Data Structures and Algorithms-Lab

Assignment No 1

Name:

Rao Muhammad Rafay

Registration No:

Sp22-Bcs-067

Section:

A

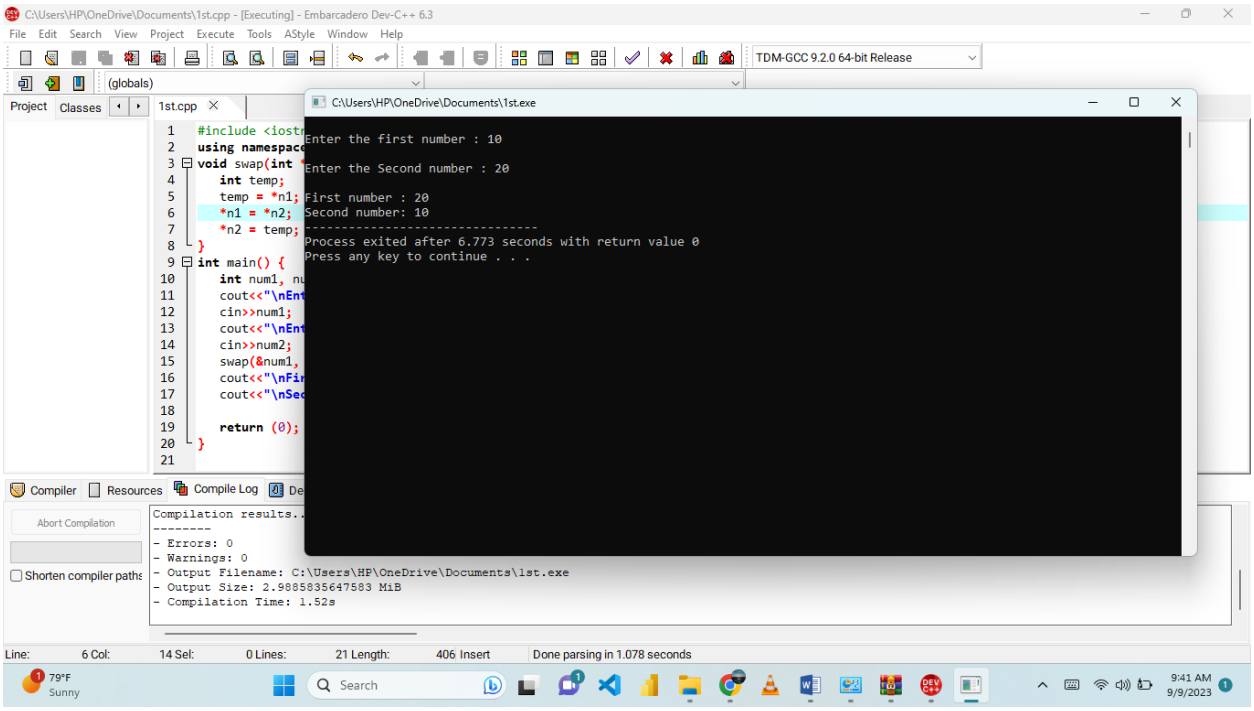
Submitted To:

Mam Yasmeen

COMSAT University Islamabad
Campus Vehari

Program No 1:

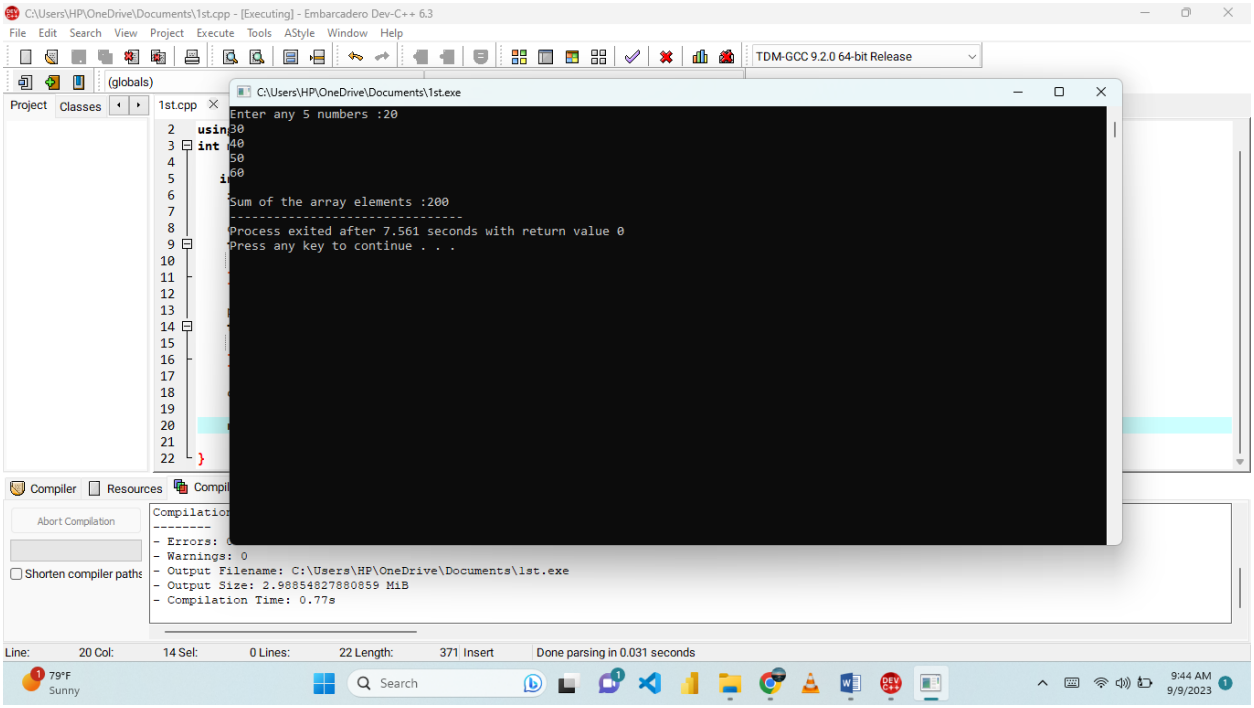
```
#include <iostream>

using namespace std;

void change(int *n1, int *n2) {

  int temp;

  temp = *n1;

  *n1 = *n2;

  *n2 = temp;

}

int main() {

  int num1, num2;

  cout<<"Enter the first number : ";

  cin>>num1;

  cout<<"\nEnter the Second number : ";

  cin>>num2;

  change(&num1, &num2);

  cout<<"\nFirst number : "<< num1;

  cout<<"\nSecond number: "<<num2;

  return (0);

}
```



