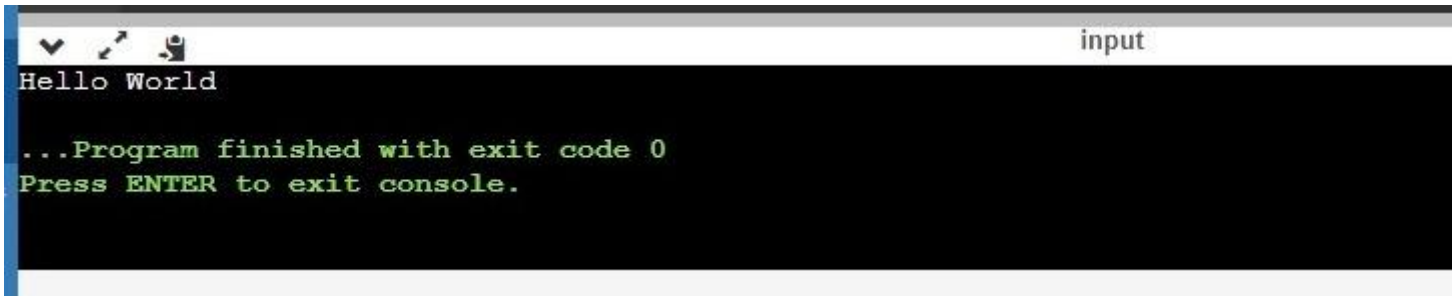
C++ ASSIGNMENT 1.1

1. Write a program to print “Hello World” on the screen.

```
#include <iostream>
using namespace std;
int main() {
cout << "Hello World!";
return 0;
}
```

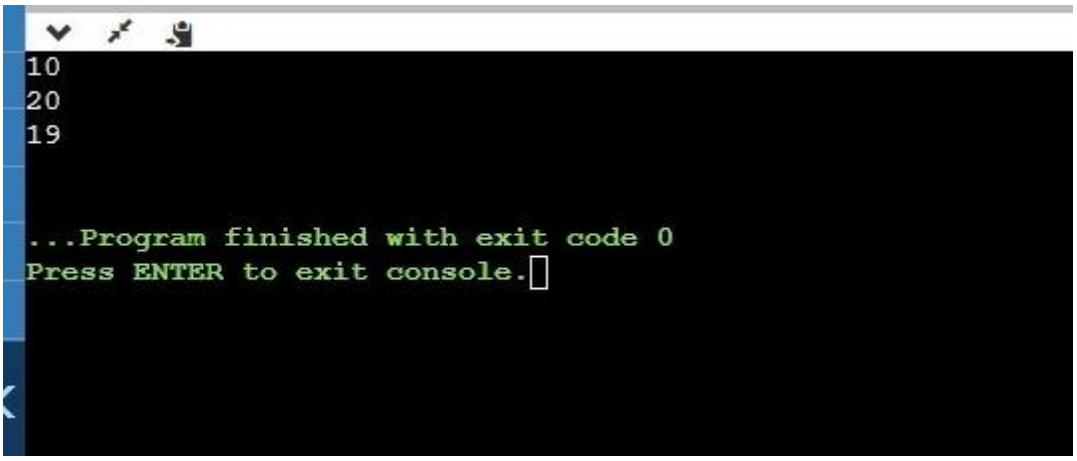


2. Write a program that generate the following output

   10, 20, 19

   Use an integer constant for 10, an arithmetic C++ ASSIGNMENT operator to generate the 20, and a decrement operator to generate 19.

```
#include <iostream>
using namespace std;
int main()
{
    int var = 10;
    cout << var << endl;     // var is 10
    var *= 2;                // var becomes 20
    cout << var-- << endl;  // displays var, then decrements it
    cout << var << endl;     // var is 19
    return 0;

}
```



