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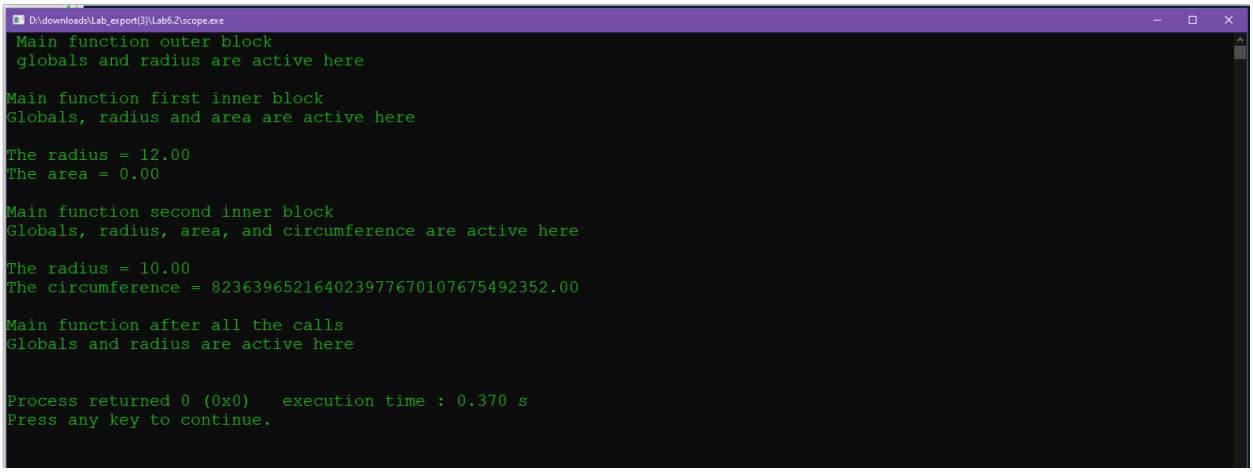
Lab_6.2

