



Assignment # 01

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Program 01

// find address and value of a variable through pointer

```
#include <iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int a=10;
```

```
    int *ptr= &a;
```

```
    cout<<"Address= "<<ptr<<endl;
```

```
    cout<<"value= "<<*ptr<<endl<<endl;
```

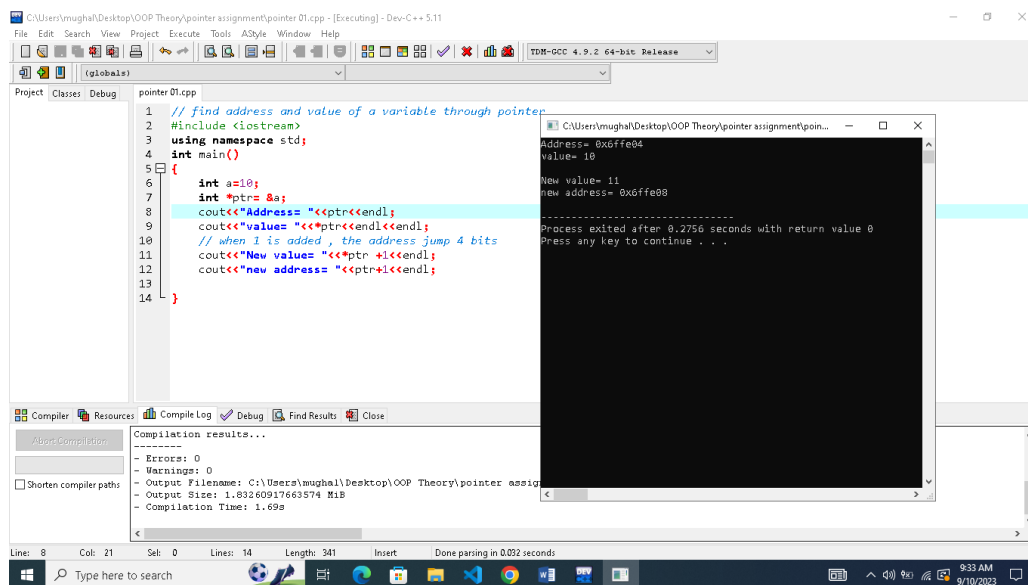
```
    // when 1 is added , the address jump 4 bits
```

```
    cout<<"New value= "<<*ptr +1<<endl;
```

```
    cout<<"new address= "<<ptr+1<<endl;
```

```
}
```

Output:



The screenshot shows the Dev-C++ IDE with a C++ program open and executed. The program is titled "pointer 01.cpp" and contains the following code:

```
1 // find address and value of a variable through pointer
2 #include <iostream>
3 using namespace std;
4 int main()
5 {
6     int a=10;
7     int *ptr= &a;
8     cout<<"Address= "<<ptr<<endl;
9     cout<<"value= "<<*ptr<<endl<<endl;
10    // when 1 is added , the address jump 4 bits
11    cout<<"New value= "<<*ptr +1<<endl;
12    cout<<"new address= "<<ptr+1<<endl;
13
14 }
```

The output window shows the following results:

```
Address= 0x0ffe04
value= 10
New value= 11
new address= 0x0ffe08
Process exited after 0.2756 seconds with return value 0
Press any key to continue . . .
```

The compilation results window at the bottom shows:

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 01.cpp
- Output Size: 1.83260917663574 Kib
- Compilation Time: 1.69s
```

Program 2

