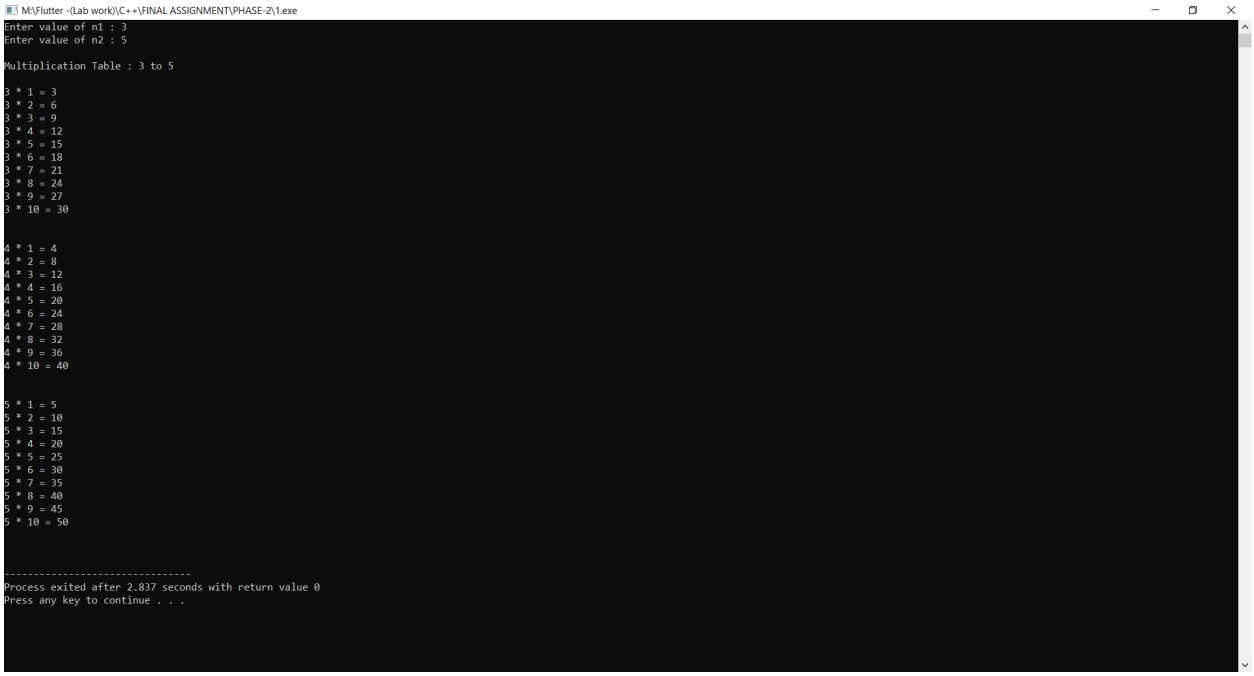
Practical-1

Aim: Kashyap has difficulty to remember multiplication tables. Write a C++ Program which generates multiplication tables between n1 and n2 provided values.

Program:

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

int main()
{

int n1,n2,i,j,sum;

cout << "Enter value of n1 : ";
cin >> n1;
cout << "Enter value of n2 : ";
cin >> n2;

cout << endl <<"Multiplication Table : "<< n1 <<" to "<< n2 << endl<<endl;

for(i=n1;i<=n2;i++)
{

for(j=1;j<=10;j++)
{
 sum = i*j;
 cout << i << " * " << j << " = " << sum << endl;
 }

cout <<endl <<endl;

}
 return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\1.exe
Enter value of n1 : 3
Enter value of n2 : 5
Multiplication Table : 3 to 5
3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18
3 * 7 = 21
3 * 8 = 24
3 * 9 = 27
3 * 10 = 30
4 * 1 = 4
4 * 2 = 8
4 * 3 = 12
4 * 4 = 16
4 * 5 = 20
4 * 6 = 24
4 * 7 = 28
4 * 8 = 32
4 * 9 = 36
4 * 10 = 40
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50

Process exited after 2.837 seconds with return value 0
Press any key to continue . . .

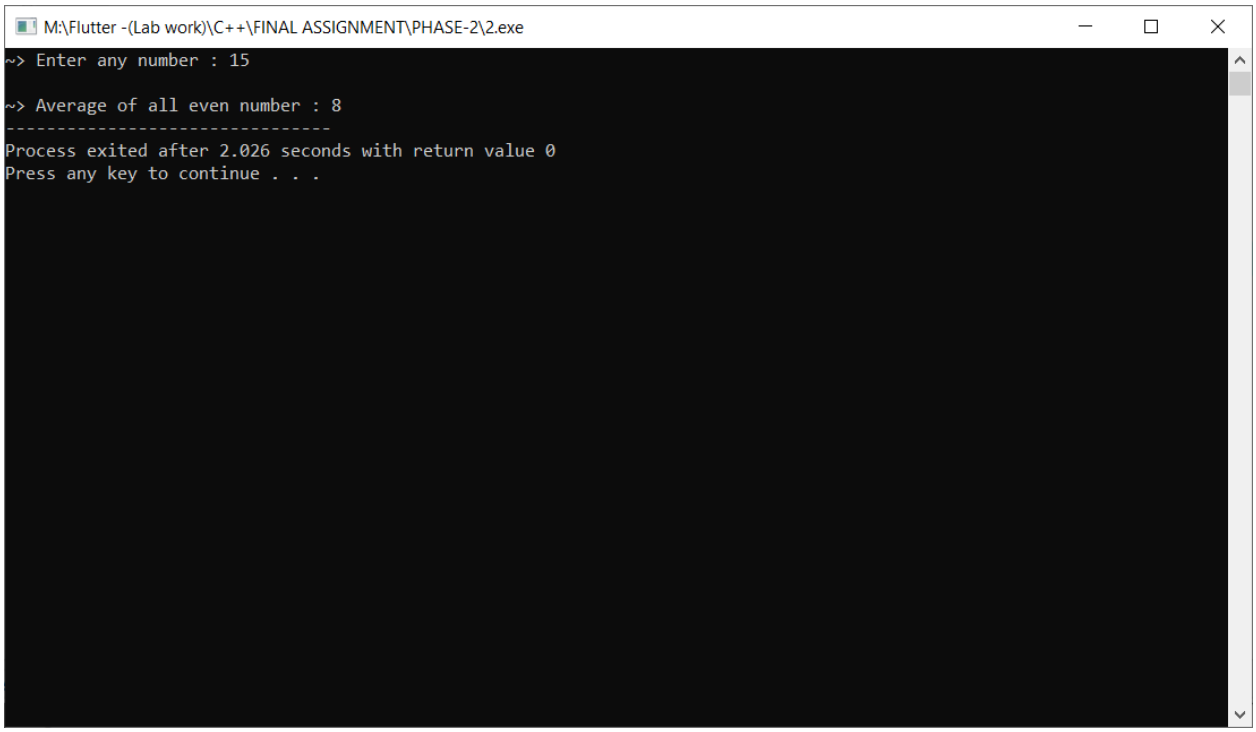
Practical-2

Aim: **A Math problem to find average of all even numbers from n Natural numbers raise difficulty to all 5th standard students. Write a C++ Program to help them.**

Program:

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

int main()

{

 int n,i;
 int avg=0,sum,c=0;

 cout << "~> Enter any number : ";
 cin >> n;

 for(i=1;i<=n;i++)
 {
 if(i%2==0)
 {
  avg = avg + i;
  c++;
  }

  }

  sum = avg/c;
  cout <<endl<< "~> Average of all even number : "<<sum;

  }
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\2.exe
~> Enter any number : 15
~> Average of all even number : 8

Process exited after 2.026 seconds with return value 0
Press any key to continue . . .