6.5

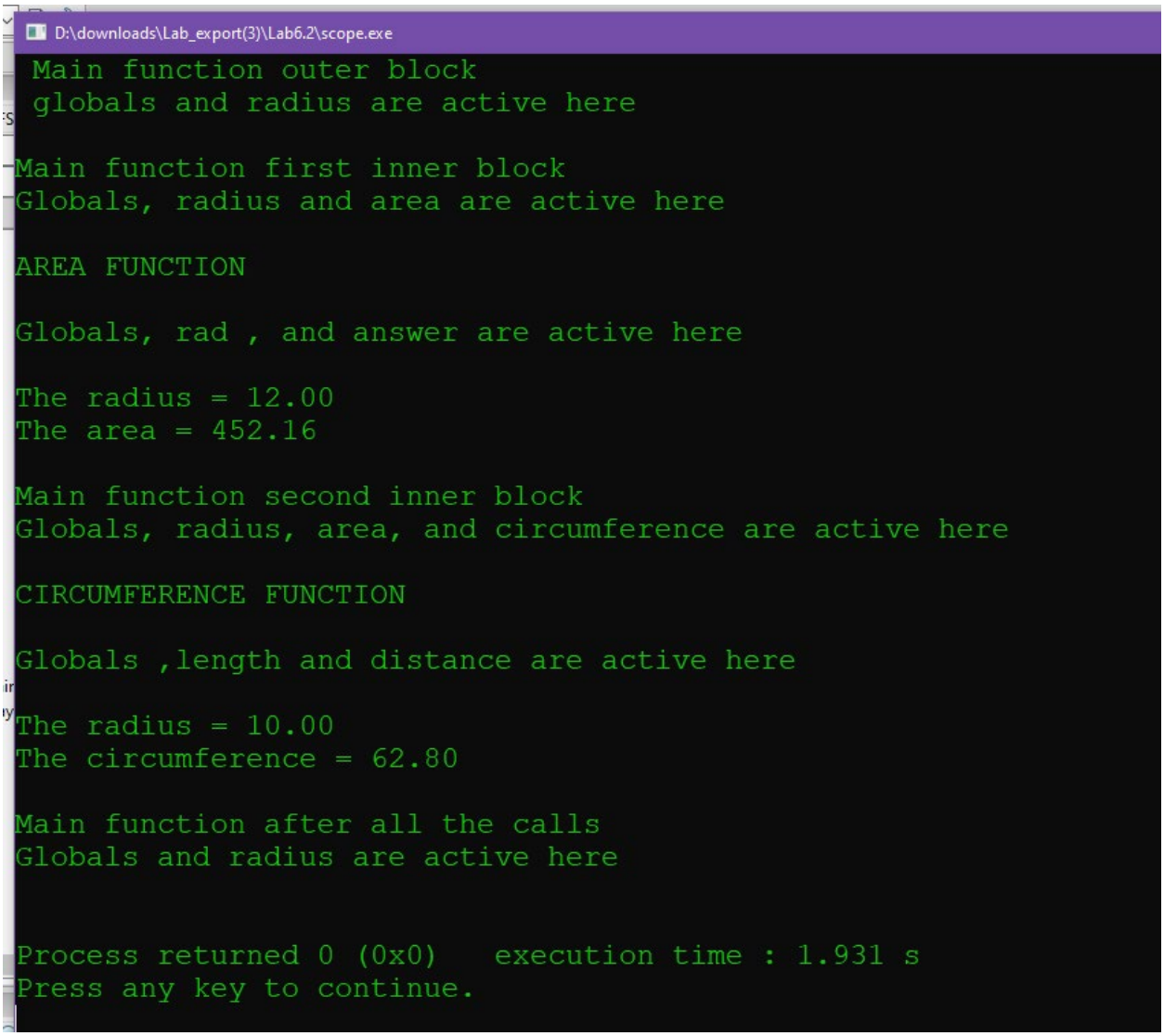
Exercise 1

GLOBAL	**Main**	**Main (inner 1)**	**Main (inner 2)**	**Area**	**Circumference**
const PI	Float radius	Float area	Float radius	Float rad	Float length
Const RATE			Float circumference	Float answer	Float distance
Void findArea					
Void findCircumference					

Exercise 2



Exercise 3



Exercise 4

Radius will be 10

Radius will be 12

This is because of variable scoping also radius is re defined in the second block

Exercise 5/source code

#include <iostream>

#include <iomanip>

using namespace std;

```
// This program will demonstrate the scope rules.

// PLACE YOUR NAME HERE

const double PI = 3.14;
const double RATE = 0.25;

void findArea(float, float&);
void findCircumference(float, float&);

int main()
{
	cout << fixed << showpoint << setprecision(2);
	float radius = 12;

	cout << " Main function outer block" << endl;
	cout << " globals and radius are active here" << endl << endl;

	{
		float area;

		cout << "Main function first inner block" << endl;
```

```
        cout << "Globals, radius and area are active here" << endl << endl;

        // Fill in the code to call findArea here
        findArea(radius,area);

        cout << "The radius = " << radius << endl;
        cout << "The area = " << area << endl << endl;
    }

    {
        float radius = 10;
        float circumference;

        cout << "Main function second inner block" << endl;
        cout << "Globals, radius, area, and circumference are active here" << endl <<
endl;

        // Fill in the code to call findCircumference here
        findCircumference(radius,circumference);

        cout << "The radius = " << radius << endl;
        cout << "The circumference = " << circumference << endl << endl;
    }
```

```
	cout << "Main function after all the calls" << endl;
	cout << "Globals and radius are active here" << endl << endl;

	return 0;
}

//	*********************************************************************
//	findArea
//
//	task:	This function finds the area of a circle given its radius
//	data in:  radius of a circle
//	data out: answer (which alters the corresponding actual parameter)
//
//	*********************************************************************

void findArea(float rad, float& answer)
{
	cout << "AREA FUNCTION" << endl << endl;
	cout << "Globals, rad , and answer are active here" << endl << endl;

	// FILL in the code, given that parameter rad contains the radius, that
	// will find the area to be stored in answer
```

```
        answer=PI*(rad*rad);
}

//
        ************************************************************************
******
//      findCircumference
//
//      task:     This function finds the circumference of a circle given its radius
//      data in:  radius of a circle
//      data out: distance (which alters the corresponding actual parameter)
//
//
        ************************************************************************
*****

void findCircumference(float length, float& distance)
{
        cout << "CIRCUMFERENCE FUNCTION" << endl << endl;
        cout << "Globals ,length and distance are active here" << endl << endl;

        // FILL in the code, given that parameter length contains the radius,
        // that will find the circumference to be stored in distance
```

distance=2*length*PI;

}

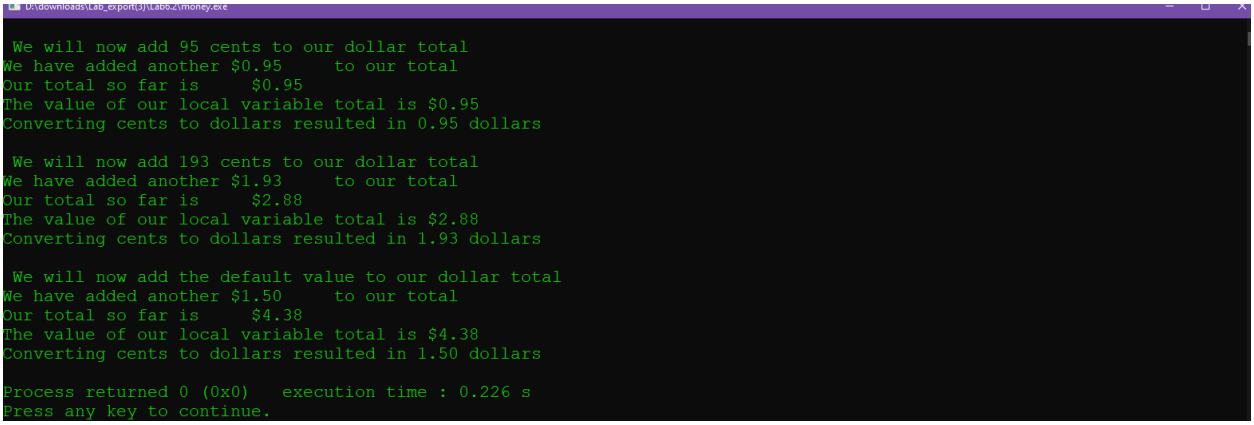
6.6

Exercise 1

$1.93

However right now it just prints 0 because things haven't been defined

Exercise 2



Source Code

#include <iostream>

#include <iomanip>

using namespace std;