3. Write a program that asks the user to enter a radius value and then compute the volume of a sphere with the input radius.

```
#include <iostream>
using namespace std;
 int main()
   {
          int rad1;
          float volsp;
          cout << "\n Calculate the volume of a sphere :\n";
          cout<<" Input the radius of a sphere : ";
          cin>>rad1;
          volsp=(4*3.14*rad1*rad1*rad1)/3;
         cout<<" The volume of a sphere is : "<< volsp << endl;
         cout << endl;
      return 0;
   }
```

```
Calculate the volume of a sphere :
Input the radius of a sphere : 4
The volume of a sphere is : 267.947
```

4. Write a program that takes three input of sides of a triangle. The program should indicate whether the triangle would be formed or not. If it can be formed it also indicates the type.

```
#include <iostream>
using namespace std;
int main()
{
          int s1,s2,s3;
          cout<<"please enter three sides of the triangle"<<endl;
          cin>>s1>>s2>>s3;
          if (s1+s2>s3 && s1+s3>s2 && s3+s2>s1)
          {
             cout <<"the triangle can be printed"<<endl;

         if(s1==s2 && s2==s3 && s3==s1)
          {
                  cout<<"Equilateral triangle"<<endl;
          }
          else if(s1==s2||s1==s3 || s2==s3)
          {
                  cout<<"isosceles triangle"<<endl;
          }
          else
          {
                  cout<<"scalene triangle";
          }}
          else
          cout<<"triangle cannot be formed"<<endl;
}
```

```
please enter three sides of the triangle
4
4
4
the triangle can be printed
Equilateral triangle


...Program finished with exit code 0
Press ENTER to exit console.
```

5. Write a program that takes one input as number and it will display whether the number is +ve, -ve or zero. If the number is +ve, then it will display whether the number is odd or even.

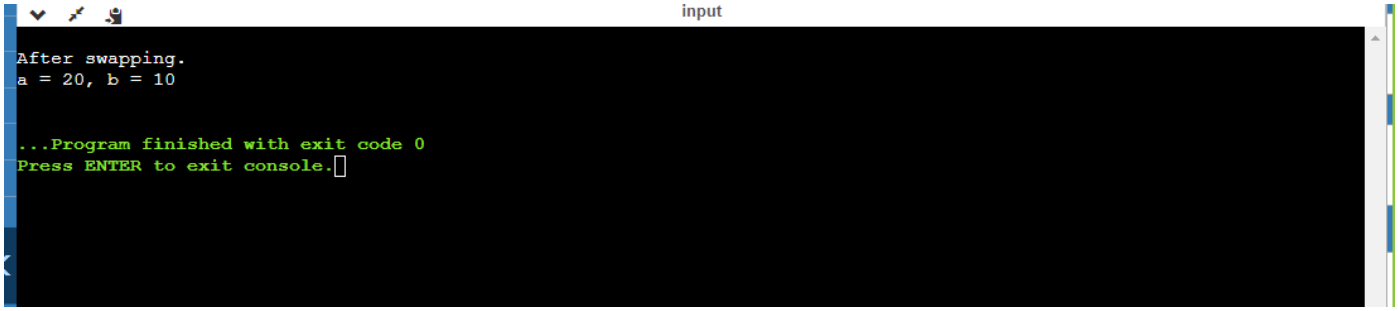
```
#include <iostream>
 using namespace std;
 int main()
{
 int a;
 cout << "Enter Number = ";
 cin >> a;
 if(a>0)
 {
        cout << "Number Is Positive" << "\n";
 {

      if((a%2)==0)
           cout << "Number Is Even";
else
 cout << "Number Is Odd";
 }
 }
else
 if(a<0)
 {
cout << "Number Is Negative";
 }
else
 if(a==0)
 {
 cout << "Number Is Zero";
}
 return 0;
}
```

6. Write a program which takes username as input and it greets to user with his name.

```
#include <iostream>
using namespace std;
int main() {
        string name;
        cout << "Please enter a name:";
        cin >> name;
        cout << "Hello " << name;
}
```