Program No 2:

```
#include <iostream>

using namespace std;

int main() {


  int ar[5], i, sum = 0;

   int *ptr;

   cout << "Enter any 5 numbers :";

   for (i = 0; i < 5; i++) {

       cin >> ar[i];

   }

   ptr = ar;

   for (i = 0; i < 5; i++) {
```

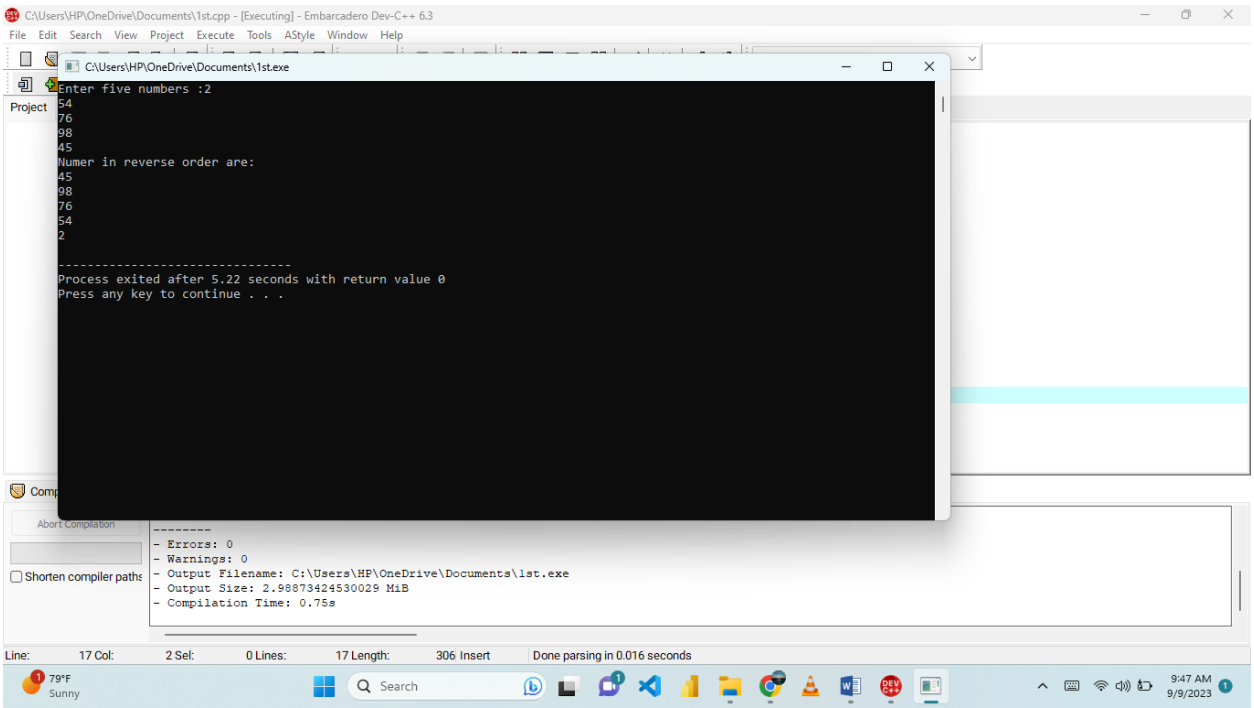
```
        sum = sum + *(ptr + i);
    }
    cout << "\nSum of the array elements :" << sum;
    return 0;

}
```



Program No 3:

```
#include <iostream>

using namespace std;


int main() {


   int arr[5],i;
```

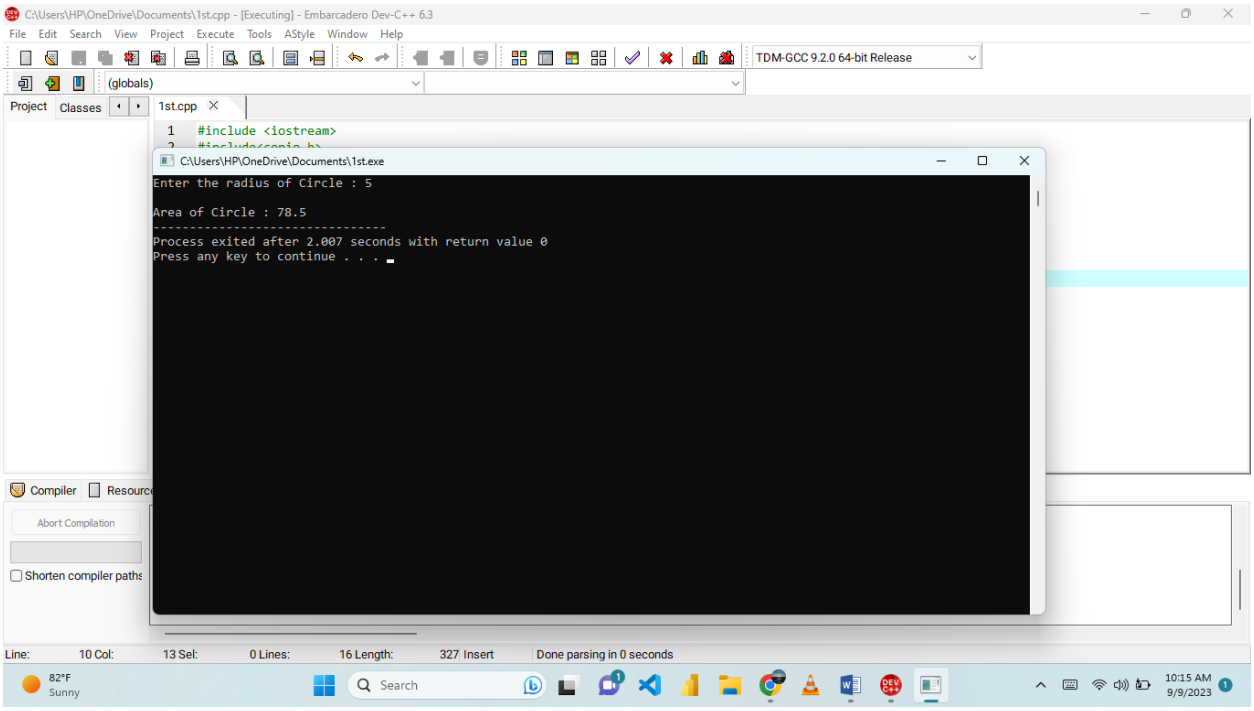
```
    int *p=arr;
    cout<<"Enter five numbers :";
    cin>>*p>>*(p+1)>>*(p+2)>>*(p+3)>>*(p+4);
    cout<<"Numer in reverse order are:\n";
    for(i=4;i>=0;i--)
       cout<<*(p+i)<<endl;



    return 0;

}
```