// PLACE YOUR NAME HERE

void normalizeMoney(float& dollars, int cents = 150);

```
// This function takes cents as an integer and converts it to dollars
// and cents. The default value for cents is 150 which is converted
// to 1.50 and stored in dollars

int main()
{
   int cents;
   float dollars;

   cout << setprecision(2) << fixed << showpoint;

   cents = 95;
   cout << "\n We will now add 95 cents to our dollar total\n";

   //      Fill in the code to call normalizeMoney to add 95 cents
   normalizeMoney(dollars,cents);

   cout << "Converting cents to dollars resulted in " << dollars << " dollars\n";

   cout << "\n We will now add 193 cents to our dollar total\n";

   // Fill in the code to call normalizeMoney to add 193 cents
   cents=193;
```

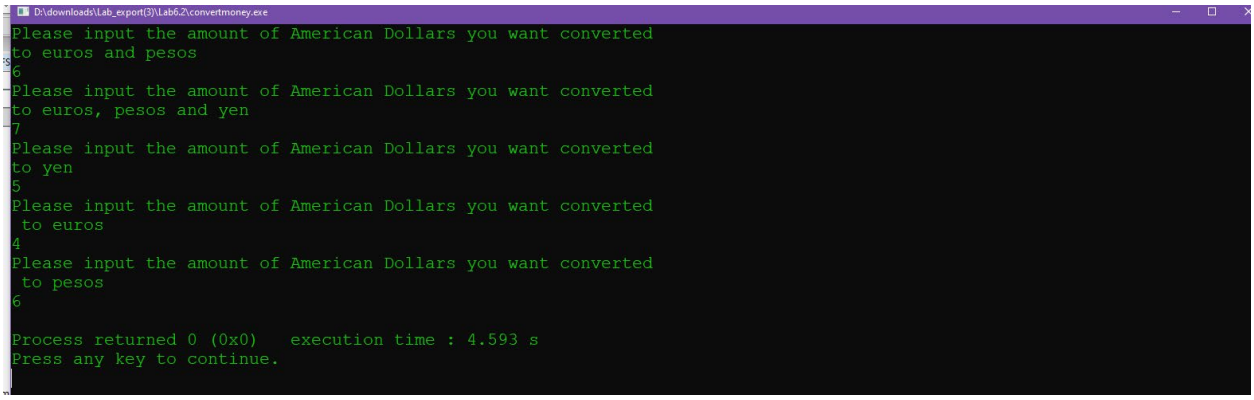
```
   normalizeMoney(dollars,cents);

   cout << "Converting cents to dollars resulted in " << dollars << " dollars\n";

   cout << "\n We will now add the default value to our dollar total\n";

   // Fill in the code to call normalizeMoney to add the default value of cents
   normalizeMoney(dollars);

   cout << "Converting cents to dollars resulted in " << dollars << " dollars\n";

   return 0;
}

//*************************************************************************
***
//        normalizeMoney
//
//        task:      This function is given a value in cents. It will convert cents
//                   to dollars and cents which is stored in a local variable called
//                   total which is sent back to the calling function through the
//                   parameter dollars. It will keep a running total of all the money
//                   processed in a local static variable called sum.
```

```
//
//          data in:  cents which is an integer
//          data out: dollars (which alters the corresponding actual parameter)
//
//*************************************************************************
*****

void normalizeMoney(float& dollars, int cents)
{
   static float total = 0;

   // Fill in the definition of sum as a static local variable
   static float sum = 0.0;

   // Fill in the code to convert cents to dollars
   dollars=cents*.01;

   total = total + dollars;
   sum += dollars;

   cout << "We have added another $" << dollars << "          to our total" << endl;
   cout << "Our total so far is $" << sum << endl;
```

```
    cout << "The value of our local variable total is $" << total << endl;
}
```

