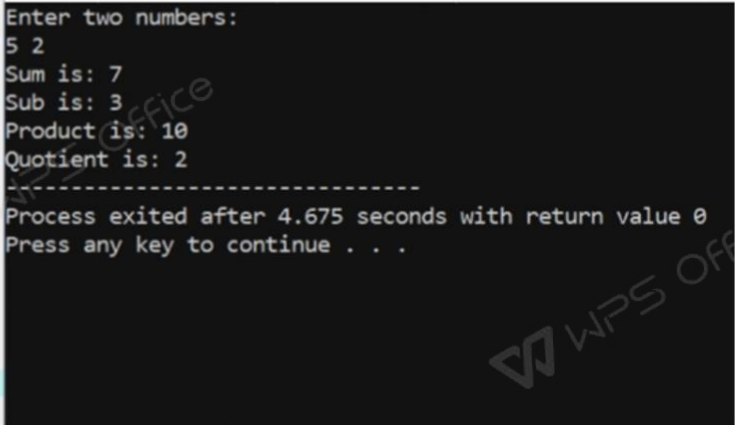


C++ Programs

- **2.16** Write a program that ask the user to enter two numbers and print sum, product, difference and quotient of two numbers.

```
1  #include<iostream>
2  using namespace std;
3  main()
4  {
5      int a,b,sum,sub,product,quotient;
6      cout<<"Enter two numbers:"<<endl;
7      cin>>a>>b;
8      sum=a+b;
9      sub=a-b;
10     product=a*b;
11     quotient=a/b;
12     cout<<"Sum is: "<<sum<<endl;
13     cout<<"Sub is: "<<sub<<endl;
14     cout<<"Product is: "<<product<<endl;
15     cout<<"Quotient is: "<<quotient;
16     return 0;
17 }
```



- **2.17** Write a program that prints “Welcome to C++ programming”.

```
#include<iostream>
using namespace std;
main()
{
    //a
    cout<<"Welcome to "<<"C++ programming."<<endl;
    //b
    cout<<"Welcome "<<"to "<<"C++ "<<"programming."<<endl;
    //c
    cout<<"Welcome to"<<endl;
    cout<<"C++ programming.";
    return 0;
}
```

- **2.18** Write a program that ask the user to enter two integers, if numbers are not equal print the msg, "These numbers are not equal".

```
1 #include<iostream>
2 using namespace std;
3 main()
4 {
5     int a,b;
6     cout<<"Enter two numbers: ";
7     cin>>a>>b;
8     if (a!=b)
9         cout<<"These numbers are not equal."<<endl;
10    if (a<b)
11        cout<<"a is smaller."<<endl;
12    if (b<a)
13        cout<<"b is smaller.";
14    return 0;
15 }
```

```
Enter two numbers: 5 2
These numbers are not equal.
b is smaller.
-----
Process exited after 4.2 seconds with return value 0
Press any key to continue . . .
```

- **2.19** Write a program that ask the user to enter two integers and prints sum, average, product of these numbers.

```
1 #include<iostream>
2 using namespace std;
3 main()
4 {
5     int a,b,c,sum,product;
6     float average;
7     cout<<"Input three integers:";
8     cin>>a>>b>>c;
9     sum=a+b+c;
10    average=a+b+c/3;
11    product=a*b*c;
12    cout<<"Sum= "<<sum<<endl;
13    cout<<"Average= "<<average<<endl;
14    cout<<"Product= "<<product;
15    return 0;
16 }
```

```
Input three integers:5 6 7
Sum= 18
Average= 13
Product= 210
-----
Process exited after 7.285 seconds with return value 0
Press any key to continue . . .
```

- **2.20** Write a program that ask the user to enter radius of circle and print diameter, circumference and area of circle.

