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Dr. Wang

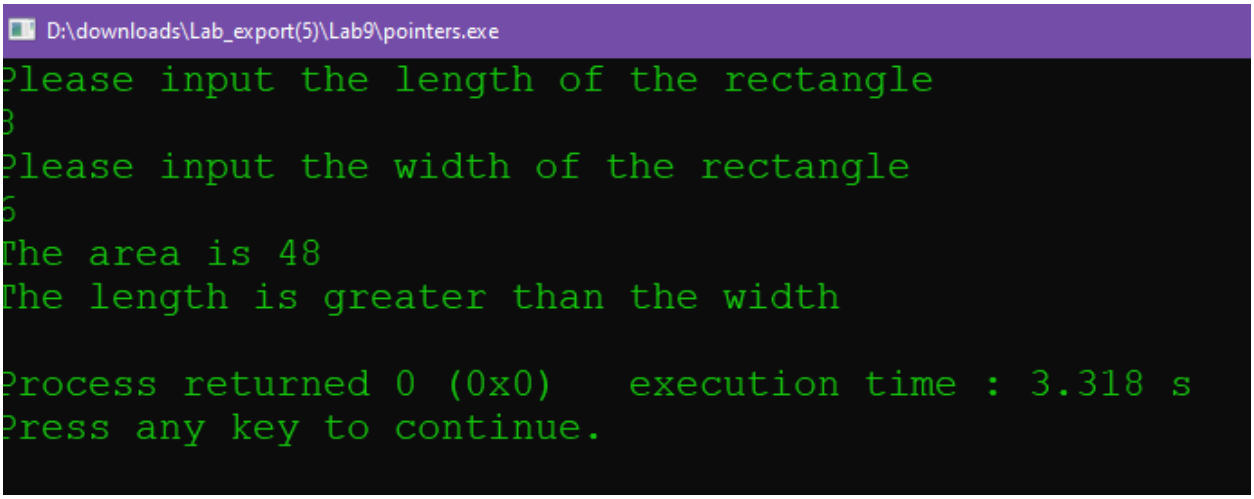
COSC 120

1 December 2020

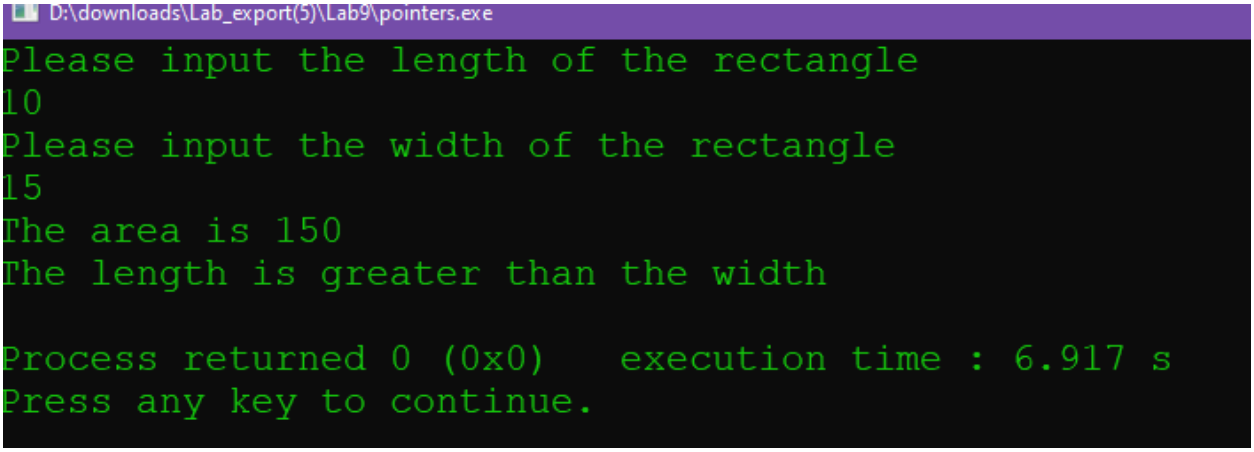
Lab 9

9.1

1.