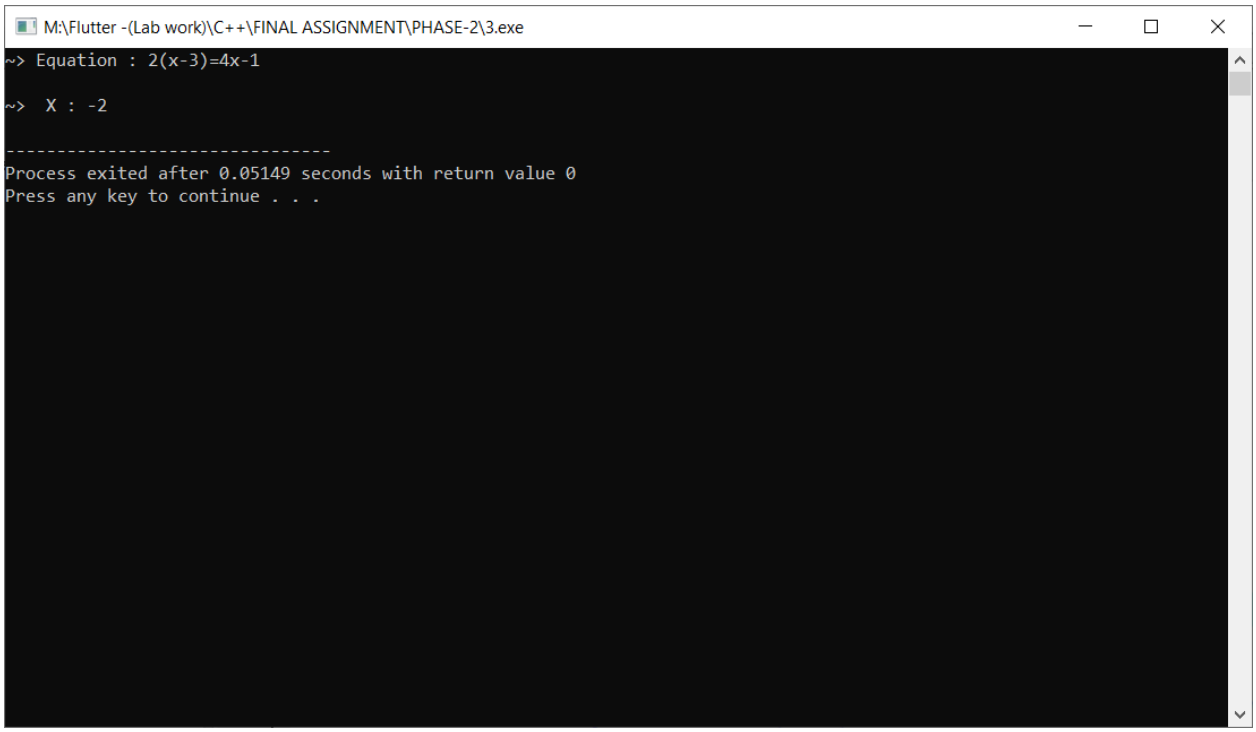
Practical-3

Aim: **Write a C++ Program to solve this mathematical equation to find out write answer for passing math's exam: 2(x-3)=4x-1**

Program:

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

int main()
{

float x;

x = -5/2 ;

cout << "~> Equation : 2(x-3)=4x-1  "<<endl<<endl <<"~>  X : "<<x <<endl;

return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\3.exe
~> Equation : 2(x-3)=4x-1
~> X : -2

Process exited after 0.05149 seconds with return value 0
Press any key to continue . . .

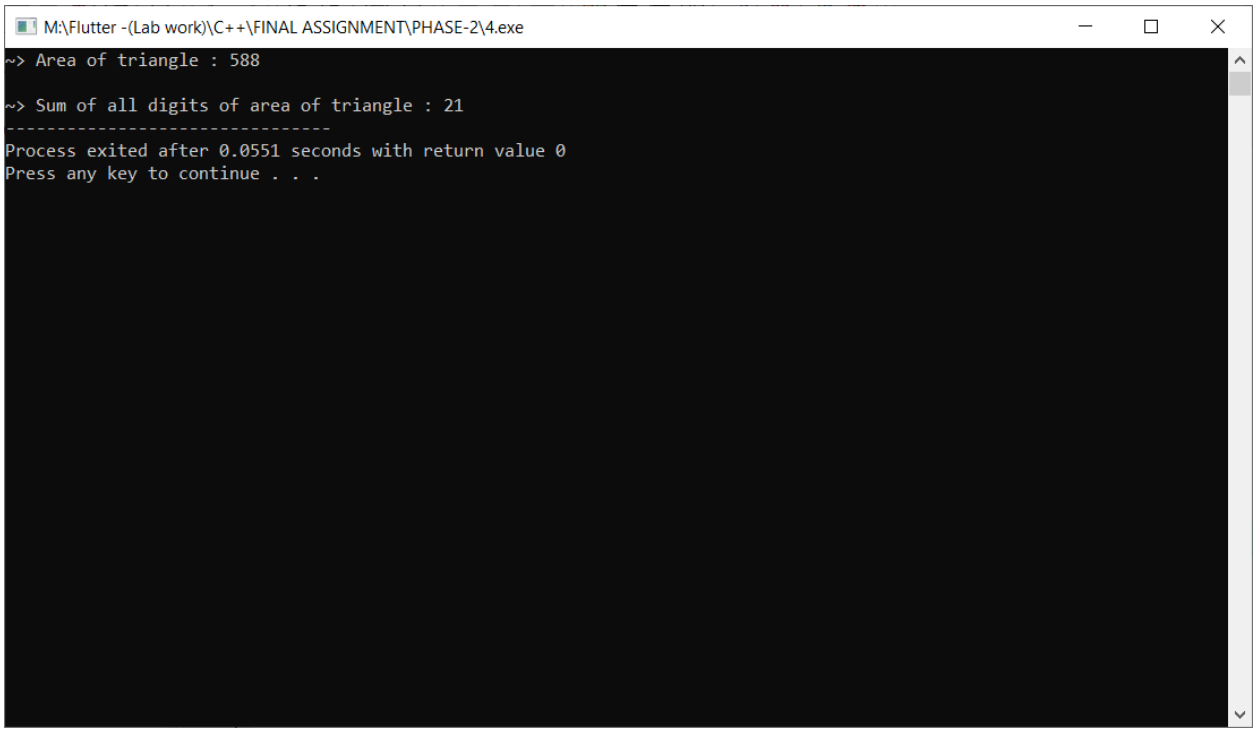
Practical-4

Aim: **Write a C++ Program which finds the area of triangle whose base is 56 units and height is 21 units. Also print sum of all digits of that area of triangle.**

Program:

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

int main()
{

int area, base = 56, height =21 ;
int rev=0 , sum=0;

area = (base*height)/2 ;

cout << "~> Area of triangle : "<<area <<endl;

while(area >0)
{

 rev = area % 10;
 area = area /10;
 sum = sum + rev;

 }

 cout <<endl<<"~> Sum of all digits of area of triangle : "<<sum;
 return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\4.exe
~> Area of triangle : 588
~> Sum of all digits of area of triangle : 21

Process exited after 0.0551 seconds with return value 0
Press any key to continue . . .