The screenshot shows a C++ program in a text editor and its execution in a command prompt. The program prompts the user to enter the radius of a circle, calculates the area, circumference, and diameter, and then prints the results.

```

1 #include<iostream>
2 using namespace std;
3 main()
4 {
5     float area,c,d;
6     int r;
7     cout<<"Enter value of r=";
8     cin>>r;
9     area=3.14*r*r;
10    c=2*3.14*r;
11    d=2*r;
12    cout<<"Area="<<area<<endl;
13    cout<<"Circumference="<<c<<endl;
14    cout<<"Diameter="<<d<<endl;
15    return 0;
16 }

```

Execution output:

```

C:\Users\user\Documents\qz0.exe
Enter value of r=5
Area=78.5
Circumference=31.4
Diameter=10
-----
Process exited after 1.312 seconds with return value 0
Press any key to continue . . .

```

- **2.21** Write a program that print c++.

The screenshot shows a C++ program that prints the text "c++" in five different patterns using cout and endl. The execution output shows the patterns as they appear on the screen.

```

1 #include<iostream>
2 using namespace std;
3 main()
4 {
5     cout<<" ccc\t+\t +\n";
6     cout<<" c \t+\t +\n";
7     cout<<"c ++++++\t+++++\n";
8     cout<<" c \t+\t +\n";
9     cout<<" ccc\t+\t +\n";
10    return 0;
11 }
12

```

Execution output:

```

C:\Users\xi carbon\Documents\cpp.exe
ccc + +
c + +
c ++++++ ++++++
c + +
ccc + +
-----
Process exited after 0.3252 seconds with return value 0
Press any key to continue . . .

```

- **2.22** What does the code print?

The screenshot shows a C++ program that prints a pattern of symbols using cout and endl. The execution output shows the pattern as it appears on the screen.

```

1 #include<iostream>
2 using namespace std;
3 main()
4 {
5     cout<<"%%%\n$$$$\n##\n@*\n";
6 }

```

Execution output:

```

%%%\n
$$$$\n
##\n
@*\n
-----
Process exited after 0.2977 seconds with return value 0
Press any key to continue . . .

```

- **2.23** Write a program that read 5 integers and prints the smallest and largest integer.

```
#include<iostream>
using namespace std;
main()
{
    int a,b,c,d,e;
    cout<<"Enter five integers=";
    cin>>a>>b>>c>>d>>e;
    //a
    if (a<b && a<c && a<d && a<e)
    {
        cout<<"Smaller="<<a<<endl;
    }
    else if (b<a && b<c && b<d && b<e)
    {
        cout<<"Smaller="<<b<<endl;
    }
    else if (c<a && c<b && c<d && c<e)
    {
        cout<<"Smaller="<<c<<endl;
    }
    else if (d<a && d<b && d<c && d<e)
    {
        cout<<"Smaller="<<d<<endl;
    }
}
```

```

}
else
{
    cout<<"Smaller="<<e<<endl;
}
//b
if (a>b && a>c && a>d && a>e)
{
    cout<<"Largest="<<a<<endl;
}
else if (b>a && b>c && b>d && b>e)
{
    cout<<"Largest="<<b<<endl;
}
else if (c>a && c>b && c>d && c>e)
{
    cout<<"Largest="<<c<<endl;
}
else if (d>a && d>b && d>c && d>e)
{
    cout<<"Largest="<<d<<endl;
}
else
{
    cout<<"Largest="<<e<<endl;
}
return 0;
}

```

- **2.24** Write a program that ask a user to enter two integers and determine the sum is even or odd.

```
#include<iostream>
using namespace std;
main()
{
    int a,b,sum;
    cout<<"Enter two numbers";
    cin>>a>>b;
    sum=a+b;
    cout<<"Sum is: "<<sum<<endl;
    if(sum%2!=0)
    cout<<"Sum is odd integer.";
    else
    cout<<"Sum is even integer.";
    return 0;
}
```

```
Enter two numbers 3 2
Sum is: 5
Sum is odd integer.
-----
Process exited after 3.758 seconds with return value 0
Press any key to continue . . .
```

- **2.25** Write a program that ask the user to enter two integers and determine first number is multiple of second or not.


```
#include<iostream>
using namespace std;
main()
{
    int a,b;
    cout<<"Enter two integers:";
    cin>>a>>b;
    if (a%b==0)
    cout<<"First number is multiple of second.";
    else
    cout<<"Numbers are not multiple.";
    return 0;
}
```

- **2.26** Display the checkboard pattern.

```
#include<iostream>
using namespace std;
main()
{
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * "<<endl;
    cout<<"* * * * * ";
    return 0;
}
```

C:\Users\user\Documents\2.30.exe

```
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
```

Process exited after 0.1928 seconds with return value 0
Press any key to continue . . .