Program No 4:

```
#include <iostream>
```

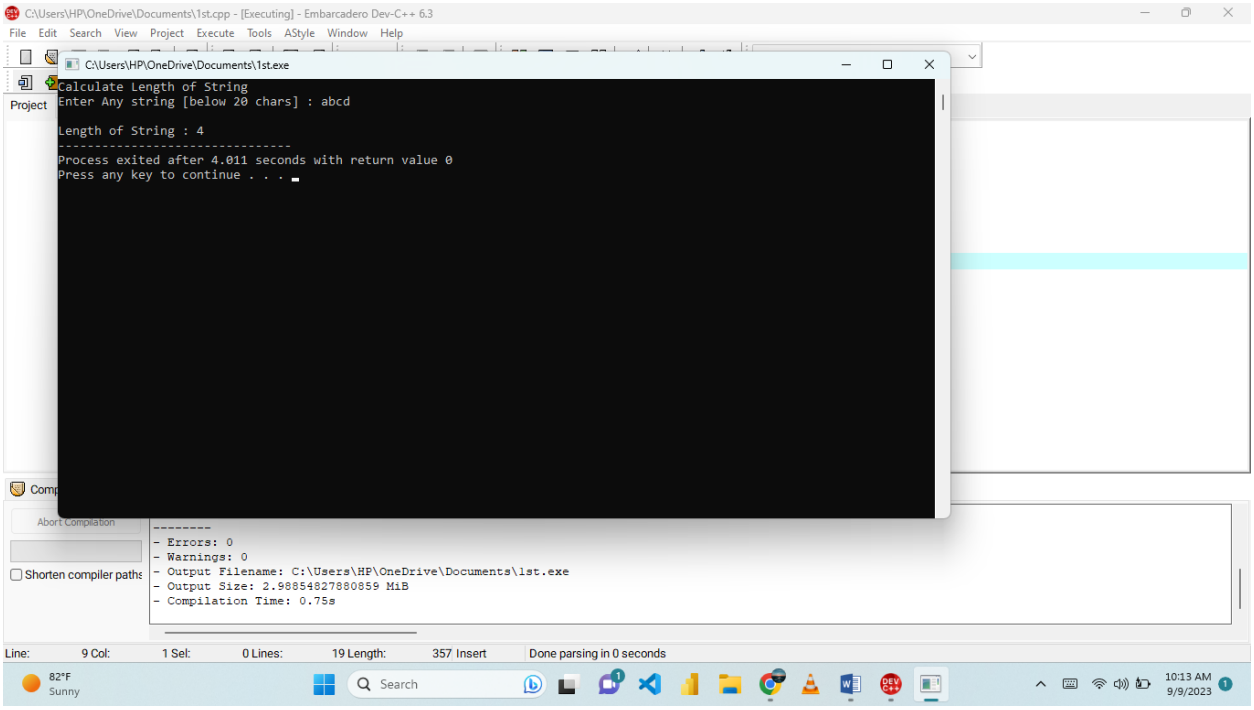
```
#include<conio.h>
using namespace std;
void circlearea(float *v, float *r) {
   *r = 3.14 * (*v) * (*v);
}

int main() {
   float radius, area;
   cout << "Enter the radius of Circle : ";
   cin>>radius;
   circlearea(&radius, &area);
   cout << "\nArea of Circle : " << area;
   return 0;
}
```



Program No 5:

```
#include <iostream>

#include<conio.h>

using namespace std;


int main() {

   char str[20], *pt;

   int i = 0;

   cout << "Calculate Length of String \n";


   cout << "Enter Any string [below 20 chars] : ";

   cin>>str;

   pt = str;
```