2.



IT says that the length is greater than the wdith

Source Code:

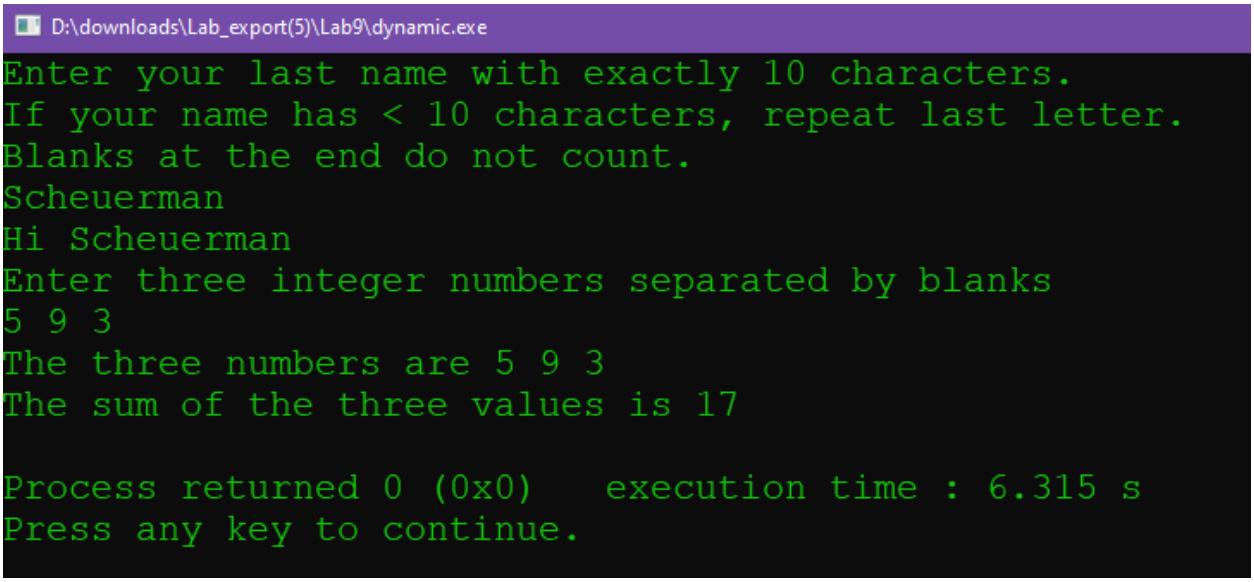
```
// This program demonstrates the use of pointer variables
// It finds the area of a rectangle given length and width
// It prints the length and width in ascending order

// PLACE YOUR NAME HERE

#include <iostream>
using namespace std;

int main()
{

   int length;    // holds length
   int width;     // holds width
   int area;      // holds area

   int *lengthPtr = nullptr;      // int pointer which will be set to point to length
   int *widthPtr = nullptr;       // int pointer which will be set to point to width

   cout << "Please input the length of the rectangle" << endl;
   cin >> length;

   cout << "Please input the width of the rectangle" << endl;
```

```
    cin >> width;

    // Fill in code to make lengthPtr point to length (hold its address)

    lengthPtr=&length;
    // Fill in code to make widthPtr point to width (hold its address)
   widthPtr=&width;
    area =(*lengthPtr)*(*widthPtr);     // Fill in code to find the area by using only the pointer variables

    cout << "The area is " << area << endl;

    if (lengthPtr>widthPtr)
    {
       // Fill in the condition length > width by using only the pointer variables)
       cout << "The length is greater than the width" << endl;
    }

    else if (widthPtr>lengthPtr)
    {
       // Fill in the condition of width > length by using only the pointer variables)
       cout << "The width is greater than the length" << endl;
    }
```

```
    else
    {
        cout << "The width and length are the same" << endl;
    }

    return 0;
}
```

9.2

1.