7. Write a program, which takes two integer numbers as input and it shows their exchanged value. (Don't use third variable)

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

int main()
{

   int a = 10, b = 20;

   a = a + b;
   b = a - b;
   a = a - b;

   cout << "\nAfter swapping." << endl;
   cout << "a = " << a << ", b = " << b << endl;

   return 0;
}
```



8. WAP to check Leap Year.

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

int main() {

  int year;
  cout << "Enter a year: ";
  cin >> year;

  if (year % 400 == 0) {
    cout << year << " is a leap year.";
  }

  else if (year % 100 == 0) {
    cout << year << " is not a leap year.";
  }

  else if (year % 4 == 0) {
    cout << year << " is a leap year.";
  }

  else {
    cout << year << " is not a leap year.";
  }

  return 0;
}
```

```
Enter a year: 2024
2024 is a leap year.

...Program finished with exit code 0
Press ENTER to exit console.
```

9. WAP for finding remainder of division of 2 numbers.

```
#include <iostream>
using namespace std;
int main() {
  int Num1, Num2,remainder;
  Num1 = 15;
  Num2 = 7;
  remainder = Num1 % Num2;
  cout << "Num1 is " << Num1 <<endl;
  cout << "Num2 is " << Num2 <<endl;
  cout << "Remainder is " << remainder;
  return 0;
}
```

```
Num1 is 15
Num2 is 7
Remainder is 1

...Program finished with exit code 0
Press ENTER to exit console.
```

10. WAP to calculate Area of Rectangle.

```
#include <iostream>
using namespace std;
int main(){
   int length, breadth, area;

   cout << "Enter the length of the rectangle: ";
   cin >> length;
   cout << "Enter the breadth of the rectangle: ";
   cin >> breadth;
   area = length * breadth;
   cout << "Area of Rectangle: " << area;
   return 0;
}
```

```
Enter the length of the rectangle: 45
Enter the breadth of the rectangle: 52
Area of Rectangle: 2340

...Program finished with exit code 0
Press ENTER to exit console.
```

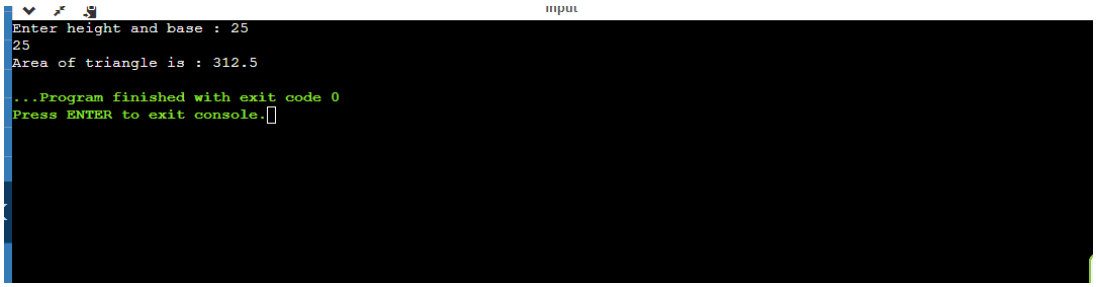
11. WAP to calculate Area of Square.

```
#include <iostream>
using namespace std;
int main(){
   int side, area;

   cout << "Enter the side of square: ";
```

```
    cin >> side;
    area = side * side;
    cout << "Area of square of side " << side << " is: " << area;
    return 0;
}
```