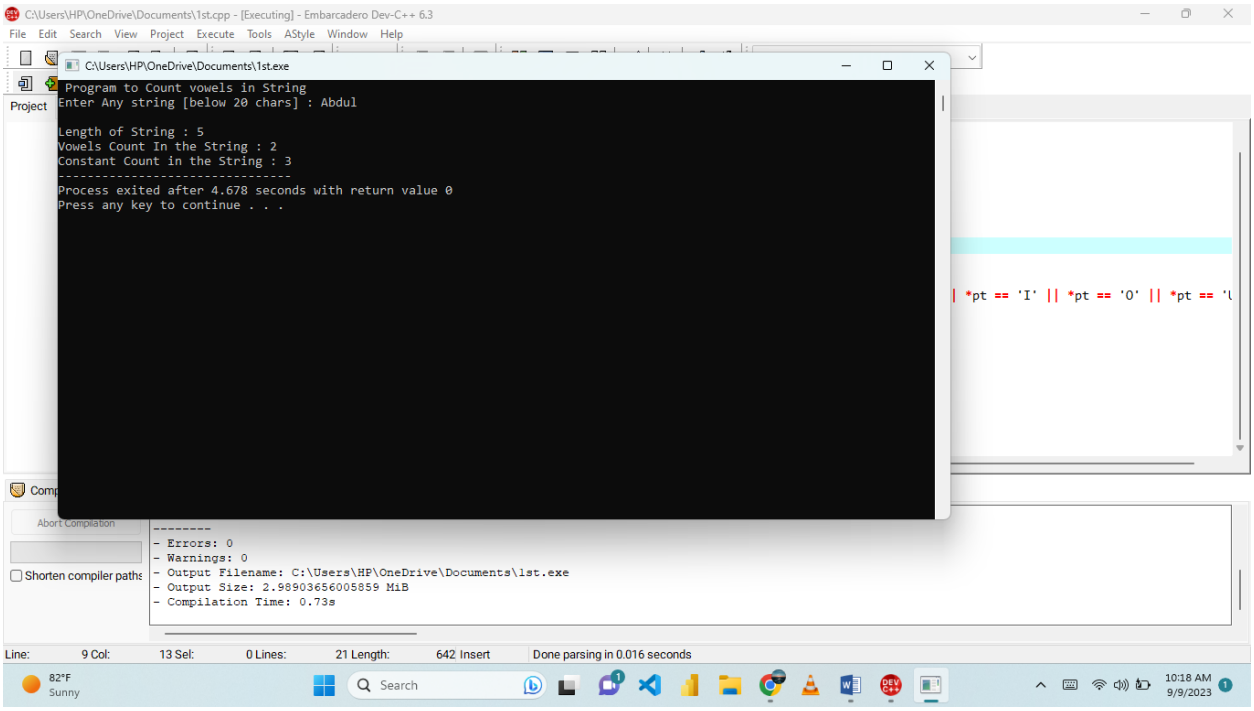
```
  while (*pt != '\0') {
    i++;
    pt++;
  }
  cout << "\nLength of String : " << i;
  return 0;
}
```



Program No 6:

```
#include <iostream>
#include<conio.h>
using namespace std;
int main() {
  char str[20], *pt;
```

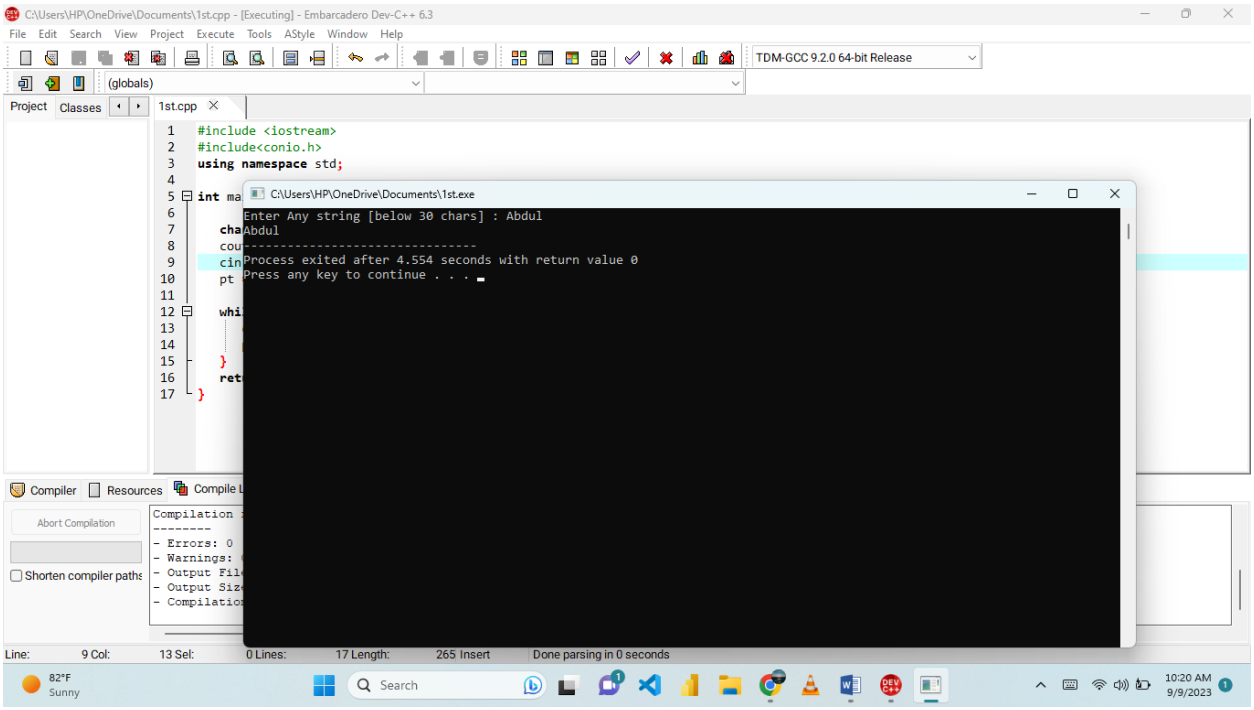
```
  int i = 0, c = 0;
  cout << " Program to Count vowels in String \n";
  cout << "Enter Any string [below 20 chars] : ";
  cin>>str;
  pt = str;
  while (*pt != '\0') {
    if (*pt == 'a' || *pt == 'e' || *pt == 'i' || *pt == 'o' || *pt == 'u'||*pt == 'A' || *pt == 'E' || *pt == 'I' ||
*pt == 'O' || *pt == 'U')
      c++;
    i++;
    pt++;
  }
  cout << "\nLength of String : " << i;
  cout << "\nVowels Count In the String : " << c;
  cout << "\nConstant Count in the String : " << (i - c);
  return 0;
}
```



Program No 7:

```
#include <iostream>

#include<conio.h>

using namespace std;


int main() {


   char str[30], *pt;

   cout << "Enter Any string [below 30 chars] : ";

   cin>>str;

   pt = str;


   while (*pt != '\0') {
```