2. cin I think it would not work because of the way the pointer is set up

Cout I also think it would not work because of the way the pointer is setup

-I was incorrect and the program ran normally

Source Code:

// This program demonstrates the use of dynamic variables

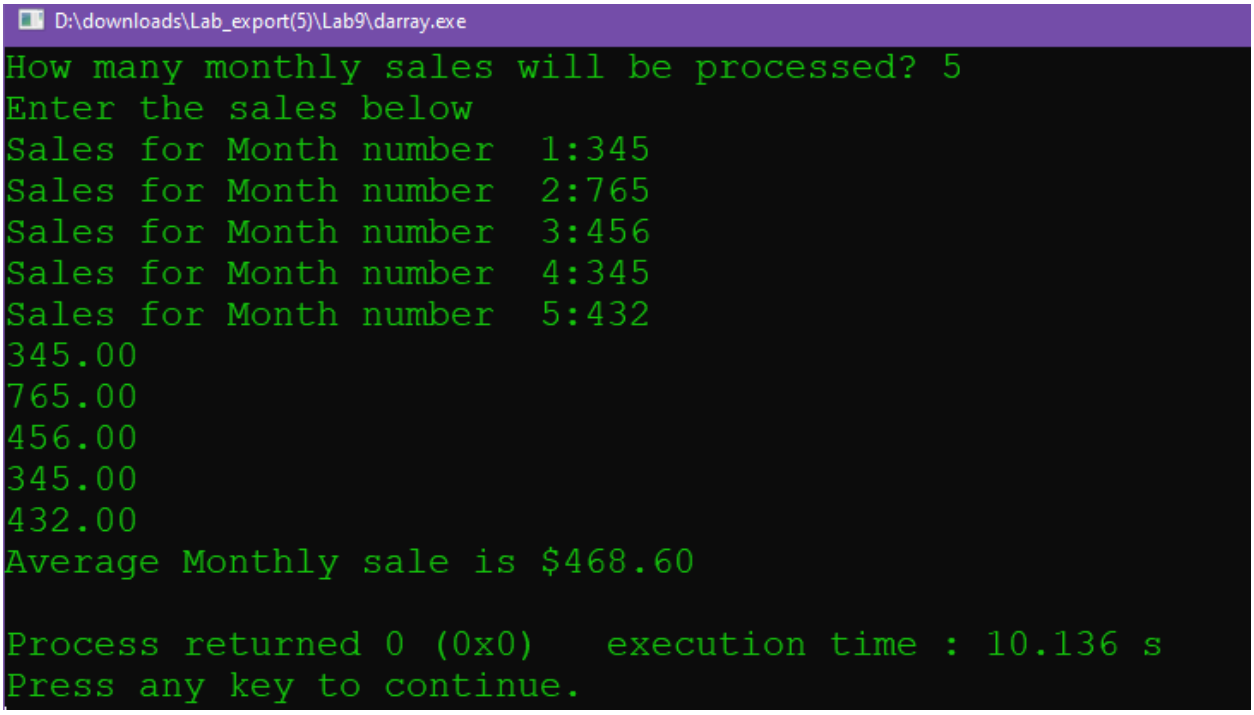
```
// PLACE YOUR NAME HERE

#include <iostream>
using namespace std;

const int MAXNAME = 10;

int main()
{
        int pos;
        char *name = nullptr;
        int *one = nullptr;
        int *two = nullptr;
        int *three = nullptr;
        int result;

        //      Fill in code to allocate the integer variable one here
   one =new int;
        //      Fill in code to allocate the integer variable two here
   two=new int;
        //      Fill in code to allocate the integer variable three here
   three=new int;
```

