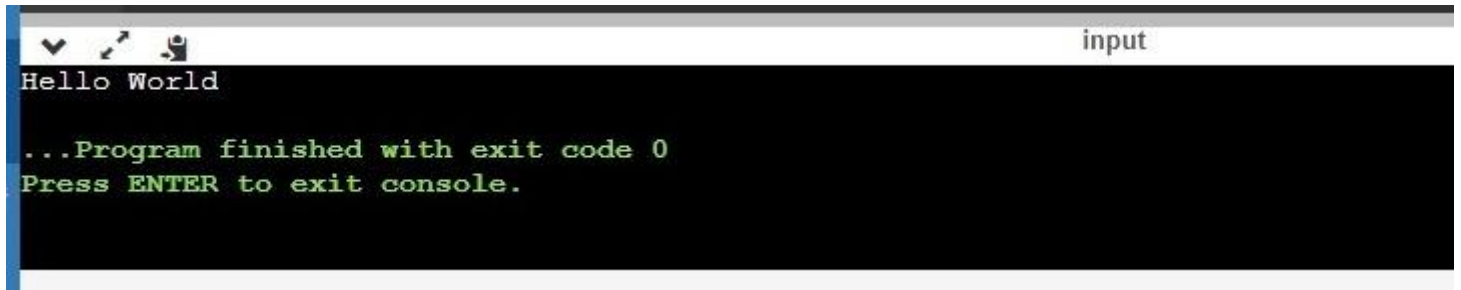


C++ ASSIGNMENT 1.1

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

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

A screenshot of a terminal window with a dark background. The title bar at the top right says 'input'. The terminal shows the output 'Hello World' in white text. Below it, in green text, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.'.

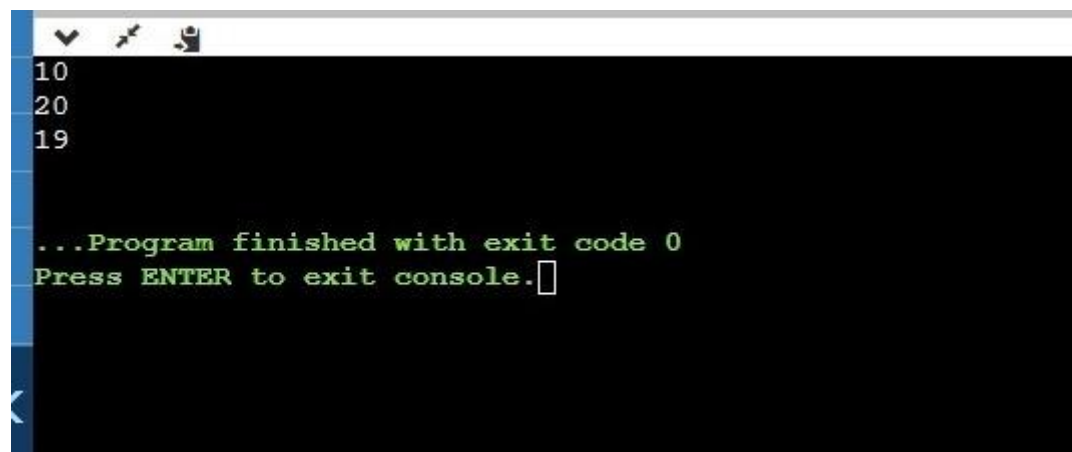
```
input
Hello World
...Program finished with exit code 0
Press ENTER to exit console.
```

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;
}
```

A screenshot of a terminal window with a dark background. The title bar at the top right is empty. The terminal shows the output '10', '20', and '19' on separate lines in white text. Below it, in green text, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.' followed by a cursor.

```
10
20
19
...Program finished with exit code 0
Press ENTER to exit console.█
```

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;
}
```



```
Enter Number = 5
Number Is Positive
Number Is Odd
...Program finished with exit code 0
Press ENTER to exit console.
```