Practical-5

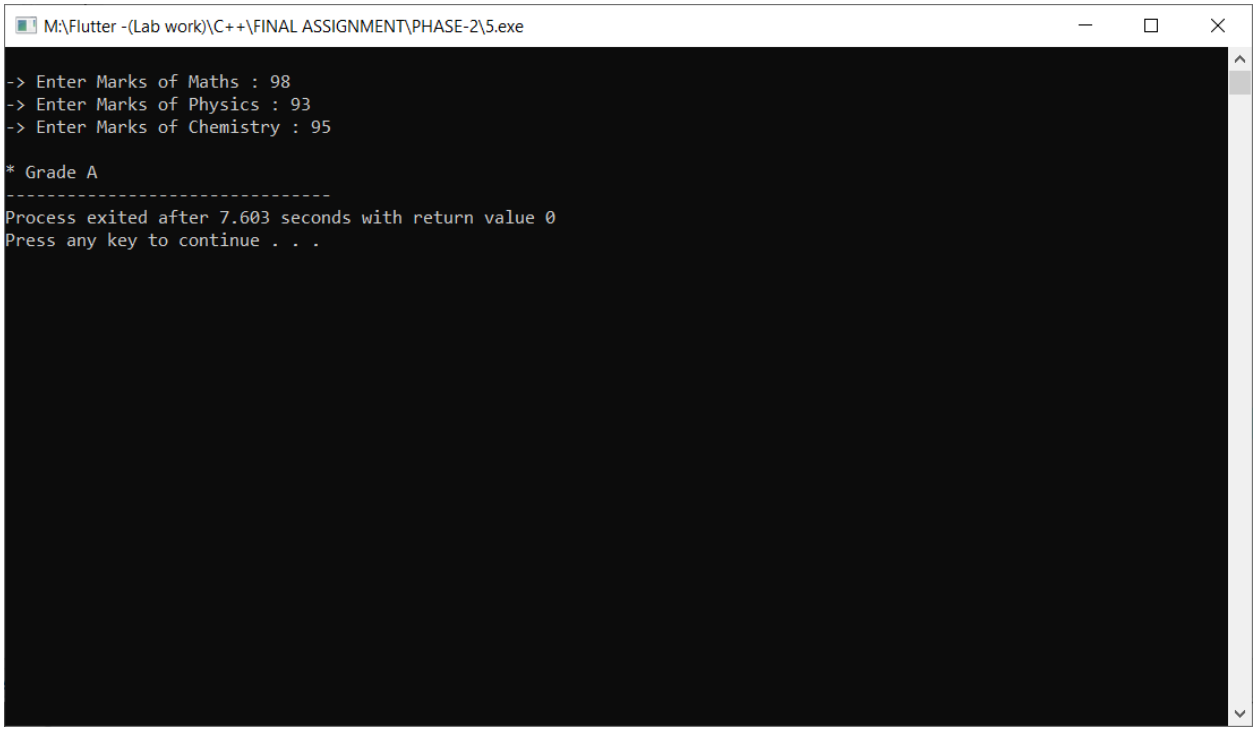
Aim: **A Prime School wants an automate system for generating students grades.**
If marks in Maths>80, Phy>75 and Chem>72 then generate Grade A.
If marks in 60<=Maths<=80, 55<=Phy<=75 and 50<=Chem<=72 then generate Grade B.
If marks in 40<=Maths<60, 35<=Phy<55 and 35<=Chem<50 then generate Grade C.
Apply Grade D (Fail) if minimum criteria of marks doesn't satisfy bt any student.
Write a C++ Program for generating total N number of students grades for this Prime School.

Program:

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

int main()
{
int m,p,c;

cout << "-> Enter Marks of Maths : ";
cin  >> m;
cout << "-> Enter Marks of Physics : ";
cin  >> p;
cout << "-> Enter Marks of Chemistry : ";
cin  >> c;