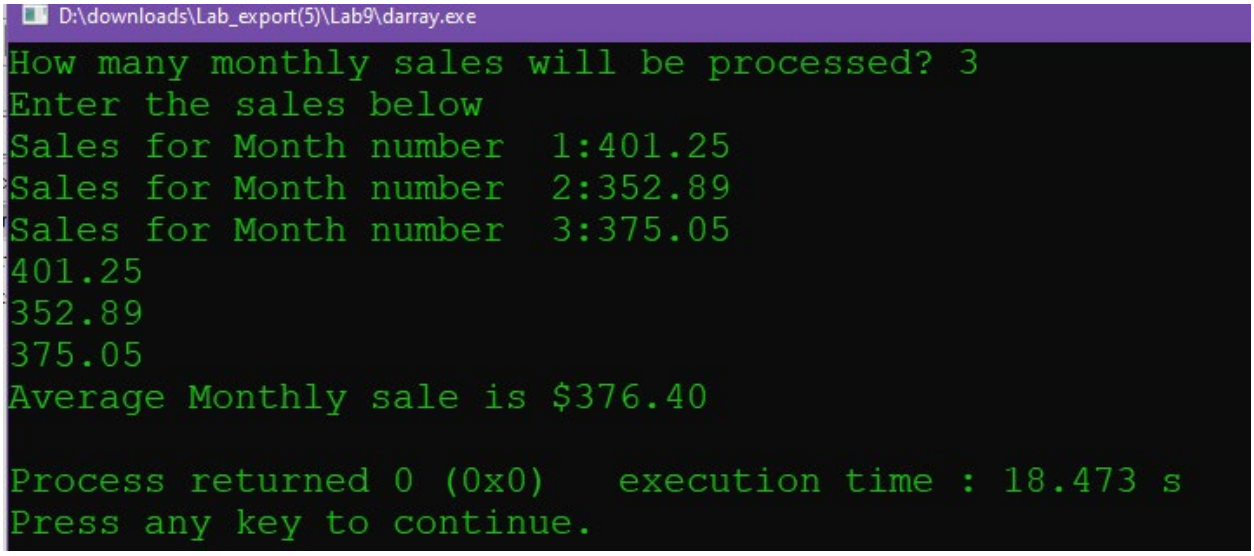
```
//          Fill in code to allocate the character array pointed to by name
name =new char[10]
;

cout << "Enter your last name with exactly 10 characters." << endl;
cout << "If your name has < 10 characters, repeat last letter. " << endl
          << "Blanks at the end do not count." << endl;

for (pos = 0; pos < MAXNAME; pos++)
          cin >>*(name+pos);    // Fill in code to read a character into the name array
                                // WITHOUT USING a bracketed subscript

cout << "Hi ";

for (pos = 0; pos < MAXNAME; pos++)
          cout <<*(name+pos); // Fill in code to a print a character from the name array
                                // WITHOUT USING a bracketed subscript

cout << endl << "Enter three integer numbers separated by blanks" << endl;

// Fill in code to input three numbers and store them in the
cin>>*one;
cin>>*two;
```

```
    cin>>*three;
    // dynamic variables pointed to by pointers one, two, and three.
    // You are working only with pointer variables

    // echo print
    cout << "The three numbers are " <<*one <<" "<<*two<<" "<<*three<< endl;

    // Fill in code to output those numbers

    result =(*one+*two+*three); // Fill in code to calculate the sum of the three numbers

    cout << "The sum of the three values is " << result << endl;
    delete one;
    delete two;
    delete three;
    delete name;

    // Fill in code to deallocate one, two, three and name

    return 0;
}
```

9.3

1.