```
// pointer in array
```

```
#include <iostream>
```

```
using namespace std;
```

```
int main(){
```

```
    int arr[10]= {1,6,3,7,9,12,87,7,54,8}; // arr acts as a pointer
```

```
    for(int i=0; i<10; i++){
```

```
        cout<<*(arr+i)<< "\t"; // number
```

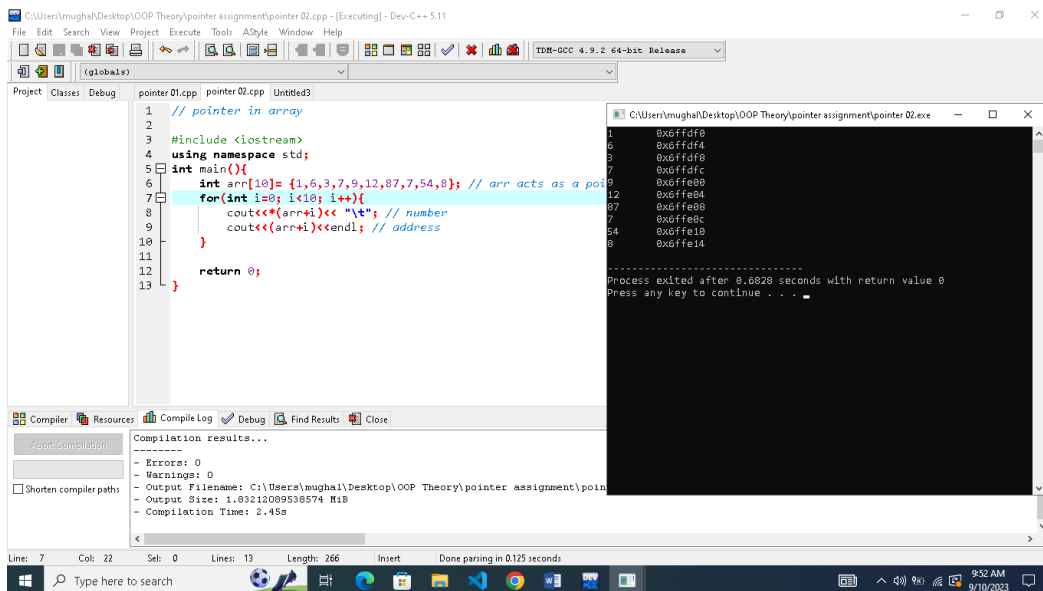
```
        cout<<(arr+i)<<endl; // address
```

```
    }
```

```
    return 0;
```

```
}
```

Output



The screenshot displays a C++ IDE with the source code for 'pointer 02.cpp' on the left and its execution output on the right. The source code defines an array 'arr' of 10 integers and iterates through it, printing both the value at each index and the memory address of the element. The output window shows the corresponding memory addresses for each element, ranging from 0x6ffdf0 to 0x6ffe14. The process exited after 0.0820 seconds with a return value of 0.

```
1 // pointer in array
2
3 #include <iostream>
4 using namespace std;
5 int main(){
6     int arr[10]= {1,6,3,7,9,12,87,7,54,8}; // arr acts as a pointer
7     for(int i=0; i<10; i++){
8         cout<<*(arr+i)<< "\t"; // number
9         cout<<(arr+i)<<endl; // address
10    }
11
12    return 0;
13 }
```

```
1 0x6ffdf0
2 0x6ffdf4
3 0x6ffdf8
4 0x6ffdfc
5 0x6ffe00
6 0x6ffe04
7 0x6ffe08
8 0x6ffe0c
9 0x6ffe10
10 0x6ffe14
-----
Process exited after 0.0820 seconds with return value 0
Press any key to continue . . .
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 02.exe
- Output Size: 1.83212089538574 MiB
- Compilation Time: 2.45s

Line: 7 Col: 22 Sel: 0 Lines: 13 Length: 266 Insert Done parsing in 0.125 seconds

9:52 AM 9/10/2023

Program 3

```
// swap the numbers
#include<iostream>
using namespace std;
int swap(int *a, int *b){
    int num;
    num= *a;
    *a=*b;
    *b=num;
}
int main(){
    int num1, num2;
    cout<<"enter first number=";
    cin>> num1;
    cout<<endl;
    cout<<"enter second number=";
    cin>> num2;
    cout<<endl;

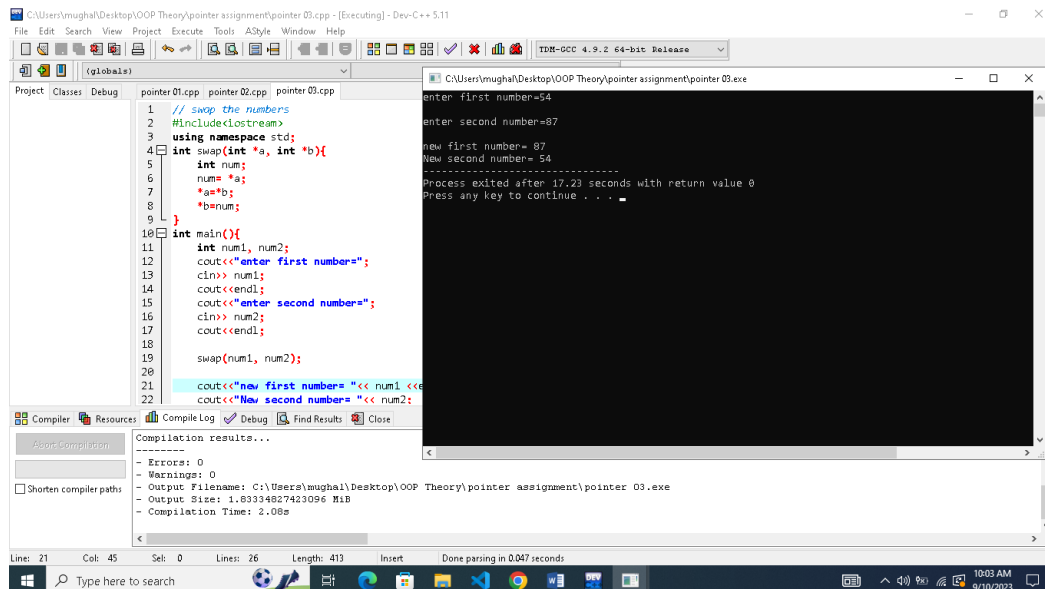
    swap(num1, num2);

    cout<<"new first number= "<< num1 <<endl;
    cout<<"New second number= "<< num2;

    return 0;
```