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;
}
```



```
Please enter a name:VISHALGARG
Hello VISHALGARG
...Program finished with exit code 0
Press ENTER to exit console.
```

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

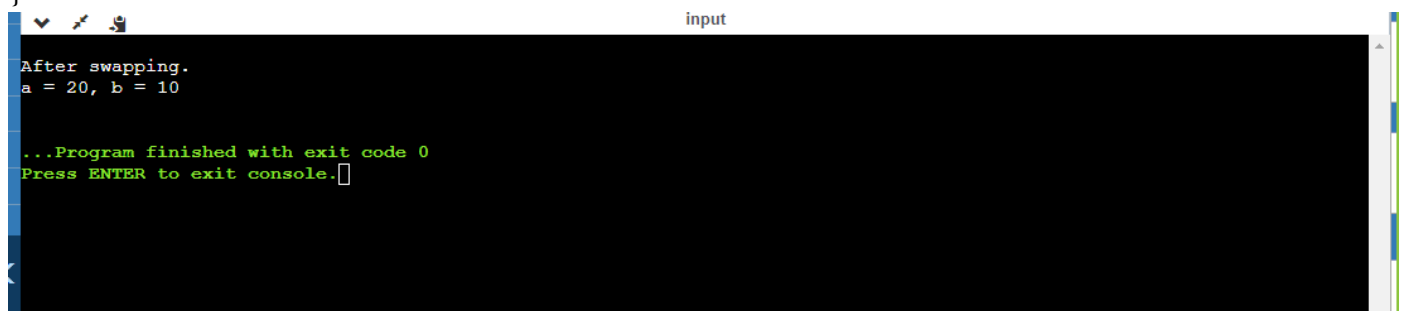
```
#include <iostream>
using namespace std;
```

```
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;
}
```

A screenshot of a C++ program execution. The code is displayed in a dark-themed editor with a toolbar at the top. The output is shown in a console window below the code. The output text is: "After swapping.\na = 20, b = 10". Below the output, there is a green message: "...Program finished with exit code 0" and "Press ENTER to exit console." with a cursor icon.

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;
}

```

A screenshot of a C++ program's output in a terminal window. The program prompts the user to enter the side of a square. The user enters '5'. The program then outputs 'Area of square of side 5 is: 25'. It also shows the program finished with exit code 0 and a prompt to press ENTER to exit the console.

```

Enter the side of square: 5
Area of square of side 5 is: 25
...Program finished with exit code 0
Press ENTER to exit console.

```

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;
}

```

A screenshot of a C++ program's output in a terminal window. The program prompts the user to enter height and base. The user enters '25' for both. The program then outputs 'Area of triangle is : 312.5'. It also shows the program finished with exit code 0 and a prompt to press ENTER to exit the console.

```

Enter height and base : 25
25
Area of triangle is : 312.5
...Program finished with exit code 0
Press ENTER to exit console.

```

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;
}

```

A screenshot of a C++ program's output in a terminal window. The program prompts the user to find the area and circumference of a circle. It asks for the radius (1/2 of diameter). The user enters '5'. The program then outputs 'The area of the circle is : 78.5397' and 'The circumference of the circle is : 31.4159'. It also shows the program finished with exit code 0 and a prompt to press ENTER to exit the console.

```

Find the area and circumference of any circle :
Input the radius(1/2 of diameter) of a circle : 5
The area of the circle is : 78.5397
The circumference of the circle is : 31.4159
...Program finished with exit code 0
Press ENTER to exit console.

```

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;
}
```

A screenshot of a C++ program execution in a terminal window. The program prompts for the weight and number of purchases for two items. The user enters 10 for weight1, 12 for num1, 14 for weight2, and 23 for num2. The program calculates the average value as 12.6286 and displays it. The terminal output is as follows:

```
Weight of Item NO 1 = 10
Number of purchase Item NO 1 = 12
Weight of Item NO 2 = 14
Number of purchase Item NO 2 = 23
Average Value = 12.6286
...Program finished with exit code 0
Press ENTER to exit console.
```

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 $\geq$ 60)
```

```
{
```

```
grad= 'A';
```

```
cout<<"Grade "<< grad;
```

```
}
```

```
else if((per $\geq$ 50)&&(per $<$ 60))
```

```
{
```

```
grad = 'B';
```

```
cout<<"Grade "<< grad;
```

```
}
```

```
else if((per $\geq$ 40)&&(per $<$ 50))
```

```
{
```

```
grad = 'C';
```

```
cout<<"Grade "<< grad;
```

```
}
```

```
else if((per $\geq$ 30)&&(per $<$ 40))
```

```
{
```

```
grad = 'D';
```

```
cout<<"Grade "<< grad;
```

```
}
```

```
else if((per $\geq$ 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;
}

```

```

Enter Basic Salary of Employee = 12000
Gross Salary of Empolyee is = 25800

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

```

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.
```