Source Code

// This program demonstrates the use of dynamic arrays

// PLACE YOUR NAME HERE

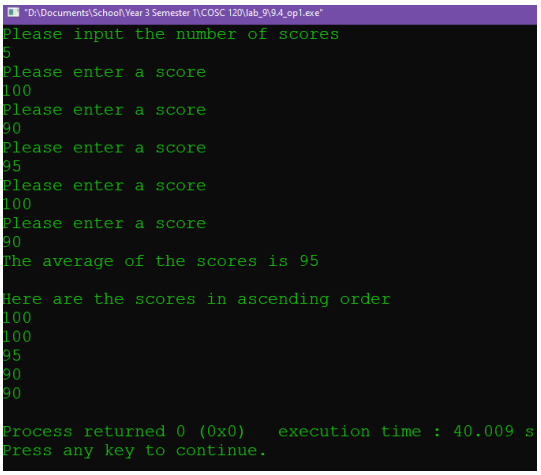
```
#include <iostream>
#include <iomanip>
using namespace std;

int main()
{
   float *monthSales = nullptr;          // a pointer used to point to an array
   // holding monthly sales

   float total = 0;        // total of all sales
   float average;                  // average of monthly sales
   int numOfSales;                 // number of sales to be processed
   int count;                      // loop counter

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

   cout << "How many monthly sales will be processed? ";
   cin >> numOfSales;

   // Fill in the code to allocate memory for the array pointed to by
   // monthSales.
   monthSales =new float[numOfSales];
```

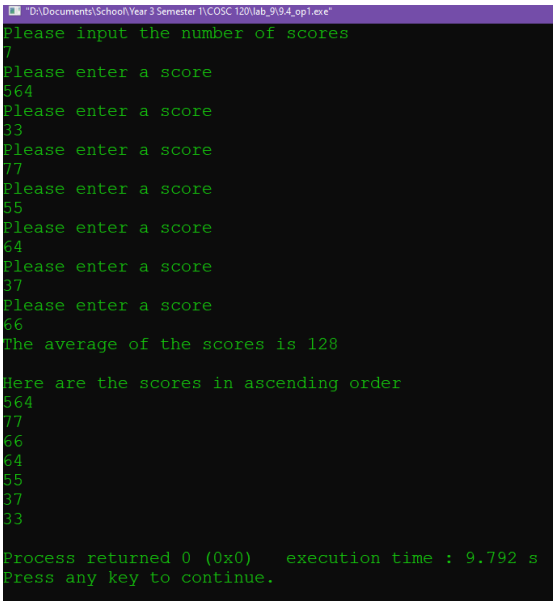
```
if (monthSales==nullptr)
{
   cout << "Error allocating memory!\n";
   return 1;
}
// Fill in the condition to determine if memory has been
// allocated (or eliminate this if construct if your instructor
// tells you it is not needed for your compiler) )



cout << "Enter the sales below\n";


for (count = 0; count < numOfSales; count++)
{
   cout << "Sales for Month number          "
        << count+1// Fill in code to show the number of the month
        << ":";
   cin>>(monthSales[count]);
   // Fill in code to bring sales into an element of the array
}


for (count = 0; count < numOfSales; count++)
```

```
    {
        cout<<monthSales[count]<<endl;
        total = total + monthSales[count];
    }

    average = total/numOfSales;// Fill in code to find the average

    cout << "Average Monthly sale is $" <<fixed<<setprecision(2)<< average << endl;

    // Fill in the code to deallocate memory assigned to the array.
    delete []monthSales;

    return 0;
}
```