if(m>80 && p>70 && c>72)
{
cout << "Grade A";
```

```
}

else if((60<=m && m<=80 )|| (55<=p && p<=75) || (50<=c && c<=72))
{
cout << "Grade B";
}
else if ((40<=m && m<60) || (35<=p && p<55) || (35<=c && c<50))
{
 cout << "Grade C";
}
else
{
cout << "Grade D(fail)";
}
return 0;
}
```

Output:



Practical-6

Aim: **Design a Calculator for an arithmetic operations in which user can do all basic operations as many times he/she wants until he/she exit from that. Use C++ as a primary language to accomplish this challenge.**

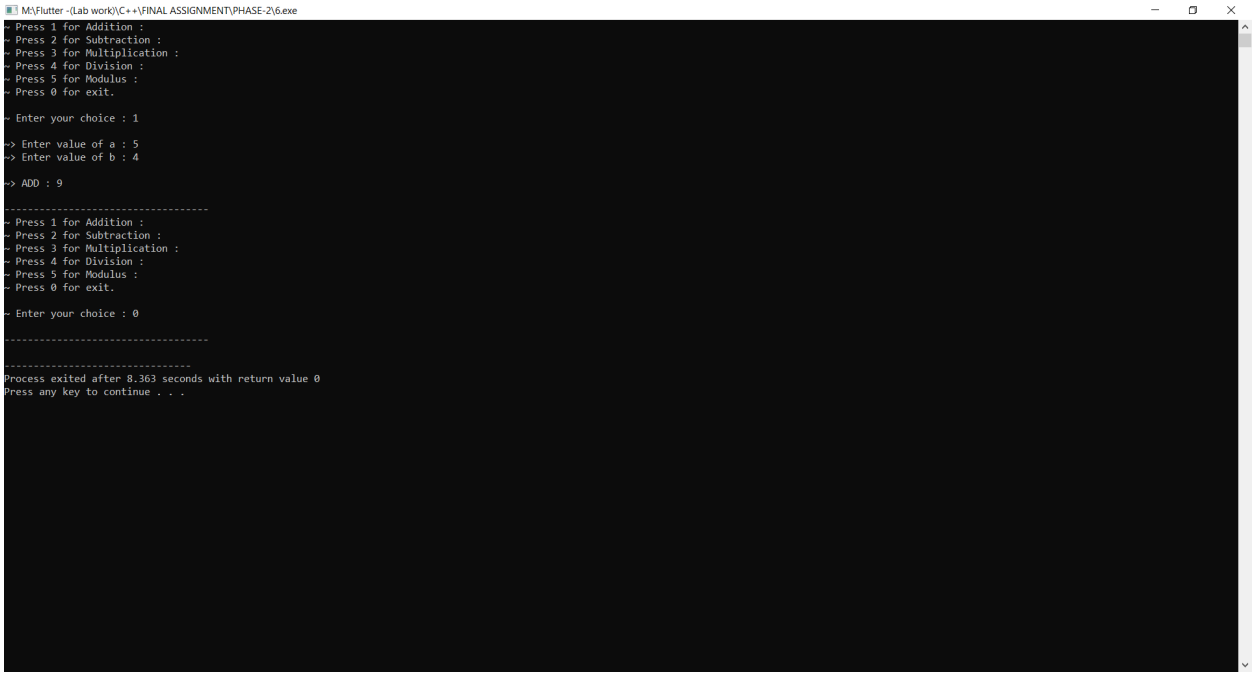
Program:

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

int main()
{

int choice ,a,b,result;

while(choice!=0)
{

cout << "~ Press 1 for Addition : "<<endl;
cout << "~ Press 2 for Subtraction : "<<endl;
cout << "~ Press 3 for Multiplication : "<<endl;
cout << "~ Press 4 for Division : "<<endl;
cout << "~ Press 5 for Modulus : "<<endl;
cout << "~ Press 0 for exit."<<endl;

cout <<endl<< "~ Enter your choice : ";
cin >> choice;

switch(choice)
{

case 1 :

cout <<endl<< "~> Enter value of a : ";
cin >> a;
```

```
cout << "~> Enter value of b : ";
cin >> b;
result = a+b;

cout <<endl<< "~> ADD : "<<result <<endl;
break;

 case 2 :

 cout <<endl<< "~> Enter value of a : ";
 cin >> a;
 cout << "~> Enter value of b : ";
 cin >> b;

 result = a-b;

 cout << endl<<"~> SUB : "<<result <<endl;

 case 3 :

 cout <<endl<< "~> Enter value of a : ";
 cin >> a;
 cout << "~> Enter value of b : ";
 cin >> b;

result = a*b;

cout << endl<<"~> MULT : "<<result<<endl;
break;

case 4 :

cout <<endl<< "~> Enter value of a : ";
cin >> a;
cout << "~> Enter value of b : ";
cin >> b;

result = a/b;

cout <<endl<< "~> DIV : "<<result<<endl;
```

```
 break;

 case 5 :

cout <<endl<<"~> Enter value of a : ";
cin >> a;
cout << "~> Enter value of b : ";
cin >> b;

result = a%b;

cout <<endl<< "~> MOD : "<<result <<endl;
break;

 case 0:

break;

default :

cout << "Invalid input .....";
break;

 }

cout <<endl<<"-----------------------------------"<<endl;

}

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\6.exe
~ Press 1 for Addition :
~ Press 2 for Subtraction :
~ Press 3 for Multiplication :
~ Press 4 for Division :
~ Press 5 for Modulus :
~ Press 0 for exit.
~ Enter your choice : 1
~> Enter value of a : 5
~> Enter value of b : 4