}

Output



The screenshot shows a C++ IDE with a project named 'pointer03.cpp'. The code defines a swap function and a main function. The main function prompts the user to enter two numbers, reads them, and then calls the swap function. The output window shows the execution results, including the input numbers, the swapped values, and the process exit message.

```
1 // swap the numbers
2 #include<iostream>
3 using namespace std;
4 int swap(int *a, int *b){
5     int num;
6     num = *a;
7     *a = *b;
8     *b = num;
9 }
10 int main(){
11     int num1, num2;
12     cout<<"enter first number=";
13     cin>>num1;
14     cout<<endl;
15     cout<<"enter second number=";
16     cin>>num2;
17     cout<<endl;
18     swap(num1, num2);
19
20     cout<<"new first number= "<< num1 <<endl;
21     cout<<"New second number= "<< num2 <<endl;
22 }
```

Output:

```
enter first number=54
enter second number=87
new first number= 87
New second number= 54
-----
Process exited after 17.23 seconds with return value 0
Press any key to continue . . .
```

Program 04

// Reverse the sequence

#include <iostream>

using namespace std;

int main() {

 int a[5],i;

 int *ptr=a;

 cout<<"Enter five numbers : "<<endl;

 cin>>*ptr>>*(ptr+1)>>*(ptr+2)>>*(ptr+3)>>*(ptr+4);

 cout<<"Numer in reverse order are:\n";

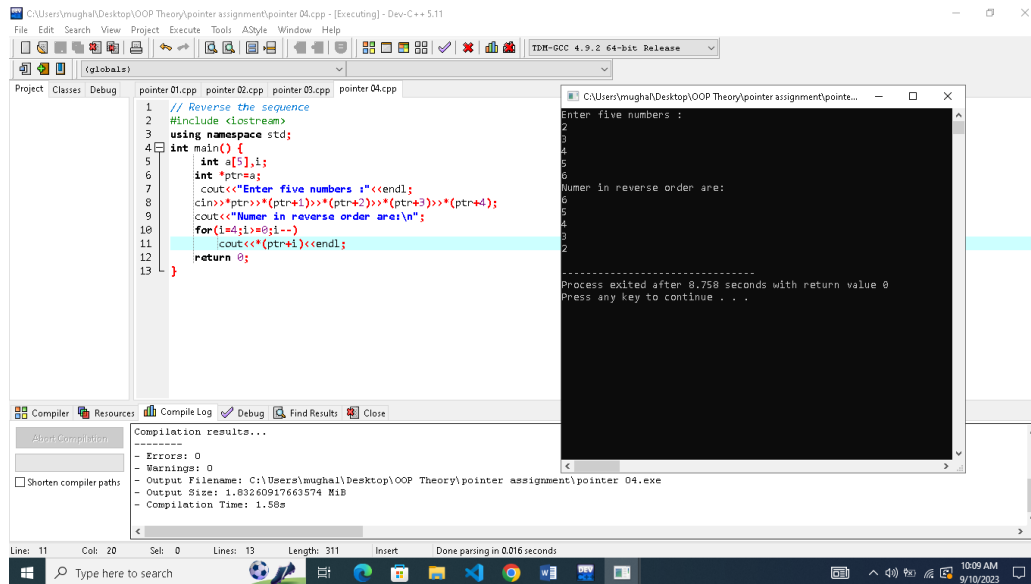
 for(i=4;i>=0;i--)

 cout<<*(ptr+i)<<endl;

 return 0;