9.4

Option 1





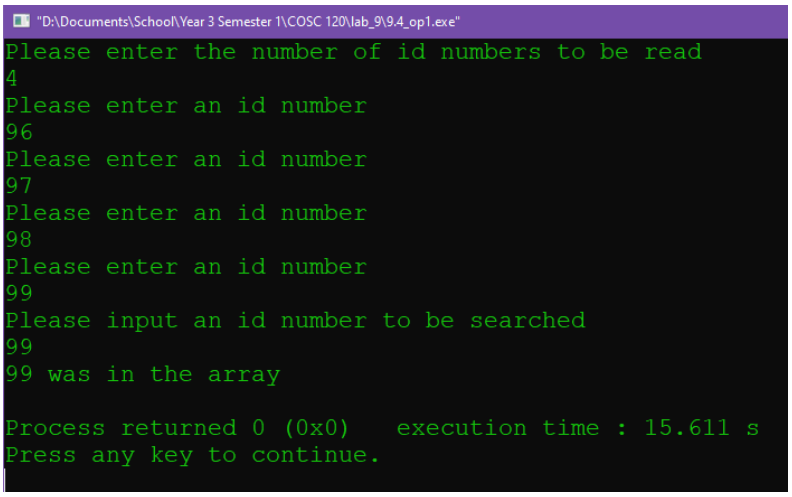
Source Code

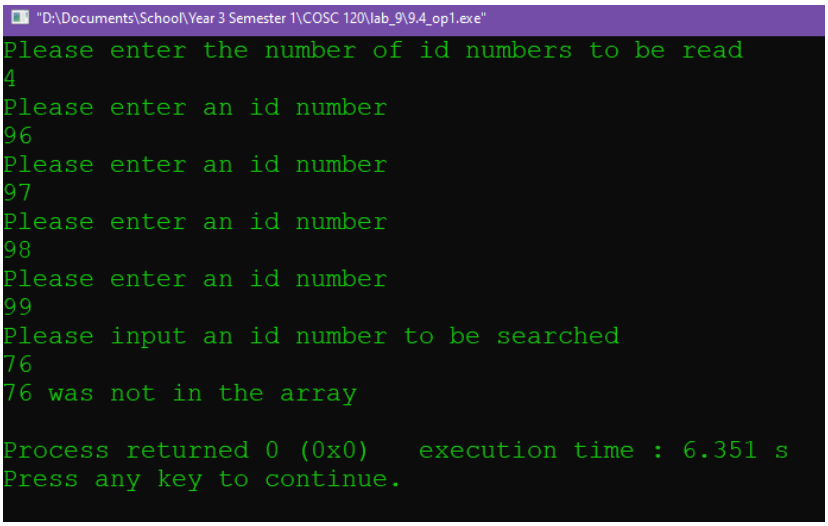
```
#include <iostream>

using namespace std;

void sort(float* score, int num_scores)

{

   //bubble sort to sort in ascending order

   for (int i = 0; i < num_scores-1; i++)

   {

      for (int j = 0; j < num_scores-i-1; j++)

      {

         if (score[j] < score[j+1])

         {

            swap(score[j], score[j+1]);

            //perform swap

         }
```

```
        }
    }
    cout<<"Here are the scores in ascending order"<<endl;
    for (int i=0; i<num_scores; i++)
    {
        //print swapped scores
        cout<<score[i]<<endl;
    }
}

int main()
{
    float *score = nullptr;
    int num_scores=0;
    int total=0;
    int avg=0;
    // a pointer variable
    cout<<"Please input the number of scores"<<endl;
    cin>>num_scores;
    score =new float[num_scores];
    for (int i=0; i<num_scores; i++)
    {
        cout<<"Please enter a score"<<endl;
```

```
        cin>>score[i];
        total+=score[i];
    }
    avg=total/num_scores;
    cout<<"The average of the scores is "<<avg<<endl<<endl;
    sort(score,num_scores);
    // allocation of the array sort(score,scoreSize); // call to the function
    delete []score;
    //deallocate
    return 0;
}
```