~> ADD : 9
~ Press 1 for Addition :
~ Press 2 for Subtraction :
~ Press 3 for Multiplication :
~ Press 4 for Division :
~ Press 5 for Modulus :
~ Press 0 for exit.
~ Enter your choice : 0
Process exited after 8.363 seconds with return value 0
Press any key to continue . . .

Practical-7

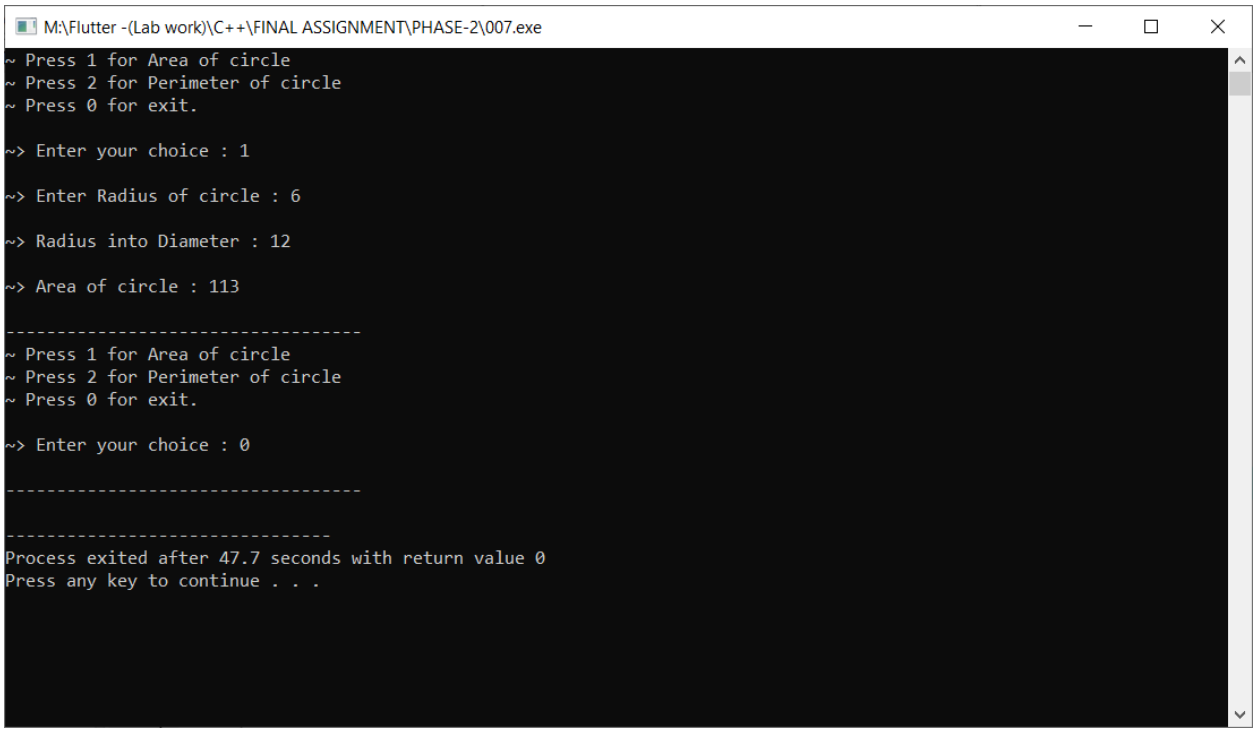
Aim: **Prepare a Calculator which only performs Circle related mathematical operations like finding Area of Circle, Perimeter of Circle and Conversion of radius into Diameter. All operations are continuous until user wish to exit. By using C++, create this calculator for a batch of bacholers.**

Program:

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

int main()
{

int area ,radius , diameter, perimeter ,pi=3.14 ,choice;

 while(choice!=0)
 {

  cout << "~ Press 1 for Area of circle  "<<endl;
  cout << "~ Press 2 for Perimeter of circle  "<<endl;
  cout << "~ Press 0 for exit."<<endl;

  cout <<endl<< "~> Enter your choice : ";
 cin  >> choice;

  switch(choice)
  {

   case 1:

  cout <<endl << "~> Enter Radius of circle : ";
  cin >> radius;
```

```
diameter = 2*radius;
cout <<endl<< "~> Radius into Diameter : "<<diameter<<endl;

area = 3.14*radius*radius;
cout <<endl<< "~> Area of circle : "<<area <<endl;
break;

case 2:

cout <<endl << "~> Enter Radius of circle : ";
cin >> radius;

diameter = 2*radius;
cout <<endl<< "~> Radius into Diameter : "<<diameter<<endl;

perimeter = 2*3.14*radius;
cout <<endl<< "~> Perimeter of circle : "<<perimeter <<endl;
break;

case 0:

break;

default:

cout << "Invalid input .....";
break;

}

cout <<endl<<"-----------------------------------"<<endl;

}

return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\007.exe
~ Press 1 for Area of circle
~ Press 2 for Perimeter of circle
~ Press 0 for exit.
~> Enter your choice : 1
~> Enter Radius of circle : 6
~> Radius into Diameter : 12
~> Area of circle : 113
~ Press 1 for Area of circle
~ Press 2 for Perimeter of circle
~ Press 0 for exit.
~> Enter your choice : 0
Process exited after 47.7 seconds with return value 0
Press any key to continue . . .

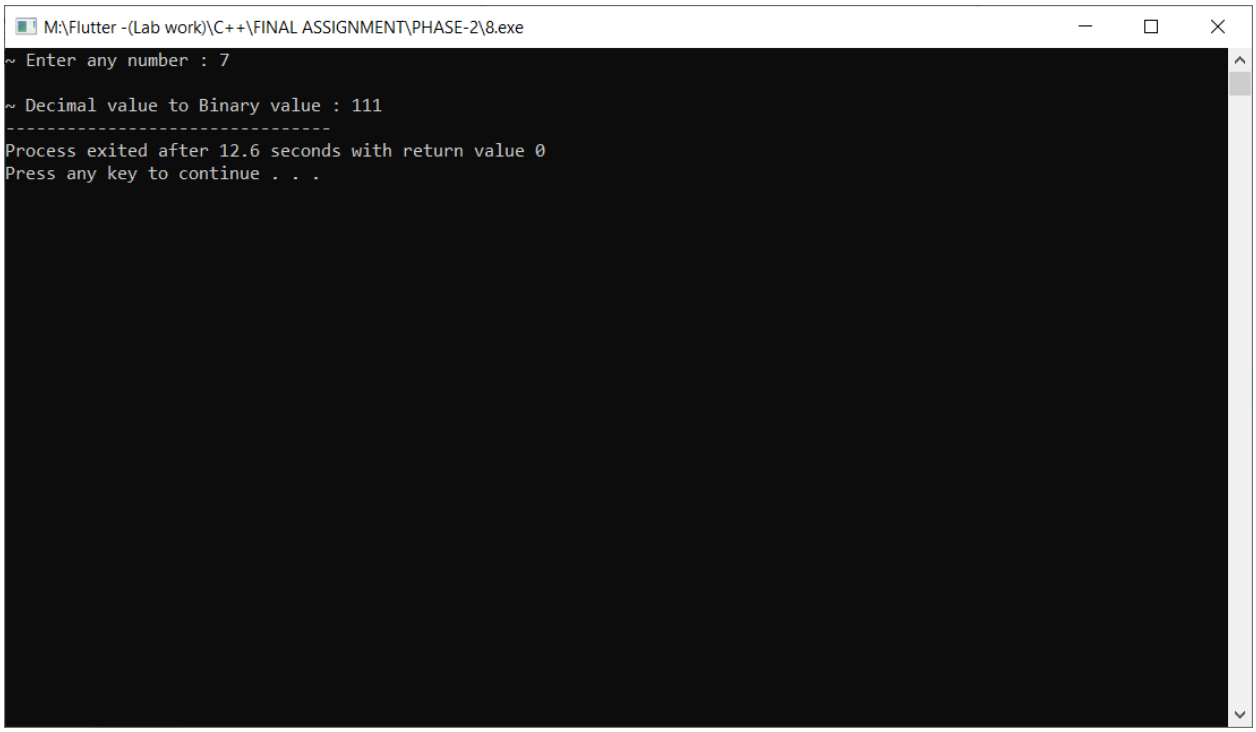
Practical-8

Aim: A Computer Teacher wants to teach a 10th standard class that how a computer converts any decimal value into binary value. Help that teacher by developing C++ program for this purpose.