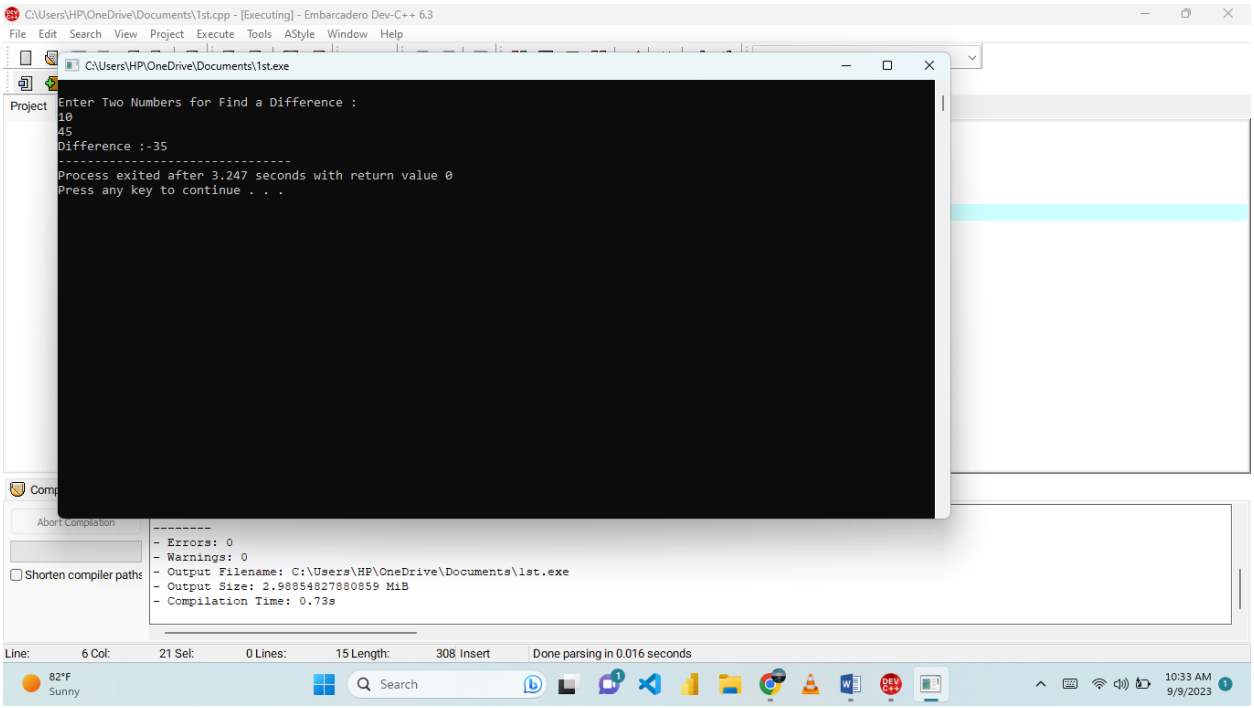
```
    cout << *pt;
    pt++;
  }
  return 0;
}
```



Program no 8:

```
#include <iostream>
#include<conio.h>
using namespace std;
int main() {
  int *p1, *p2;
  int num1, num2, d;
  cout << "\nEnter Two Numbers for Find a Difference : \n";
```

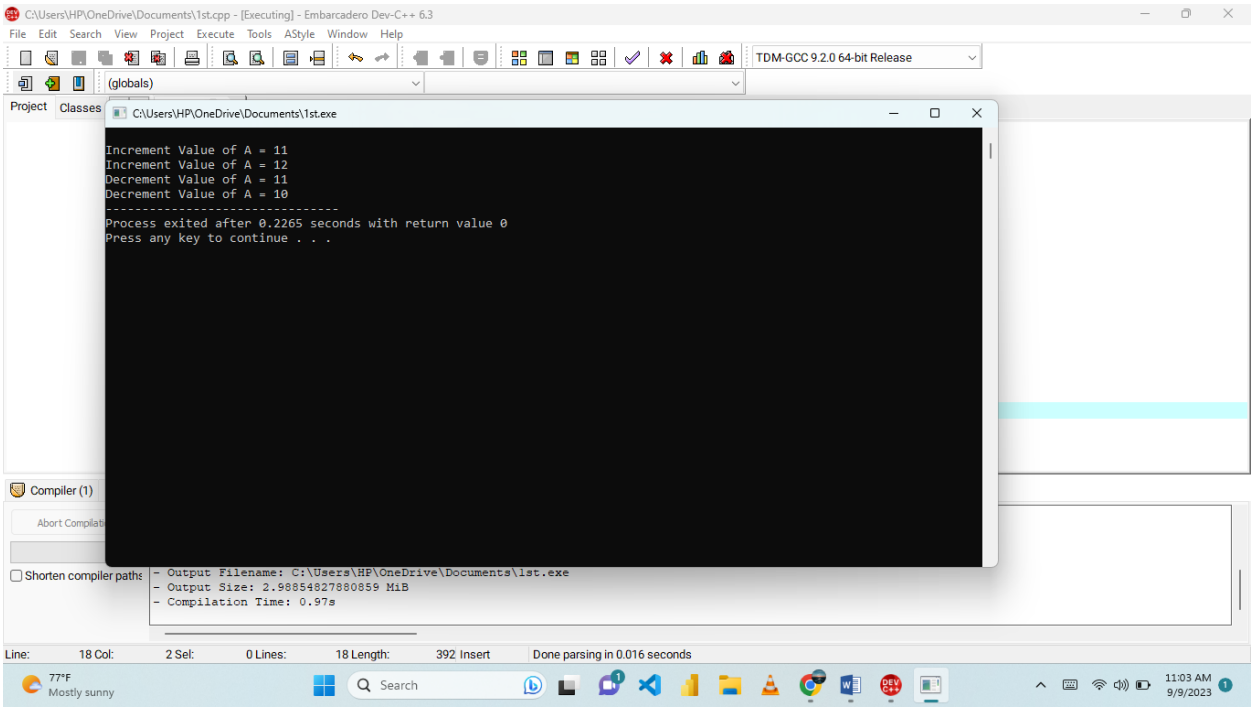
```
    cin>>num1;
    cin>>num2;
    p1 = &num1;
    p2 = &num2;
    d = *p1 - *p2;
    cout << "Difference :" << d;
    return 0;
}
```



Program No 9:

```
#include <iostream>
#include<conio.h>
using namespace std;
int main() {
```