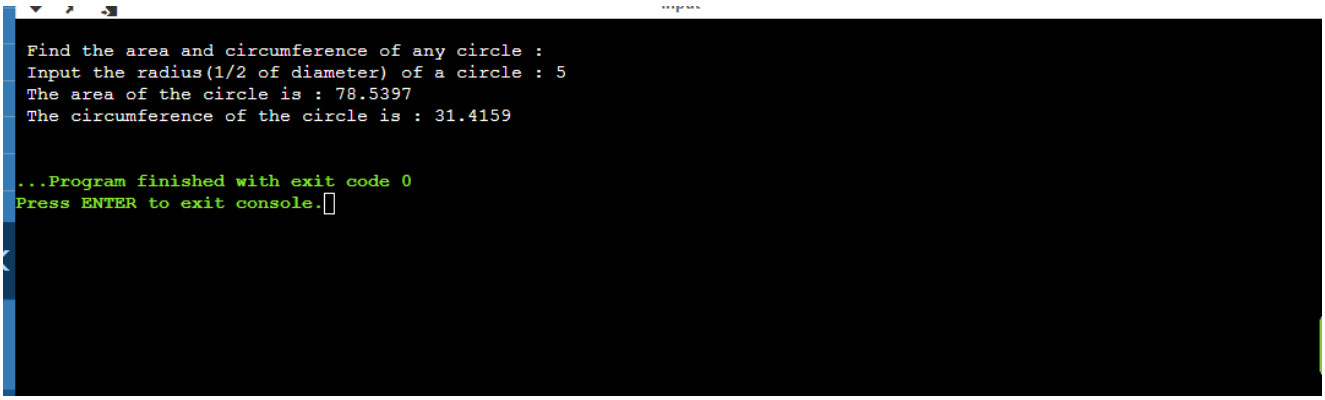
12. WAP to calculate the area of Triangle.

```
int main() {
    int height, base;
    float ans;
    cout<<"Enter height and base : ";
    cin>>height>>base;
    ans= (0.5)*height*base;
    cout<<"Area of triangle is : "<<ans;
        return 0;
}
```



13. WAP to calculate Area and Circumference of Circle.

```
#include <iostream>
#define PI 3.14159
using namespace std;

    int main()
    {
        float radius, area, circum;
                cout << "\n Find the area and circumference of any circle :\n";
      cout<<" Input the radius(1/2 of diameter) of a circle : ";
        cin>>radius;
           circum = 2*PI*radius;
                area = PI*(radius*radius);
      cout<<" The area of the circle is : "<< area << endl;
      cout<<" The circumference of the circle is : "<< circum << endl;
      return 0;
    }
```



14. WAP for two item's weight (floating points' values) and number of purchase (floating points' values) and calculate the average value of the items.

Test Data:
Weight - Item1: 15
No. of item1: 5
Weight - Item2: 25
No. of item2: 4
Expected Output:
Average Value = 19.444444

```
#include <iostream>
 using namespace std;
 int main()
{
float weight1,weight2,num1,num2,avg;
cout << "Weight of Item NO 1 = ";
 cin >> weight1;
 cout << "Number of purchase Item NO 1 = ";
cin >> num1;
 cout << "Weight of Item NO 2 = ";
 cin >> weight2;
 cout << "Number of purchase Item NO 2 = ";
 cin >> num2;
 avg = (((weight1*num1)+(weight2*num2))/(num1+num2));
 cout << "Average Value = " << avg ;
 return 0;
 }
```

15. WAP to calculate a bike's average consumption from the given total distance (integer value) travelled (in km) and spent fuel.

Test Data:
Input total distance in km: 350
Input total fuel spent in litres: 5
Expected Output:
Average consumption (km/lt) 70.00

```
#include <iostream>
using namespace std;
int main()
{
int km,lit,avg;
cout << "Input Total Distance (Km)= ";
cin >> km;
cout << "Input Total Fuel (Lit)= ";
cin >> lit;
avg = km/lit;
cout << "Average Consumption (Km/Lit)= " << avg;
return 0;
}
```

```
Input Total Distance (Km)= 12000
Input Total Fuel (Lit)= 600
Average Consumption (Km/Lit)= 20

...Program finished with exit code 0
Press ENTER to exit console.
```

16. Write a program that will give the grade of the student based on the percentage he got in the course.

Use the following criteria for assigning grades:

Grade = A (when percentage >= 60)