Program:

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

int main()
{

int n,bin;

cout << "~ Enter any number : ";
cin >> n;

cout <<endl<<"~ Decimal value to Binary value : ";
while(n>0)
{

bin = n%2;
n=n/2;
cout << bin;

}

return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\8.exe
~ Enter any number : 7
~ Decimal value to Binary value : 111

Process exited after 12.6 seconds with return value 0
Press any key to continue . . .

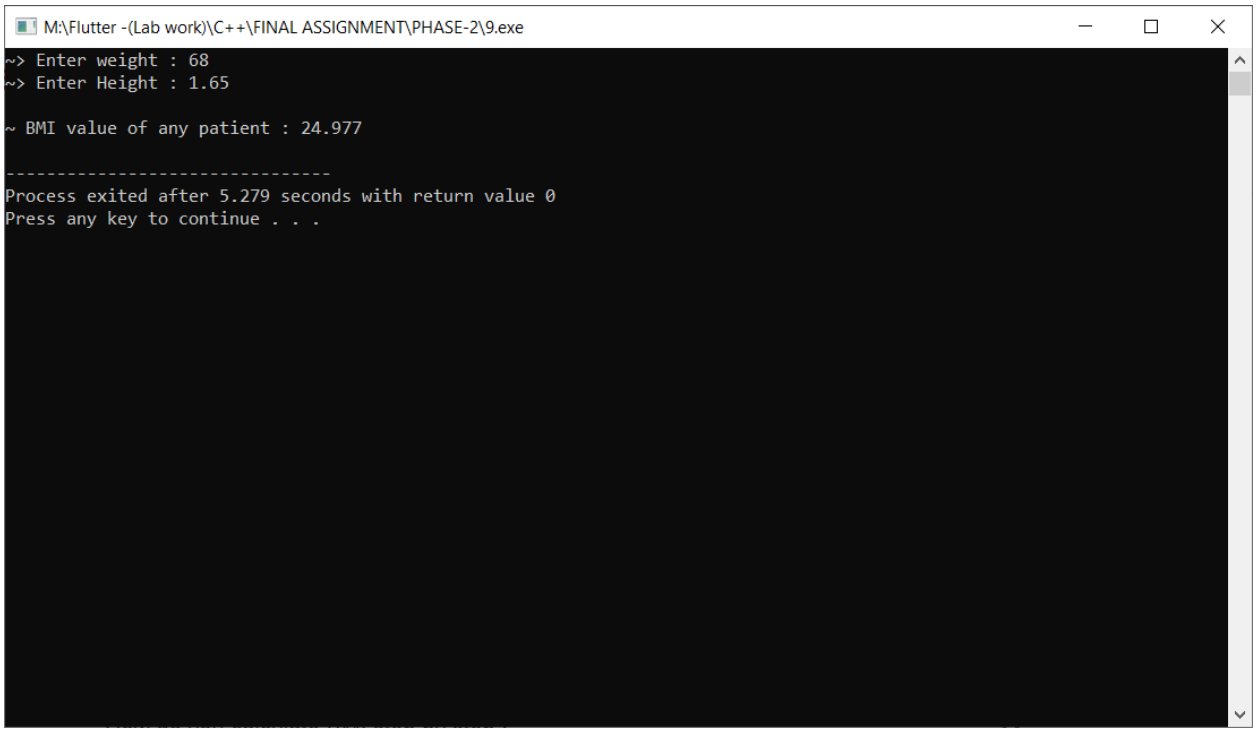
Practical-9

Aim: A Hospital Staff needs a BMI Calculator for rapidly check BMI values of any patient. Design a BMI Calculator by using C++ to provide this facility to all Hospital staff members.

Program:

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

int main()
{
float weight , height , BMI ;

cout << "~> Enter weight : ";
cin >>weight;

cout << "~> Enter Height : ";
cin >> height;

// BMI = Body Mass Index
BMI =weight/(height*height);                    // BMI = kg^2/m^2;

cout <<endl<< "BMI value of any patient : "<<BMI <<endl;

return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\9.exe
~> Enter weight : 68
~> Enter Height : 1.65
~ BMI value of any patient : 24.977

Process exited after 5.279 seconds with return value 0
Press any key to continue . . .

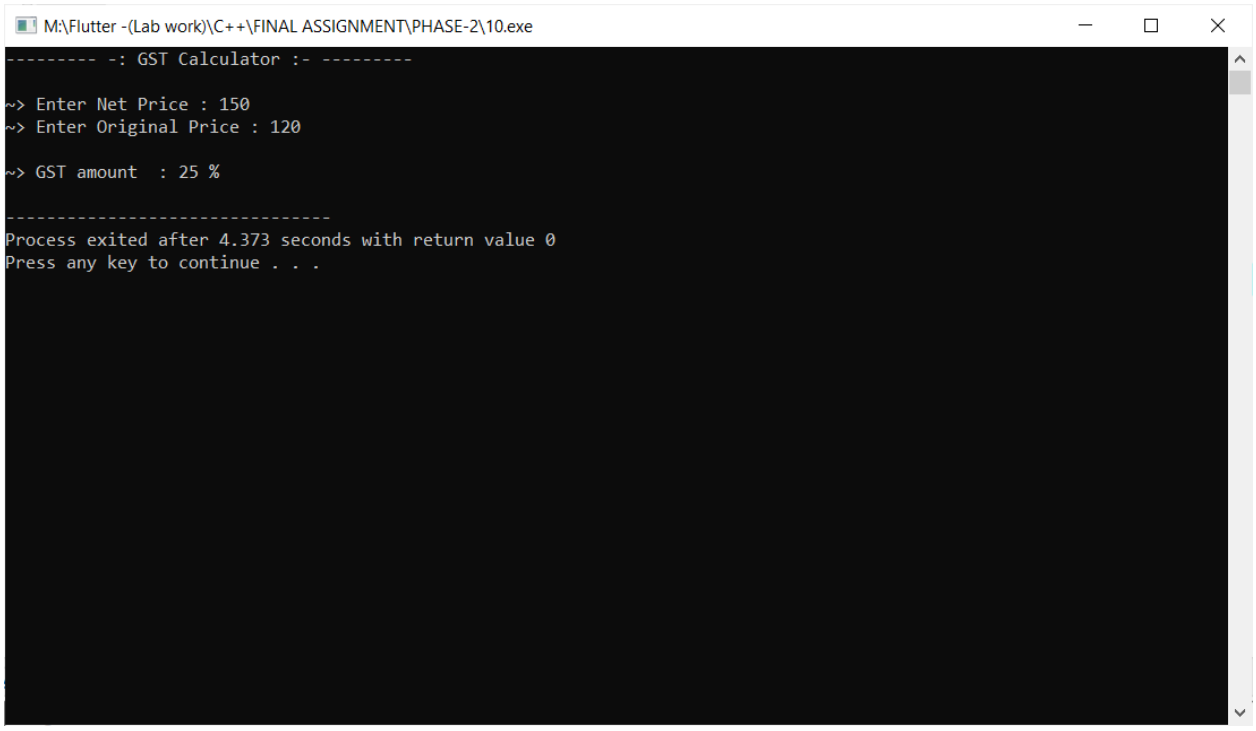
Practical-10

Aim: An average consumer established his own business shop. He went to C.A for maintain all his accounts related queries. Now, help that C.A to build GST calculator for ease of calculation.

Program:

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

int main()
{

int GST , GST_Amount;
int price,cost;

cout <<"--------- -: GST Calculator :- ---------"<<endl;
cout << endl<<"~> Enter Net Price : ";
cin >> price;
cout << "~> Enter Original Price : ";
cin >> cost;

//GST.Amount = Net price - Original price

GST_Amount = price - cost;
GST =(GST_Amount * 100)/cost;
cout <<endl<< "~> GST amount  : "<<GST <<" % " <<endl;

return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\10.exe
--------- -: GST Calculator :- ---------
~> Enter Net Price : 150
~> Enter Original Price : 120
~> GST amount : 25 %

Process exited after 4.373 seconds with return value 0
Press any key to continue . . .

Practical-11

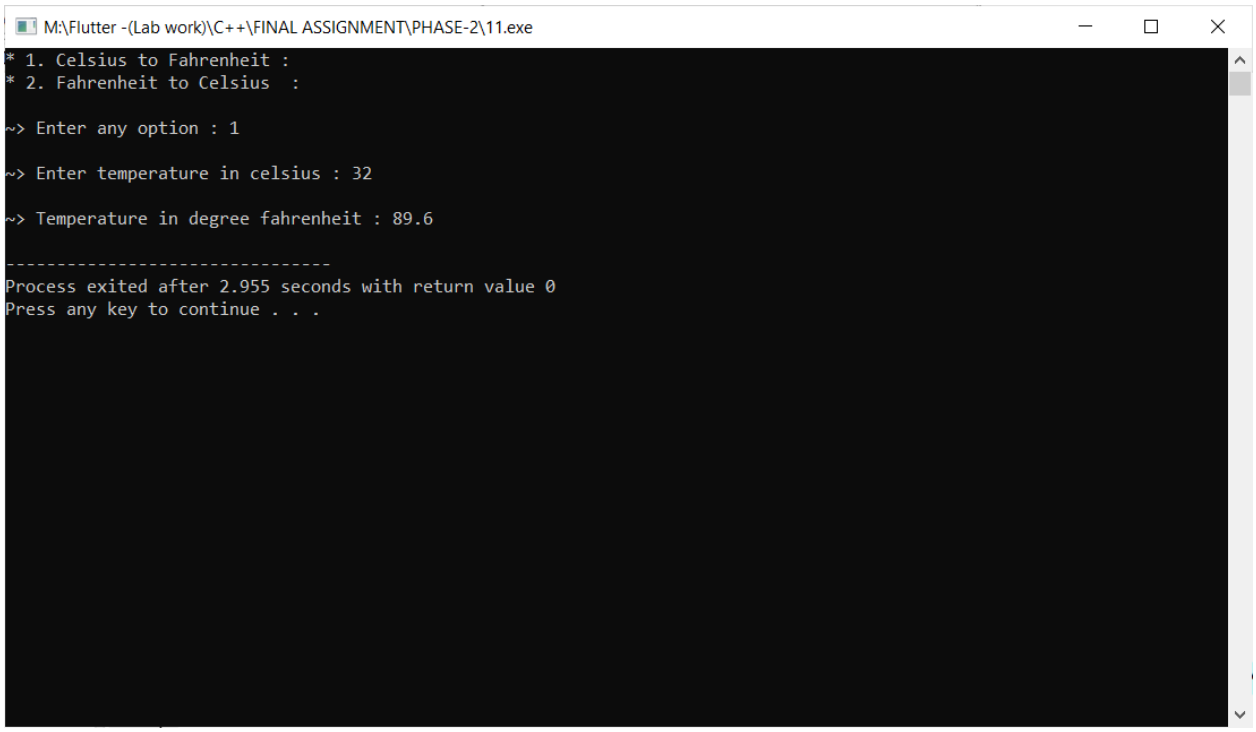