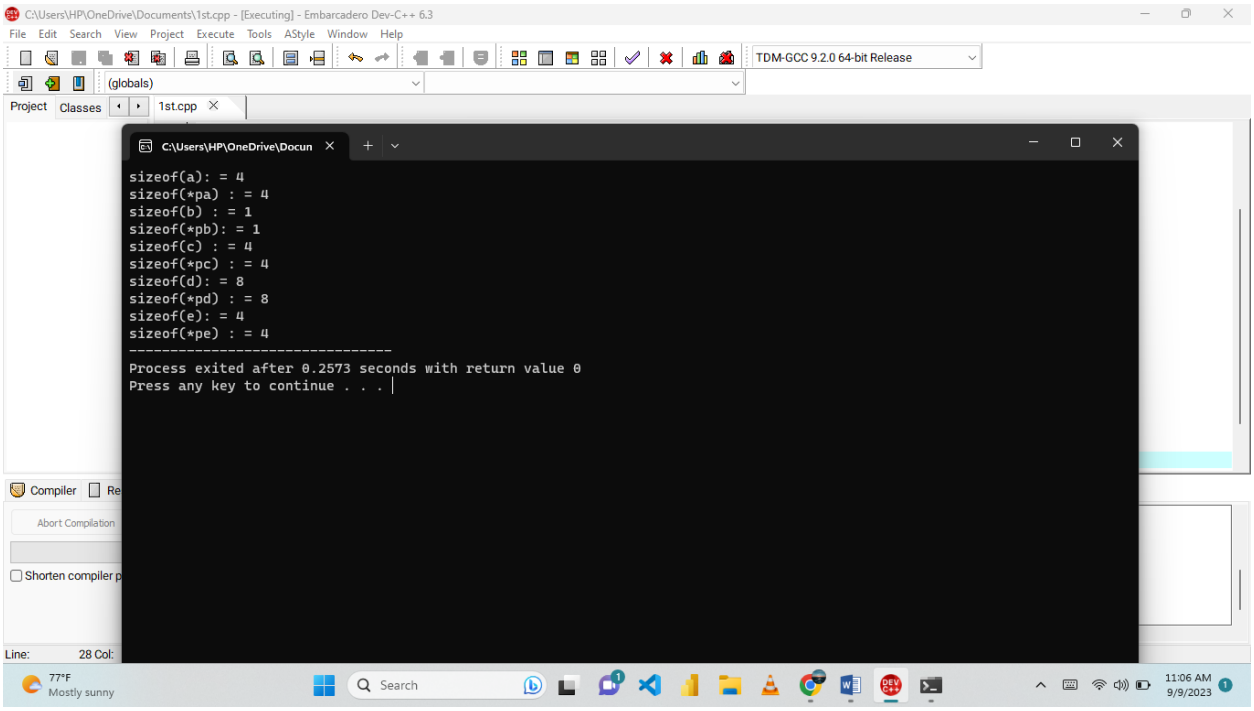
```
  int a;
  int *ptrr;
  a = 10;
  ptrr = &a;
  (*ptrr)++;
  cout << "Increment Value of A = " << a;
  ++(*ptrr);
  cout << "\nIncrement Value of A = " << a;
  (*ptrr)--;
  cout << "\nDecrement Value of A = " << a;
  --(*ptrr);
  cout << "\nDecrement Value of A = " << a;
  return 0;
}
```



Program No 10:

```
#include <iostream>

#include<conio.h>

using namespace std;

int main() {

   int a = 20;

   int *pa = &a;

   char b = 'x';

   char *pb = &b;

   float c = 20.02;

   float *pc = &c;

   double d = 20.01;

   double *pd = &d;
```

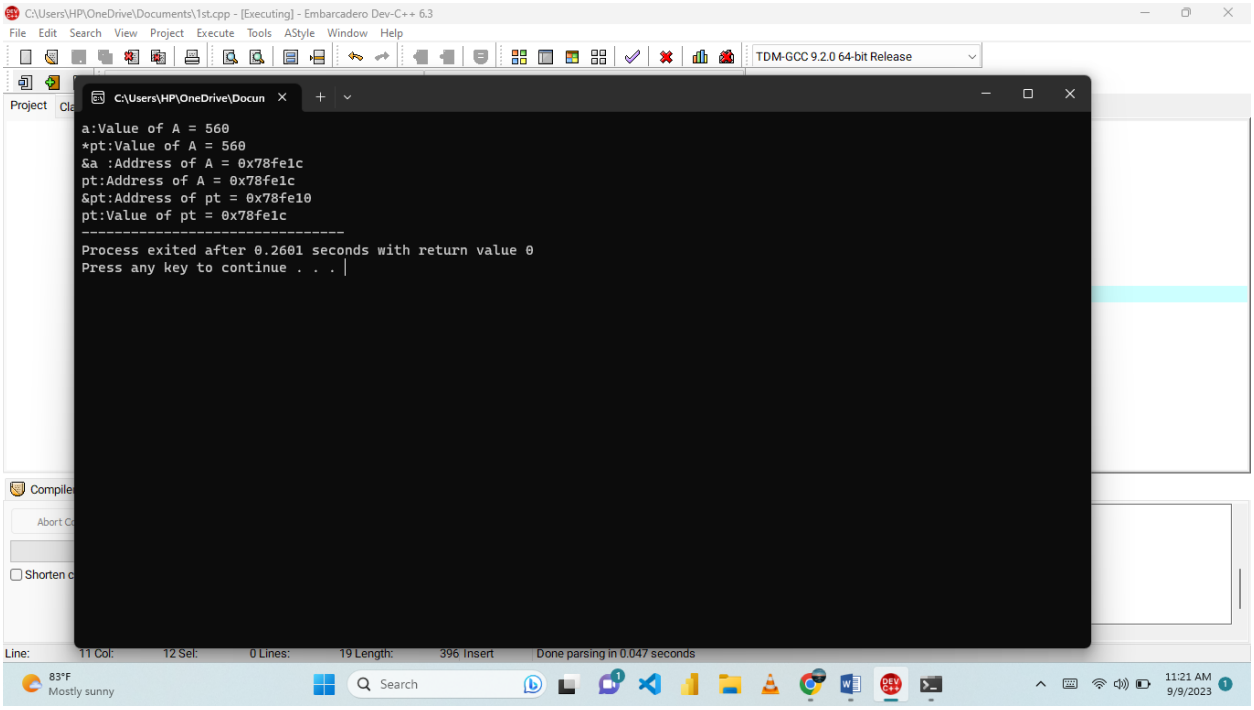
```
    long e = 20.02;
    long *pe = &e;
    cout << "sizeof(a): = " << sizeof (a);
    cout << "\nsizeof(*pa) : = " << sizeof (*pa);

    cout << "\nsizeof(b) : = " << sizeof (b);
    cout << "\nsizeof(*pb): = " << sizeof (*pb);

    cout << "\nsizeof(c) : = " << sizeof (c);
    cout << "\nsizeof(*pc) : = " << sizeof (*pc);

    cout << "\nsizeof(d): = " << sizeof (d);
    cout << "\nsizeof(*pd) : = " << sizeof (*pd);

    cout << "\nsizeof(e): = " << sizeof (e);
    cout << "\nsizeof(*pe) : = " << sizeof (*pe);

    return 0;
}
```