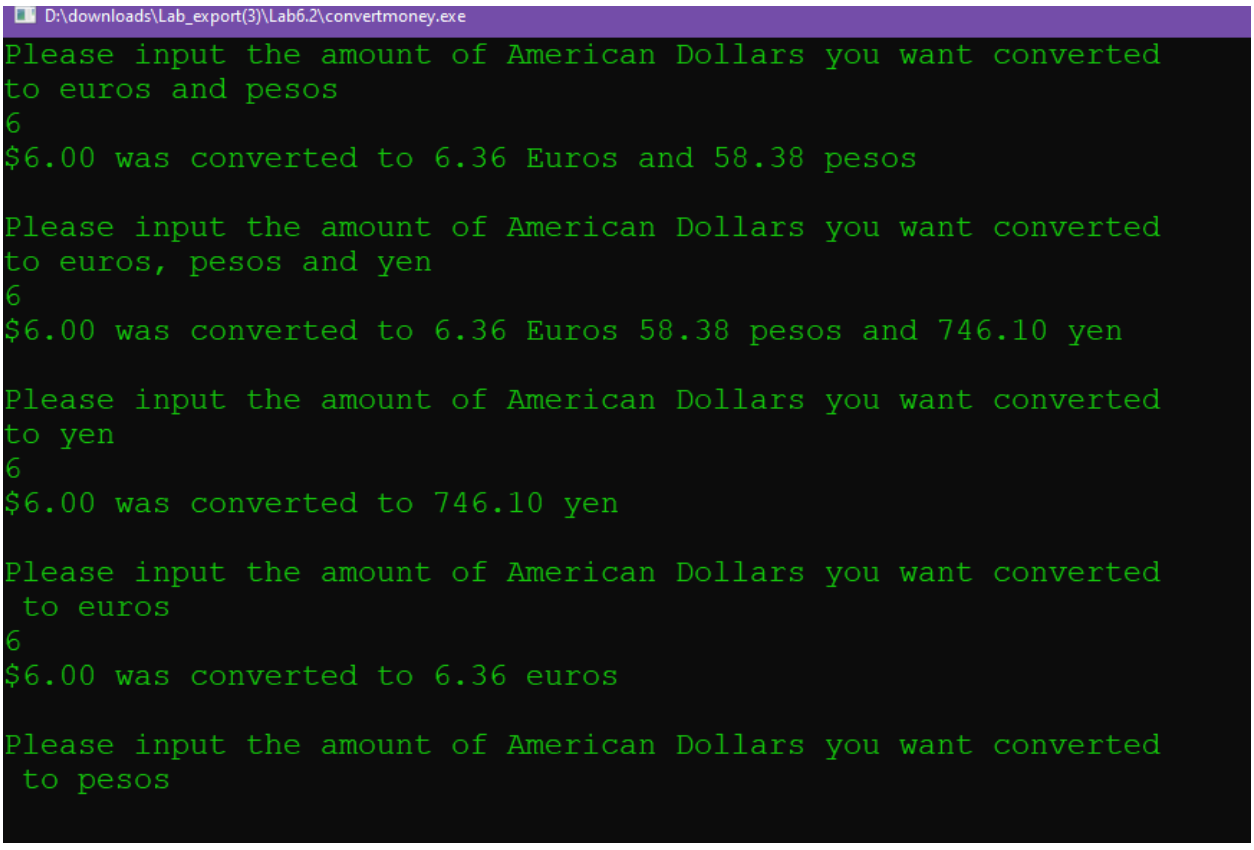
6.7

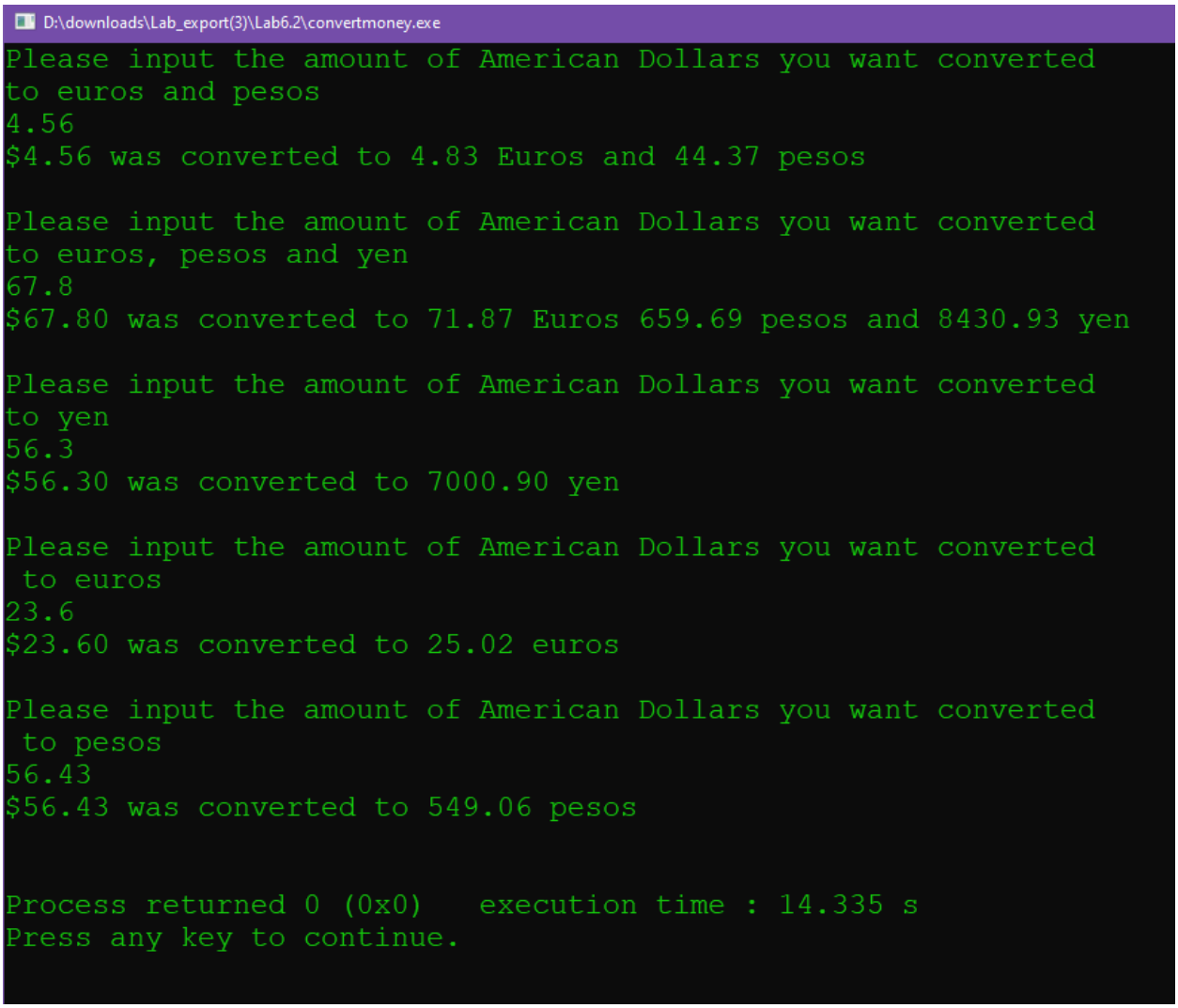
Exercise 1



I assume scope and variable passing was not done correctly

Exercise 2





Source code

```
#include <iostream>

#include <iomanip>

using namespace std;


// This program will input American money and convert it to foreign currency


// PLACE YOUR NAME HERE
```

```
// Prototypes of the functions
void convertMulti(float dollars, float& euros, float& pesos);
void convertMulti(float dollars, float& euros, float& pesos, float& yen);
float convertToYen(float dollars);
float convertToEuros(float dollars);
float convertToPesos(float dollars);

const float TOEUROS=1.06;
const float TOPESOS=9.73;
const float TOYEN=124.35;

int main()
{
   float dollars;
   float euros;
   float pesos;
   float yen;

   cout << fixed << showpoint << setprecision(2);

   cout << "Please input the amount of American Dollars you want converted "
        << endl;
   cout << "to euros and pesos" << endl;
```

```
cin >> dollars;

// Fill in the code to call convertMulti with parameters dollars, euros, and pesos
convertMulti(dollars,euros,pesos);

// Fill in the code to output the value of those dollars converted to both euros
// and pesos

cout << "Please input the amount of American Dollars you want converted\n";
cout << "to euros, pesos and yen" << endl;
cin >> dollars;

// Fill in the code to call convertMulti with parameters dollars, euros, pesos and yen
convertMulti(dollars,euros,pesos,yen);

// Fill in the code to output the value of those dollars converted to euros,
// pesos and yen

cout << "Please input the amount of American Dollars you want converted\n";
cout << "to yen" << endl;
cin >> dollars;

// Fill in the code to call convertToYen
```

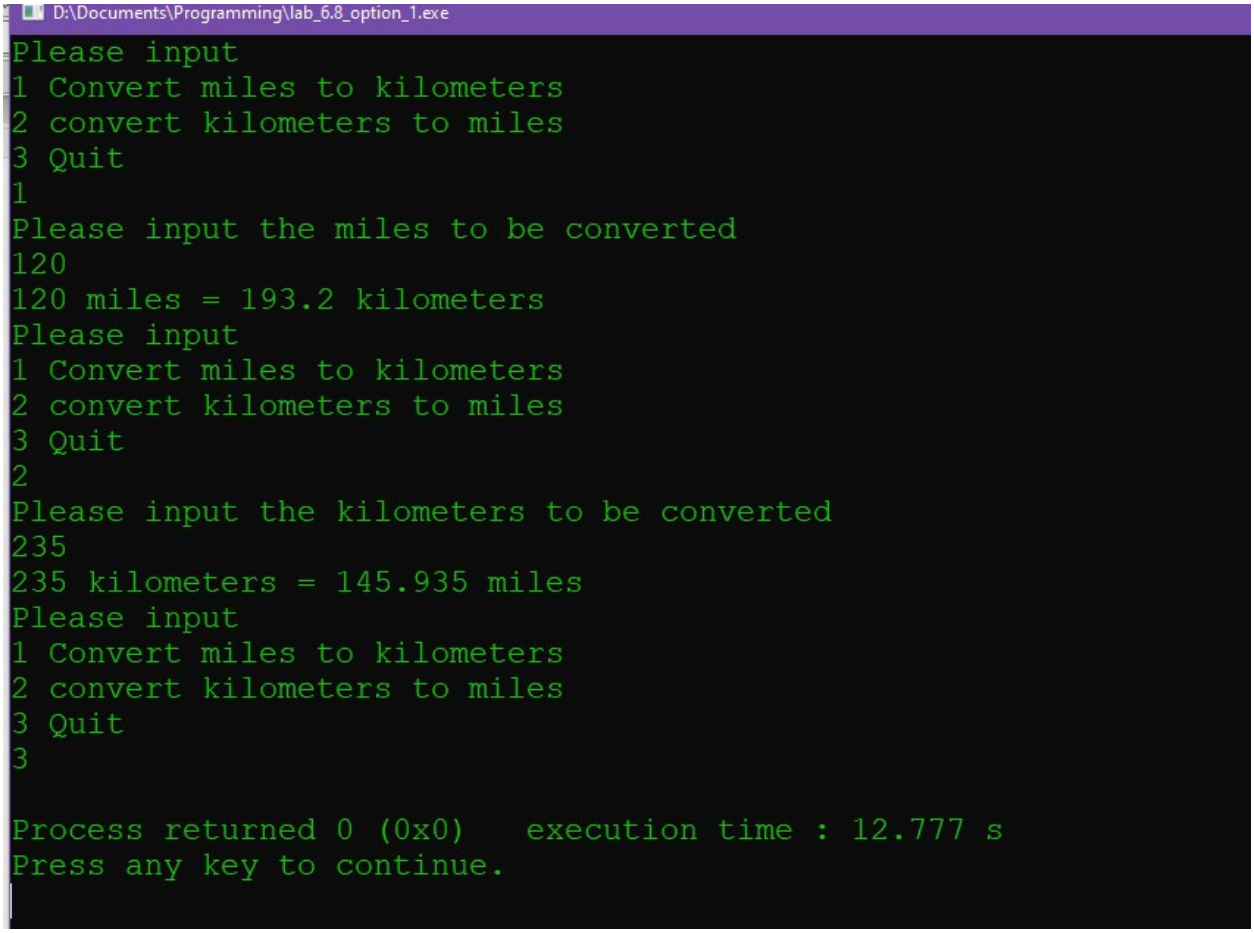
```
convertToYen(dollars);