Option 2





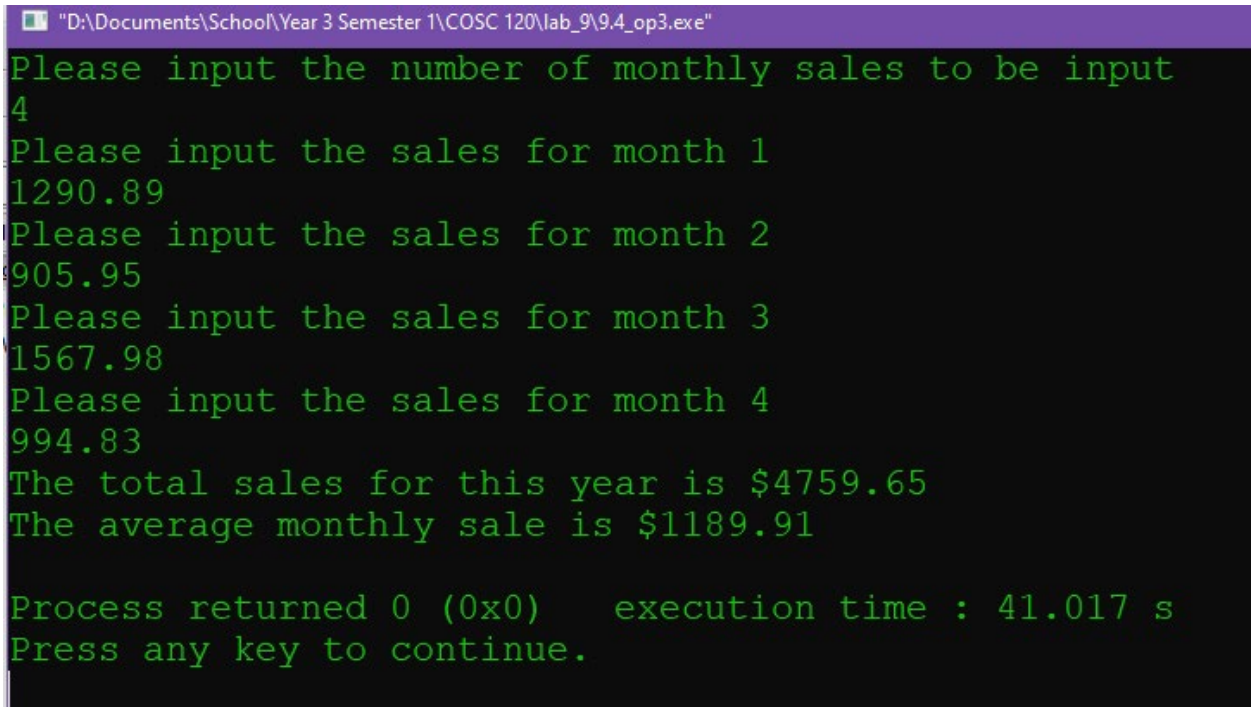
Source Code

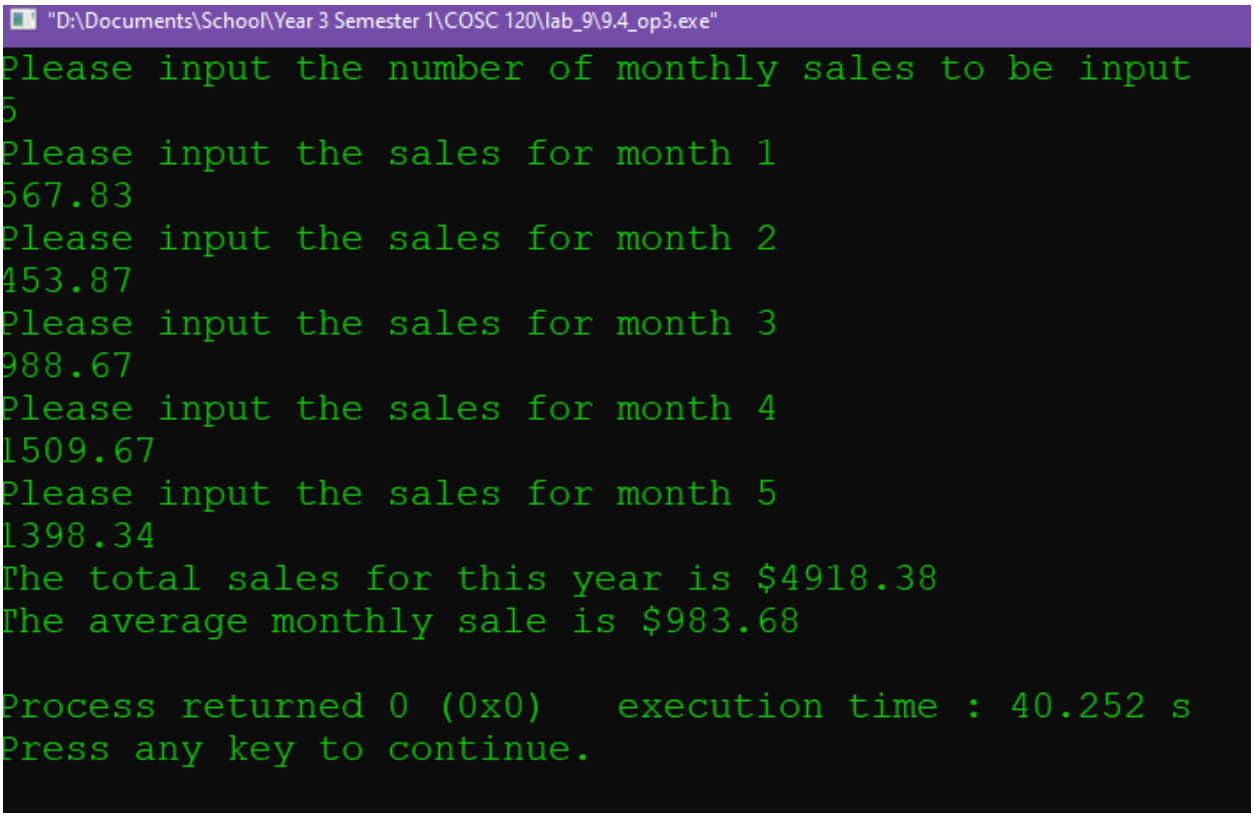
```
#include <iostream>

using namespace std;


int main()

{

   int* ids=nullptr;

   //define Ptr

   int id_amnt;

   int id_search;

   bool in_array;

   //initialize

   cout<<"Please enter the number of id numbers to be read"<<endl;

   cin>>id_amnt;

   ids =new int [id_amnt];
```

```
for (int i=0; i<id_amnt; i++)
   //populate array
{
   cout<<"Please enter an id number"<<endl;
   cin>>ids[i];
}
cout<<"Please input an id number to be searched"<<endl;
cin>>id_search;
for(int i=0; i<<id_amnt; i++)
   //perform id search
{
   if (ids[i]=id_search)
   {
      in_array=true;
      break;
   }
   else
   {
      in_array=false;
   }
}
if (in_array==true)
{
```

```
        cout<<id_search<<" was in the array"<<endl;
    }
    else
    {
        cout<<id_search<<" was not in the array"<<endl;
    }
    delete [] ids;
    //deallocate
    return 0;
}
```

Option 3





Source Code:

```
#include <iostream>

#include <iomanip>

using namespace std;

float get_avg(float *sales_arr,int arr_size);

float get_total(float *sales_arr,int arr_size);

float get_avg(float *sales_arr,int arr_size)

{

    //function to calculate average with dynamic array

    float total=0;

    float avg=0;

    for (int i=0; i<arr_size; i++)
```

```
    {
        total+=sales_arr[i];
    }
    avg=total/arr_size;
    //calculate and return
    return avg;
}
float get_total(float *sales_arr,int arr_size)
{
    //function to calculate average with dynamic array
    float total=0;
    for (int i=0; i<arr_size; i++)
    {
        total+=sales_arr[i];
    }
    //calculate and return
    return total;
}
int main()
{
    int months=0;
    float *Ptr=nullptr;
    float total=0;
```

```
float avg=0;
//initialize

cout<<"Please input the number of monthly sales to be input "<<endl;
cin>>months;
Ptr=new float[months];
//allocate
for (int i=0; i<months; i++)
{
   //populate array
   cout<<"Please input the sales for month "<<i+1<<endl;
   cin>>Ptr[i];

}
avg=get_avg(Ptr,months);
total=get_total(Ptr,months);
//get avg and total
cout<<"The total sales for this year is $"<<fixed<<setprecision(2)<<total<<endl;
cout<<"The average monthly sale is $"<<fixed<<setprecision(2)<<avg<<endl;

delete [] Ptr;
//deallocate memory
```

```
    return 0;
}
```