Program no 11:

```
#include <iostream>

#include<conio.h>


using namespace std;


int main() {


   int a;

   int *pt;

   a = 560;

   pt = &a;

   cout << "a:Value of A = " << a;
```

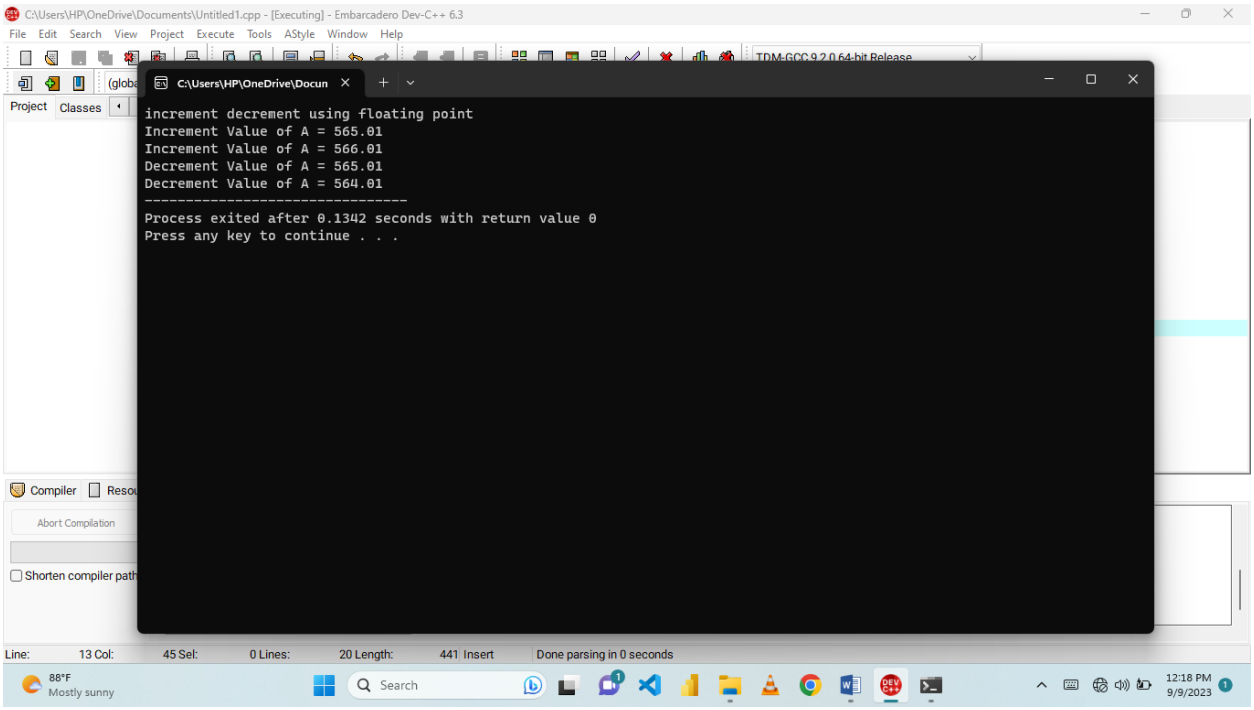
```
    cout << "\n*pt:Value of A = " << *pt;
    cout << "\n&a :Address of A = " << &a;
    cout << "\npt:Address of A = " << pt;
    cout << "\n&pt:Address of pt = " << &pt;
    cout << "\npt:Value of pt = " << pt;
    return 0;
}
```



Program No 12:

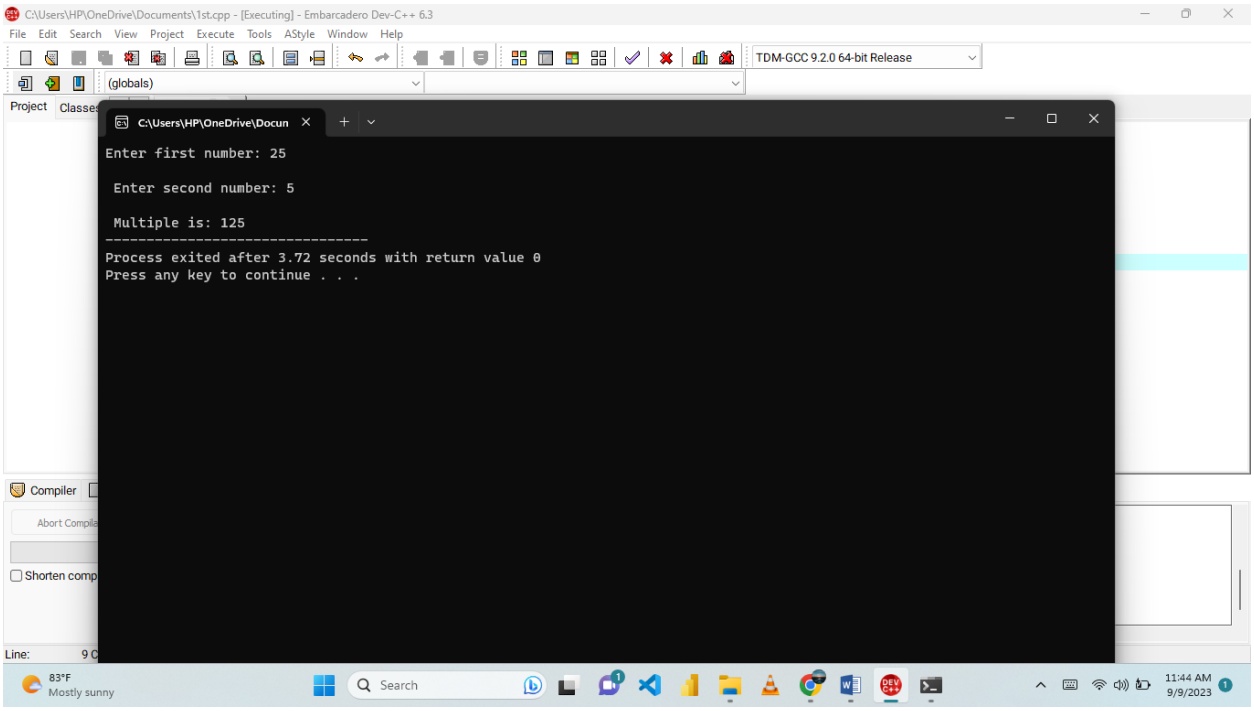
```
#include <iostream>
#include<conio.h>
using namespace std;
int main() {
    float a;
```

```
  float *pt;
  a = 564.01;
  pt = &a;
  (*pt)++;
  cout << "Increment Value of A = " << a;
  ++(*pt);
  cout << "Increment Value of A = " << a;
  (*pt)--;
  cout << "Decrement Value of A = " << a;
  --(*pt);
  cout << "Decrement Value of A = " << a;
  return 0;
}
```



Program No 13:

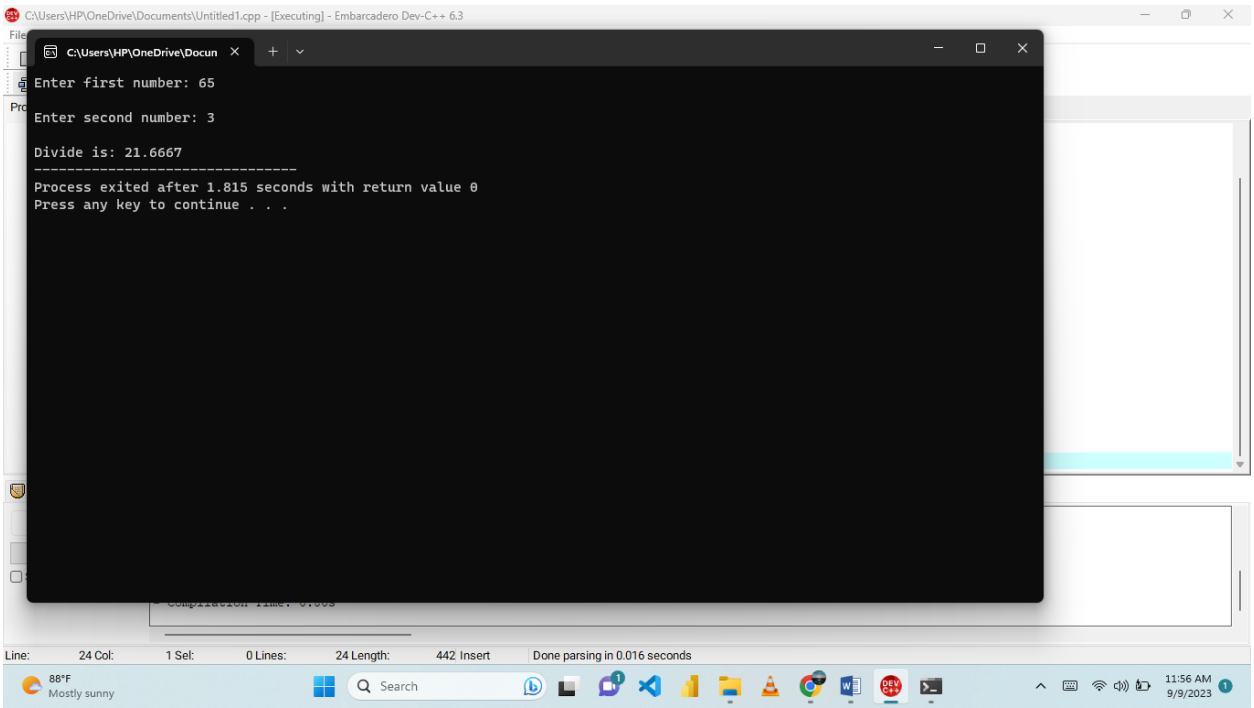
```
#include <iostream>

using namespace std;

int main()

{

   int num1, num2;

   int *ptr1, *ptr2;

   int mul;

   cout << "Enter first number: ";

   cin >> num1;

   cout << "\n Enter second number: ";

   cin >> num2;

   ptr1 = &num1;

   ptr2 = &num2;

   mul = *ptr1 * *ptr2;

   cout << "\n Multiple is: " << mul;

   return 0;

}
```



Program no 14:

```
#include <iostream>

using namespace std;

int main()

{

    float num1, num2;

    float *ptr1, *ptr2;

    float div;

    cout << "Enter first number: ";

    cin >> num1;

    cout << "\nEnter second number: ";

    cin >> num2;

    ptr1 = &num1;
```

```
    ptr2 = &num2;
    if(*ptr1>*ptr2){
        div = *ptr1 / *ptr2;
        cout << "\nDivide is: " << div;
        }
        else{
            cout<<"Cant divide by small number";
        }

    return 0;
}
```



Program No 15:

```
#include <iostream>

#include <conio.h>

using namespace std;

int main()

{

   int i,*ptr;

   ptr=&i;

   for(*ptr=0; *ptr<=1000; *ptr=*ptr+5)

   {

    cout<<*ptr<<" ";

   }

   return 0;

}
```