// Fill in the code to output the value of those dollars converted to yen

cout << "Please input the amount of American Dollars you want converted\n";
cout << " to euros" << endl;
cin >> dollars;

// Fill in the code to call convert ToEuros
convertToEuros(dollars);

// Fill in the code to output the value of those dollars converted to euros

cout << "Please input the amount of American Dollars you want converted\n";
cout << " to pesos " << endl;
cin >> dollars;

// Fill in the code to call convertToPesos
convertToPesos(dollars);

// Fill in the code to output the value of those dollars converted to pesos

return 0;
```

```
}

// All of the functions are stubs that just serve to test the functions
// Replace with code that will cause the functions to execute properly

//
        ************************************************************************
**
//      convertMulti
//
//      task:     This function takes a dollar value and converts it to euros
//                and pesos
//      data in:  dollars
//      data out: euros and pesos
//
//
        ************************************************************************
*

void convertMulti(float dollars, float& euros, float& pesos)
{
   pesos=dollars*TOPESOS;
   euros=dollars*TOEUROS;
```

```
    cout<< "$"<< dollars
        << " was converted to " <<euros<<" Euros and "<<pesos<<" pesos "<< endl << endl;


}


//          ***************************************************************************
//          convertMulti
//
//          task:       This function takes a dollar value and converts it to euros
//                      pesos and yen
//          data in:  dollars
//          data out: euros pesos yen
//
//          ***************************************************************************


void convertMulti
```

6.8

Option 1



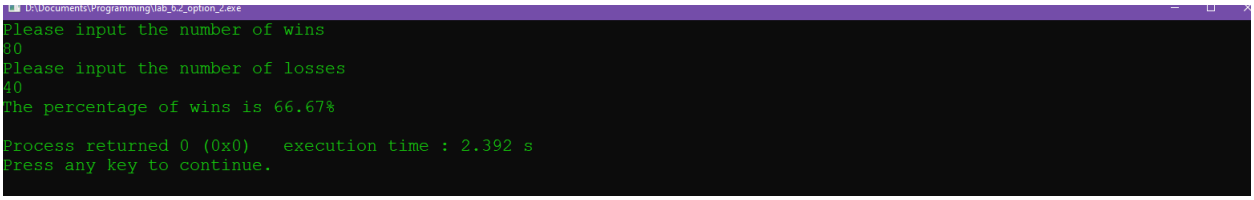
Source Code

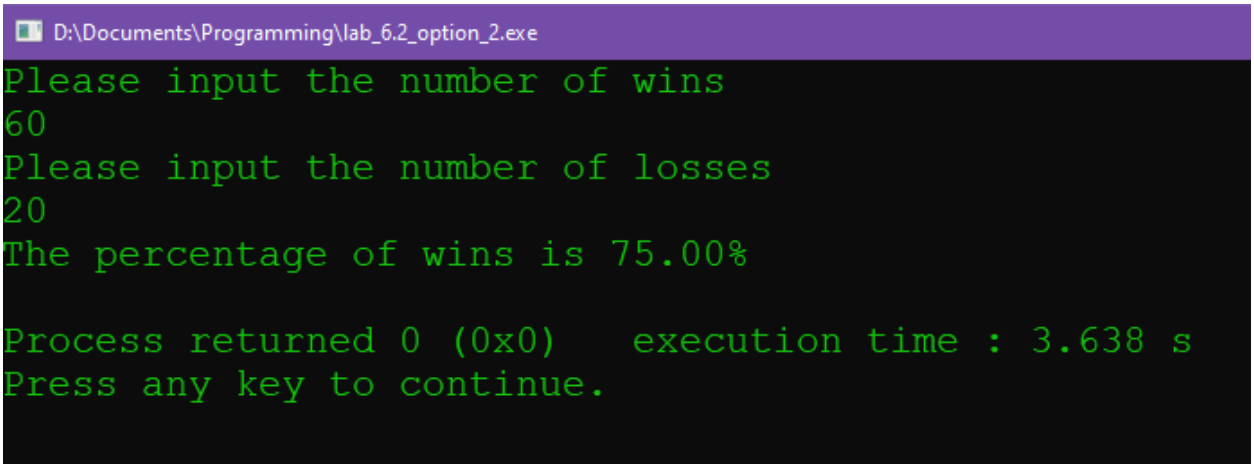
```
#include <iostream>


using namespace std;

const float TOKM=.621;

const float TOMI=1.61;

float kmtomi();

float mitokm();

float kmtomi(float kilo)

{
```

```
    float miles=0;
    miles=kilo*TOKM;
    return miles;
}

float mitokm(float miles)
{
    float kilo=0;
    kilo=miles*TOMI;
    return kilo;
}
int main ()
{
    int choice=4;
    float miles=0;
    float kilo=0;
    while (choice!=3)
    {
        cout<<"Please input"<<endl<<"1 Convert miles to kilometers"<<endl<<"2 convert
kilometers to miles"<<endl<<"3 Quit"<<endl;
        cin>>choice;
        if(choice==1)
        {
```

```
        cout<<"Please input the miles to be converted"<<endl;
        cin>>miles;
        kilo=mitokm(miles);
        cout<<miles<<" miles = "<<kilo<<" kilometers"<<endl;
      }
      else  if(choice==2)
      {
        cout<<"Please input the kilometers to be converted"<<endl;
        cin>>kilo;
        miles=kmtomi(kilo);
        cout<<kilo<<" kilometers = "<<miles<<" miles"<<endl;
      }
      else if (choice==3)
      {
        break;
      }
   }


   return 0;
}
```

Option 2





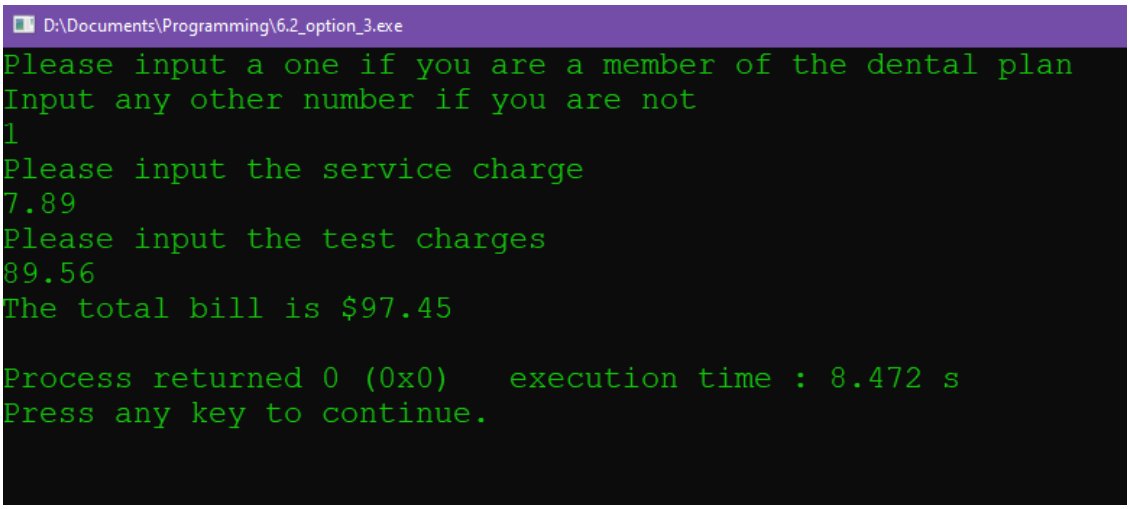
Soure Code

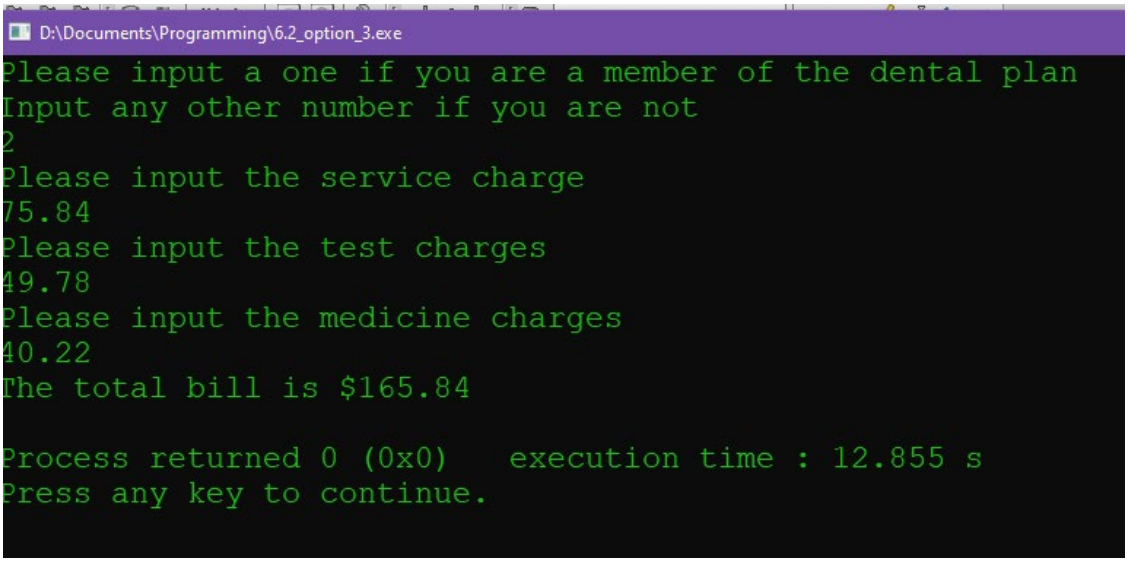
```
#include <iostream>

#include <iomanip>



using namespace std;

int num_wins();

int num_losses();

float percentage(int wins,int losses);


int num_wins()

{

   //get wins

   int amnt=0;
```