Aim: A Mountain Tracker needs a Temperature Converter for maintaining his tracking at Mount Everest. Build temperature converter for that tracker using C++ as your primary language.

Program:

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

int main()
{

float celsius ,fahrenheit ,option;

cout << "* 1. Celsius to Fahrenheit : "<<endl;
cout << "* 2. Fahrenheit to Celsius  : "<<endl;

cout <<endl<< "~> Enter any option : ";
cin >> option ;

//convert celsius into fahernheit

if(option == 1)
{
cout <<endl<< "~> Enter temperature in celsius : ";
cin >> celsius;

fahrenheit = (celsius * 1.8)+32;

cout << endl<<"~> Temperature in degree fahrenheit : "<<fahrenheit <<endl;

}

//convert  fahrenheit into celsius
```

```
else if(option == 2)
{
cout <<endl<< "~> Enter temperature in fahrenheit  : ";
cin >> fahrenheit ;

//(9/5)=1.8
celsius = (fahrenheit-32)/1.8;

 cout <<endl<< "~> Temperature in celsius  : "<<celsius  <<endl;
}
else
{
cout << "~> Wrong input...";
}

return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\11.exe
* 1. Celsius to Fahrenheit :
* 2. Fahrenheit to Celsius :
~> Enter any option : 1
~> Enter temperature in celsius : 32
~> Temperature in degree fahrenheit : 89.6

Process exited after 2.955 seconds with return value 0
Press any key to continue . . .

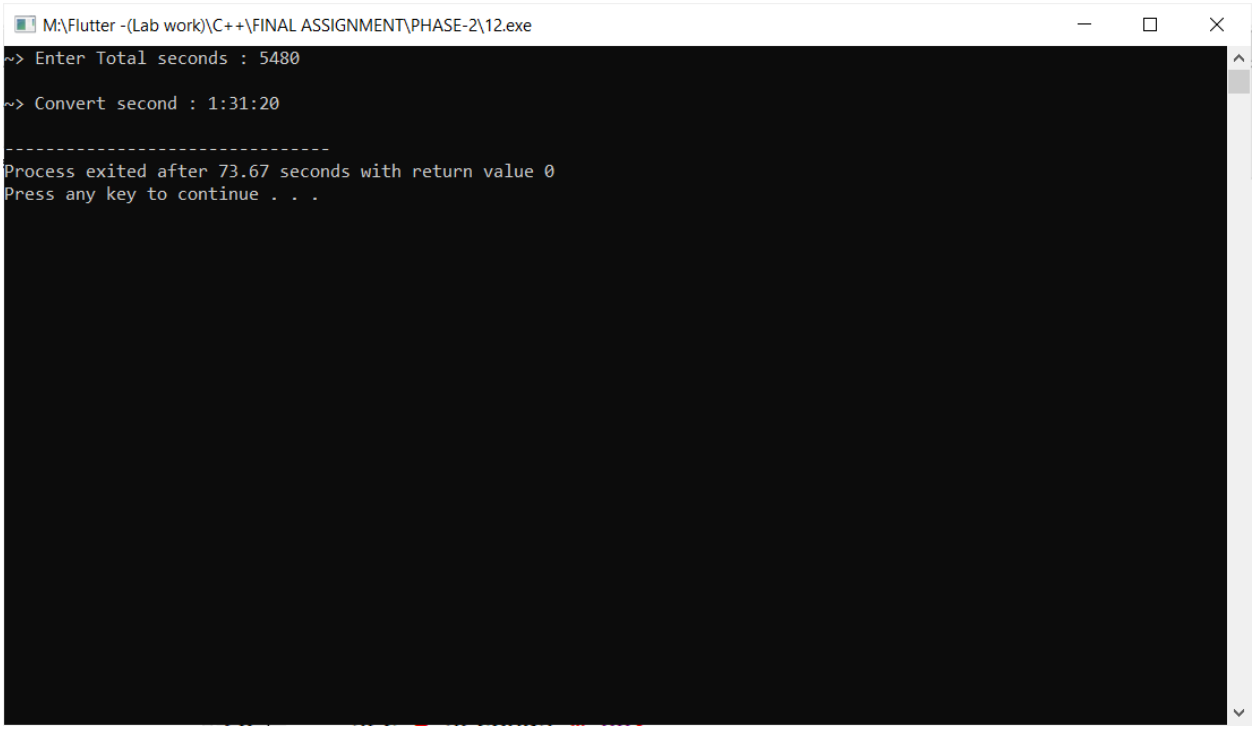
Practical-12

Aim: Nishant trapped in a cyber game, in which he only gets some random amount of seconds for determining at which exact time he has to leave that game. Wite a C++ program which converts that seconds into HH:MM:SS format.

Program:

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

int main()
{

int seconds , hr , min , sec ;

cout << "~> Enter Total seconds : ";
cin >> seconds;

hr = seconds / 3600;
min = (seconds/60)%60;
sec = seconds % 60;

cout <<endl<< "~> Convert second : "<<hr <<":" <<min <<":" <<sec <<endl;

return 0:

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\12.exe
~> Enter Total seconds : 5480
~> Convert second : 1:31:20

Process exited after 73.67 seconds with return value 0
Press any key to continue . . .

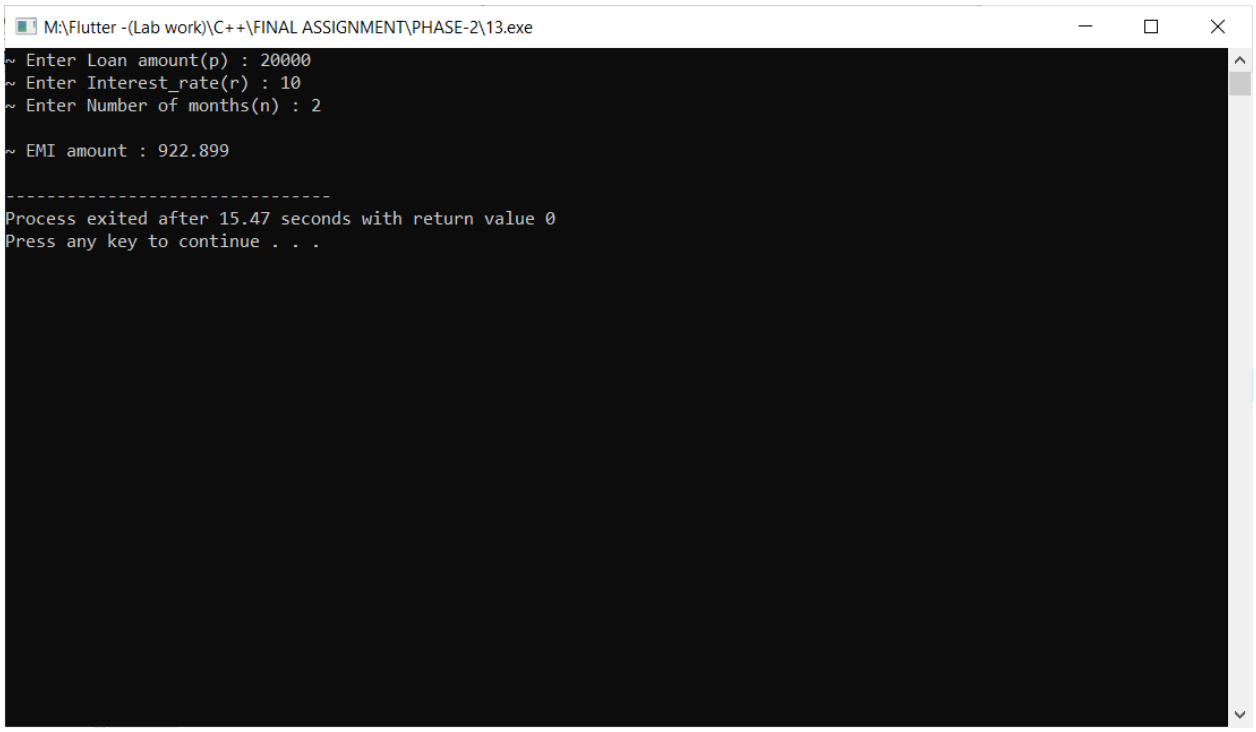
Practical-13

Aim: Design an EMI Calculator for deciding accurate EMI price of ex-showroom car models to help an executive to easily guide his consumers. Use C++ to build this type of system.

Program:

```
#include<iostream>
#include<math.h>
using namespace std;

int main()
{

float EMI ,p,r,n;

cout << "~ Enter Loan amount(p) : ";
cin >> p;
cout << "~ Enter Interest_rate(r) : ";
cin >> r;
cout << "~ Enter Number of months(n) : ";
cin >> n;

r= r/(12*100);
n=n*12;
EMI = (p*r*pow(1+r,n))/(pow(1+r,n)-1);
cout <<endl<< "~ EMI amount : "<<EMI <<endl;

return 0;

}
```

Output:


M:\Flutter -(Lab work)\C++\FINAL ASSIGNMENT\PHASE-2\13.exe
~ Enter Loan amount(p) : 20000
~ Enter Interest_rate(r) : 10
~ Enter Number of months(n) : 2
~ EMI amount : 922.899

Process exited after 15.47 seconds with return value 0
Press any key to continue . . .

Practical-14

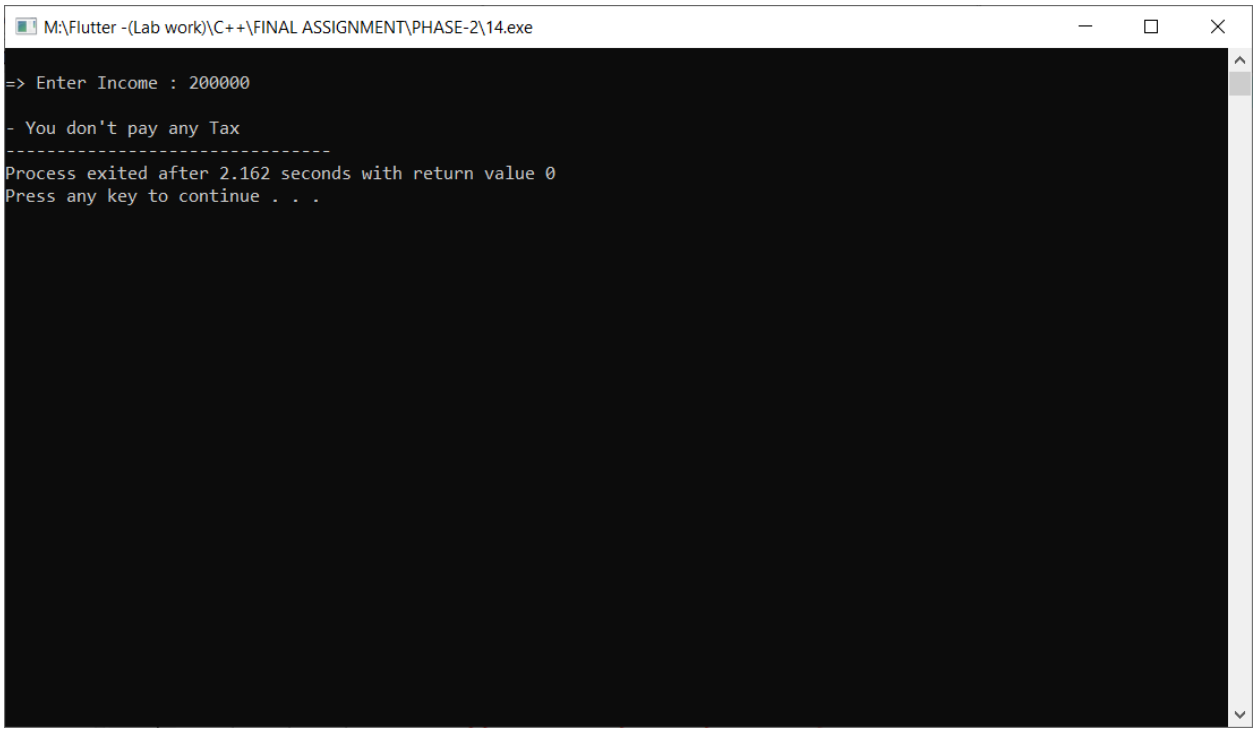
Aim: Develop a solution for Income Tax Department for identify which person have to pay how much tax basis on his/her income using C++ and pre-defined percentage criteria for tax calculation.

Program:

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

class Tax_department
{

private:
     int tax,n;

public:

    Tax_department()
{
cout <<endl<<"=> Enter Income : ";
cin  >>n;

if(n<=200000)
{
cout <<endl<<"- You don't pay any Tax";
}
else if(n>=200000 && n<=500000)
{
tax=(n-200000)/10;
cout <<endl<<"- Your Tax amount  : "<<tax;
}
else if(n>=500000 && n<=1000000)
{
tax=((n-500000)/10*2)+30000;
```

```
cout <<endl<<"- Your Tax amount  : "<<tax;
}
else
{
tax=((n-1000000)/10*3)+130000;
cout <<endl<<"- Your Tax amount  : "<<tax;
}
}
};

int main()
{
Tax_department() ;
}
```

Output:



Practical-15

Aim: A new OLED Smart TV as a gift from a bussiness with emersive 32*52 inch size is arrived at occation of Dashera in the house of Mayer. Now Mayer has to decide that how much of minimum wll area (width * hight) will be required to fit that new TV so that evevn after applying that TV, 10 inch of margin still available around TV. Help Mayer to indentify the solution by using c++.

Program:

```
#include<stdio.h>
#include<string.h>
using namespace std;

class Mayer
{

private:
int w=32, h=52;

public:

void solution()
{

cout<<endl<<"=> Smart TV (width * hight) is 32*52 inch"<<endl;
cout<<"=> Minimum Wall Area is cover = "<<w*h<<endl<<endl;
cout<<"=> Wall Minimum H*W to around tleast 10 Inches Margin."<<endl;

cout<<"=> Wall H*W is = "<<w+20<<" * "<<h+20<<endl;
```

```
 cout<<"=> Total Area That covered TV is = "<<(w+20)*(h+20)<<endl;

}

};

int main()
{
	Mayer m1;

	m1.solution();

	return 0;
}
```

Output: