *xp, int *yp)
{
        int temp = *xp;
        *xp = *yp;
        *yp = temp;
}

void selectionSort(int arr[], int n)
{
```

```
        int i, j, min_idx;

        // One by one move boundary of unsorted subarray
        for (i = 0; i < n-1; i++)
        {
                // Find the minimum element in unsorted array
                min_idx = i;
                for (j = i+1; j < n; j++)
                if (arr[j] < arr[min_idx])
                        min_idx = j;

                // Swap the found minimum element with the first element
                swap(&arr[min_idx], &arr[i]);
        }
}

/* Function to print an array */
void printArray(int arr[], int size)
{
        int i;
        for (i=0; i < size; i++)
                cout << arr[i] << " ";
        cout << endl;
}

// Driver program to test above functions
int main()
{
        int arr[] = {64, 25, 12, 22, 11};
        int n = sizeof(arr)/sizeof(arr[0]);
        selectionSort(arr, n);
        cout << "Sorted array: \n";
        printArray(arr, n);
        return 0;
}
```