}

Output



```
1 // Reverse the sequence
2 #include <iostream>
3 using namespace std;
4 int main() {
5     int a[5], i;
6     int *ptr=a;
7     cout<<"Enter five numbers "<<endl;
8     cin>>*ptr>>*(ptr+1)>>*(ptr+2)>>*(ptr+3)>>*(ptr+4);
9     cout<<"Number in reverse order are:\n";
10    for(i=4;i>=0;i--)
11        cout<<*(ptr+i)<<endl;
12    return 0;
13 }
```

Enter five numbers :
1
2
3
4
5
Number in reverse order are:
5
4
3
2
1
.....
Process exited after 0.758 seconds with return value 0
Press any key to continue . . .

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 04.exe
- Output Size: 1.83260917663574 MiB
- Compilation Time: 1.58s

Program 05

// Addition and multiply

```
#include <iostream>
```

```
using namespace std;
```

```
int main(){
```

```
    float a, b;
```

```
    float *p= &a;
```

```
    float*q= &b;
```

```
    cout<<"Enter first number= ";
```

```
    cin >> *p;
```

```
    cout<<"Enter 2nd number= ";
```

```
    cin>> *q;
```

```
    cout<<"*****Add*****"<<endl;
```

```
    float add;
```

```

add= *p+(*q);

cout<<"Sum="<<add<<endl;

cout<<endl;

cout<<"*****Multiply*****"<<endl;

float mul;

mul= (*p)*(*q);

cout<<"Multiple= "<< mul;

return 0;

}

```

Output

The screenshot displays a C++ IDE with the following components:

- Source Code Editor:** Shows a file named `pointer 05.cpp` with the following code:


```

1 // Addition and multiply
2 #include <iostream>
3 using namespace std;
4 int main(){
5     float a, b;
6     float *p, *q;
7     float *p, *q;
8     cout<<"Enter first number= ";
9     cin >> *p;
10    cout<<"Enter 2nd number= ";
11    cin >> *q;
12
13    cout<<"*****Add*****"<<endl;
14    float add;
15    add= *p+(*q);
16    cout<<"Sum="<<add<<endl;
17    cout<<endl;
18    cout<<"*****Multiply*****"<<endl;
19    float mul;
20    mul= (*p)*(*q);
21    cout<<"Multiple= "<< mul;
22    return 0;

```
- Compiler Output:** Shows the compilation results, indicating that the program compiled successfully with no errors or warnings.


```

Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\magha\Desktop\OOP Theory\pointer assignment\pointer 05.exe
- Output Size: 1.833097457088574 Kib
- Compilation Time: 1.27s

```
- Output Window:** Displays the runtime output of the program:


```

Enter first number= 5
Enter 2nd number= 7.87
*****Add*****
Sum=12.87
*****Multiply*****
Multiple= 39.35
Process exited after 7.786 seconds with return value 0
Press any key to continue . . .

```

Program 06

```

// subtract and divide

#include <iostream>

using namespace std;

int main(){

    float a, b;

```

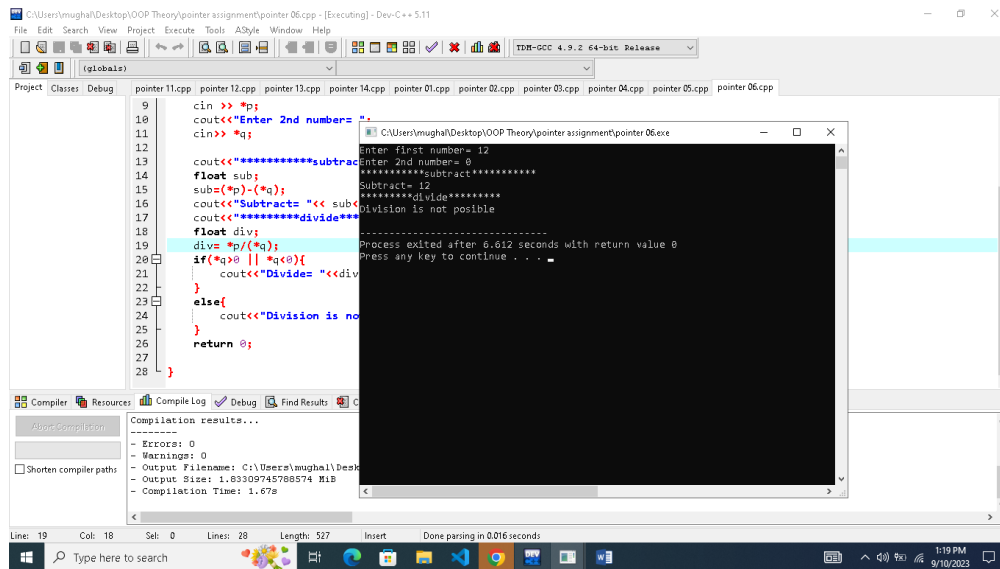
```

float *p= &a;
float*q= &b;
cout<<"Enter first number= ";
cin >> *p;
cout<<"Enter 2nd number= ";
cin>> *q;

cout<<"*****subtract*****"<<endl;
float sub;
sub=(*p)-(*q);
cout<<"Subtract= "<< sub<<endl;
cout<<"*****divide*****"<<endl;
float div;
div= *p/( *q);
if(*q>0 || *q<0){
    cout<<"Divide= "<<div<< endl;
}
else{
    cout<<"Division is not posible"<<endl;
}
return 0;
}