- **2.27** Write a program that display capital letter , small letters and digits.

```
#include<iostream>
using namespace std;
main()
{
    char c;
    cout<<"Enter any character=";
    cin>>c;
    if (c>='a' && c<='z')
    cout<<"Small letter."<<endl;
    else if (c>='A' && c<='Z')
    cout<<"Capital letter."<<endl;
    else if(c>='0' && c<='9')
    cout<<"Digits."<<endl;
    else
    cout<<"Special digits";
    return 0;
}
```

- **2.28** Write a program that ask the user to enter four integers and determine their reverse.

```
sum.cpp
1  #include<iostream>
2  using namespace std;
3  main()
4  {
5      int a,b,c,d;
6      cout<<"Enter four integers:";
7      cin>>a>>b>>c>>d;
8      cout<<d<<c<<b<<a;
9      return 0;
10 }
```

C:\Users\Xi carbon\Documents\sum.exe

Enter four integers:1 2 3 4
4321

Process exited after 4.472 seconds with return value 0
Press any key to continue . . .

- **2.29** Dram table.

```
sum.cpp
1  #include<iostream>
2  using namespace std;
3  main()
4  {
5      cout<<"Side\tPerimeter\tArea\n";
6      cout<<"1\t4\t1\n2\t8\t4\n3\t12\t9\n4\t16\t16\n5\t20\t25";
7      return 0;
8  }
```

Side	Perimeter	Area
1	4	1
2	8	4
3	12	9
4	16	16
5	20	25

Process exited after 0.2979 seconds with return value 0
Press any key to continue . . .

- **2.30** Write a program that calculate Body Mass Index?

```

#include<iostream>
using namespace std;
main()
{
    float height,weight;
    cout<<"Enter hieght in meters=";
    cin>>height;
    cout<<"Enter weight in kilograms=";
    cin>>weight;
    float bmi=weight/(height*height);
    cout<<"BMI="<<bmi<<endl;
    if (bmi<18.5)
    {
        cout<<"Underweight"<<endl;
    }
    else if (bmi<25)
    {
        cout<<"Normal weight"<<endl;
    }
    else if (bmi<30)
    {
        cout<<"Overweight"<<endl;
    }
    else
    {
        cout<<"Obese";
    }
    return 0;
}

```

- 2.31 Write a program for Car-Pool savings calculator.

```

#include<iostream>
using namespace std;
main()
{
    float totalmiles,costpergallon,avgmilespergallon,parkingfees,tolls;
    cout<<"Enter total miles driven per day="<<endl;
    cin>>totalmiles;
    cout<<"Enter cost per gallons of gasoline="<<endl;
    cin>>costpergallon;
    cout<<"Enter average miles per gallon="<<endl;
    cin>>avgmilespergallon;
    cout<<"Enter parking fees per day="<<endl;
    cin>>parkingfees;
    cout<<"Enter tolls per day"<<endl;
    cin>>tolls;
    //calculating cost per day for driving
    float costperday=(totalmiles/avgmilespergallon)*costpergallon*parkingfees*tolls;
    cout<<"Your cost per day driving to work is="<<costperday<<endl;
    return 0;
}

```

- 2.32 Write a program that calculate Maximum Heart Rate?

```
#include<iostream>
using namespace std;
main()
{
    int age,mhr;
    cout<<"Enter age="<<endl;
    cin>>age;
    mhr=220-age;
    cout<<"MHR="<<mhr<<endl;
    return 0;
}
```