Grade = B (when percentage >= 50 and percentage < 60)

Grade = C (when percentage >= 40 and percentage < 50)

Grade = D (when percentage >= 30 and percentage < 40)

Grade = E (when percentage >= 20 and percentage < 30)

```
#include <iostream>
using namespace std;
int main()
{

int per;
char grad;
cout << "Enter Percentange = ";
cin >> per;
if(per>=60)
{
grad= 'A';
cout<<"Grade "<< grad;
}
else if((per>=50)&&(per<60))
{
grad = 'B';
cout<<"Grade "<< grad;
}
else if((per>=40)&&(per<50))
{
grad = 'C';
cout<<"Grade "<< grad;
}
else if((per>=30)&&(per<40))
{
grad = 'D';
cout<<"Grade "<< grad;
}
else if((per>=20)&&(per<30))
{
grad = 'E';
cout<<"Grade "<< grad;
}
return 0;
}
```

```
Enter Percentange = 56
Grade B

...Program finished with exit code 0
Press ENTER to exit console.
```

17. WAP to check whether a number is divisible by 5.

```
#include<iostream>
using namespace std;
 int main()
{
        int num;
        cout<<"Enter the Number :";
        cin>> num;
        if(num%5==0)
         {
            cout<<"Number is divisible by 5";
         }
        else{
             cout<<"It's not Divisible by 5";
         }
         return 0;
 }
```

```
Enter the Number :40
The Number is divisible by 5

...Program finished with exit code 0
Press ENTER to exit console.
```

18. WAP to input basic salary of an employee and calculate its Gross salary according to following:
    Basic Salary <= 10000 : HRA = 20%, DA = 80%
    Basic Salary <= 20000 : HRA = 25%, DA = 90%
    Basic Salary > 20000 : HRA = 30%, DA = 95%

```
#include <iostream>
using namespace std;
int main()
{
float BSal ,HRA ,DA ,GrossSal;
cout << "Enter Basic Salary of Employee = ";
cin >> BSal ;
if(BSal<=10000)
{
HRA = BSal*0.2;
DA = BSal*0.8;
GrossSal = BSal + HRA + DA ;
cout << "Gross Salary of Empolyee is = " << GrossSal ;
 }
else if((BSal<=20000)&&(BSal>10000))
 {
HRA = BSal*0.25;
DA = BSal*0.9;
GrossSal = BSal + HRA + DA ;
```

```
cout << "Gross Salary of Empolyee is = " << GrossSal ;
}
else if(BSal>20000)
{
HRA = BSal*0.3;
DA = BSal*0.95;
GrossSal = BSal + HRA + DA ;
cout << "Gross Salary of Empolyee is = " << GrossSal ;
}
return 0;
}
```

19. WAP to input electricity unit charges and calculate total electricity bill according to the given condition:
    For first 50 units Rs. 0.50/unit
    For next 100 units Rs. 0.75/unit
    For next 100 units Rs. 1.20/unit
    For unit above 250 Rs. 1.50/unit
    An additional surcharge of 20% is added to the bill

```
#include <iostream>
using namespace std;
int main()
{
float nunit,ebill;
cout << "Enter Number Of Units = ";
cin >> nunit;
if (nunit<=50)
{
ebill = (0.50*nunit);
cout << "Electricity Bill is = " << ebill ;
}
else if ((nunit>50)&&(nunit<=150))
{
ebill = (0.75*nunit);
cout << "Electricity Bill is = " << ebill;
}
else if ((nunit>150)&&(nunit<=250))
{
ebill = (1.20*nunit);
cout << "Electricity Bill is = " << ebill;
}
else if (nunit>250)
{
ebill = (1.50*nunit)+ (0.20*nunit);
cout << "Electricity Bill is = " << ebill;
}
return 0;
}
```


Enter Number Of Units = 12000
Electricity Bill is = 20400
...Program finished with exit code 0
Press ENTER to exit console.