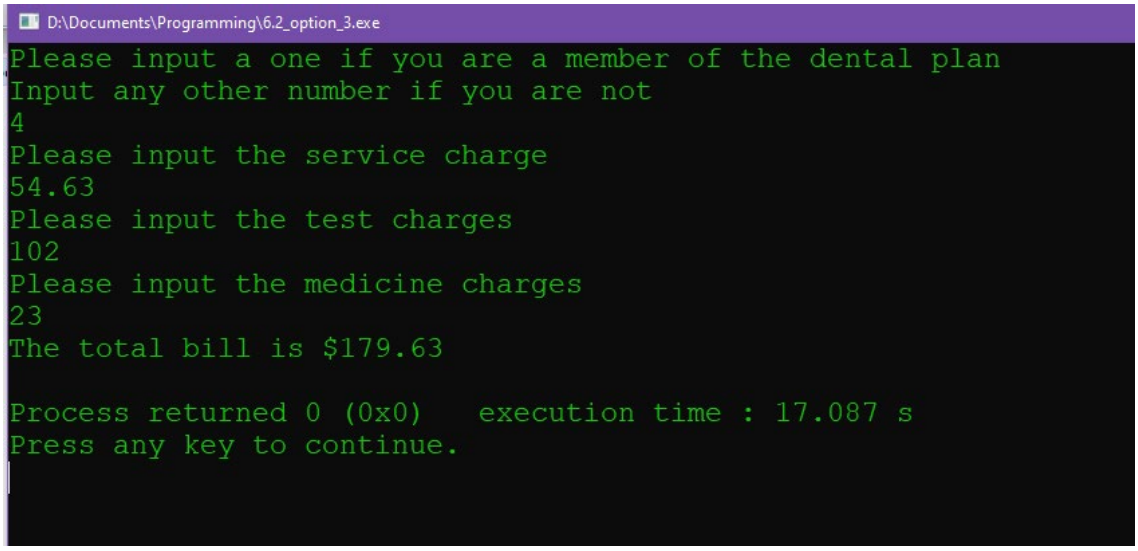
```
    cin>>amnt;
    return amnt;

}
int num_losses()
{
    //get losses
    int amnt=0;
    cin>>amnt;
    return amnt;

}
float percentage(int wins,int losses)
{
    //do calculations

    float total=(float) wins+ (float) losses;
    float ratio=((float) wins/total)*100;
    return ratio;
}


int main()
```

```
{
    //define
    int wins=0;
    int losses=0;
    float percent=0;



    cout<<"Please input the number of wins"<<endl;
    wins=num_wins();
    cout<<"Please input the number of losses"<<endl;
    losses=num_losses();
    percent=percentage(wins,losses);
    cout<<fixed<<"The percentage of wins is "<<setprecision(2)<<percent<<"%"<<endl;
//finish and print



}
```

Option 3


D:\Documents\Programming\6.2_option_3.exe
Please input a one if you are a member of the dental plan
Input any other number if you are not
1
Please input the service charge
7.89
Please input the test charges
89.56
The total bill is $97.45
Process returned 0 (0x0)   execution time : 8.472 s
Press any key to continue.


D:\Documents\Programming\6.2_option_3.exe
Please input a one if you are a member of the dental plan
Input any other number if you are not
2
Please input the service charge
75.84
Please input the test charges
49.78
Please input the medicine charges
40.22
The total bill is $165.84
Process returned 0 (0x0)   execution time : 12.855 s
Press any key to continue.


D:\Documents\Programming\6.2_option_3.exe
Please input a one if you are a member of the dental plan
Input any other number if you are not
4
Please input the service charge
54.63
Please input the test charges
102
Please input the medicine charges
23
The total bill is $179.63
Process returned 0 (0x0)   execution time : 17.087 s
Press any key to continue.

Source Code

```
#include <iostream>
#include <iomanip>

using namespace std;
float total_bill(float service,float test);
float total_bill(float service,float test,float medicine);
float total_bill(float service,float test)
{
   float total=service+test;
   return total;

}
float total_bill(float service,float test,float medicine)
{
   float total=service+test+medicine;
   return total;

}

int main()
{
   int plan=0;
```

```
    float service=0;
    float test=0;
    float medicine=0;
    float total=0;
    //init
    cout<<"Please input a one if you are a member of the dental plan"<<endl<<"Input any other
number if you are not"<<endl;
    cin>>plan;
    cout<<"Please input the service charge"<<endl;
    cin>>service;
    cout<<"Please input the test charges"<<endl;
    cin>>test;
    if (plan==1)
       //if a member
    {
       total=total_bill(service,test);
    }
    else
    {
       cout<<"Please input the medicine charges"<<endl;
       cin>>medicine;
       total= total_bill(service,test,medicine);
    }
```

```
    cout<<"The total bill is $"<<fixed<<setprecision(2)<<total<<endl;
}
```