```

Output



Program 07

```

// palindrome
#include <iostream>
using namespace std;
int main()
{
    int a,rem,res,q;
    int *p= &a;
    cout<<"Enter a 3 digit number= " << endl;
    cin>> *p;
    q=*p;
    while(q!=0){
        rem=(q)%10;
        res += (rem)*(rem)*(rem);
        (q)=(q)/10;
    }
    if(res== *p){

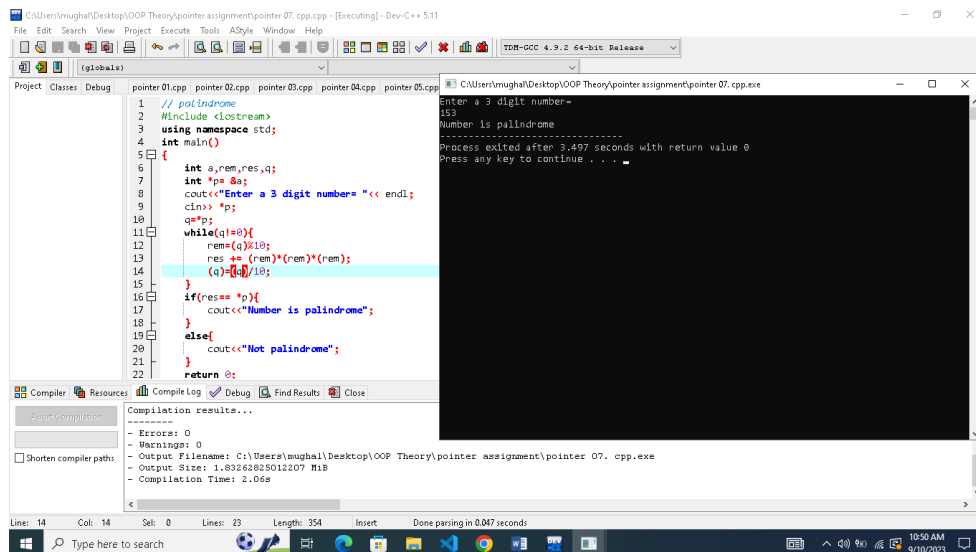
```

```

        cout<<"Number is palindrome";
    }
    else{
        cout<<"Not palindrome";
    }
    return 0;
}

```

Output



Program 8

```

#include <iostream>
using namespace std;
int main()
{
    float rad;
    float *p= &rad;
    cout<<"enter the radius of the circle= "<<endl;
    cin>> *p;
}

```

```

float PI= 3.14;

float area;

area= (*p)* (*p)* PI;

cout<<"Area of the circle is"<< area;

return 0;

}

```

Output

The screenshot shows a C++ IDE with the following source code in `pointer08.cpp`:

```

1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     float rad;
6     float *p= &rad;
7     cout<<"enter the radius of the circle="<<endl;
8     cin>> *p;
9     float PI= 3.14;
10    float area;
11    area= (*p)* (*p)* PI;
12    cout<<"Area of the circle is"<< area;
13    return 0;
14 }
15

```

The output window shows the execution results:

```

Enter the radius of the circle=
6
Area of the circle is=113.04
Process exited after 2.842 seconds with return value 0
Press any key to continue . . .

```

The compilation results at the bottom show 0 errors and 0 warnings.

Program 9

```

//table of a number

#include <iostream>

using namespace std;

int main(){

    int num;

    int *ptr = &num;

    cout<<"Enter the number= ";

    cin>> *ptr;

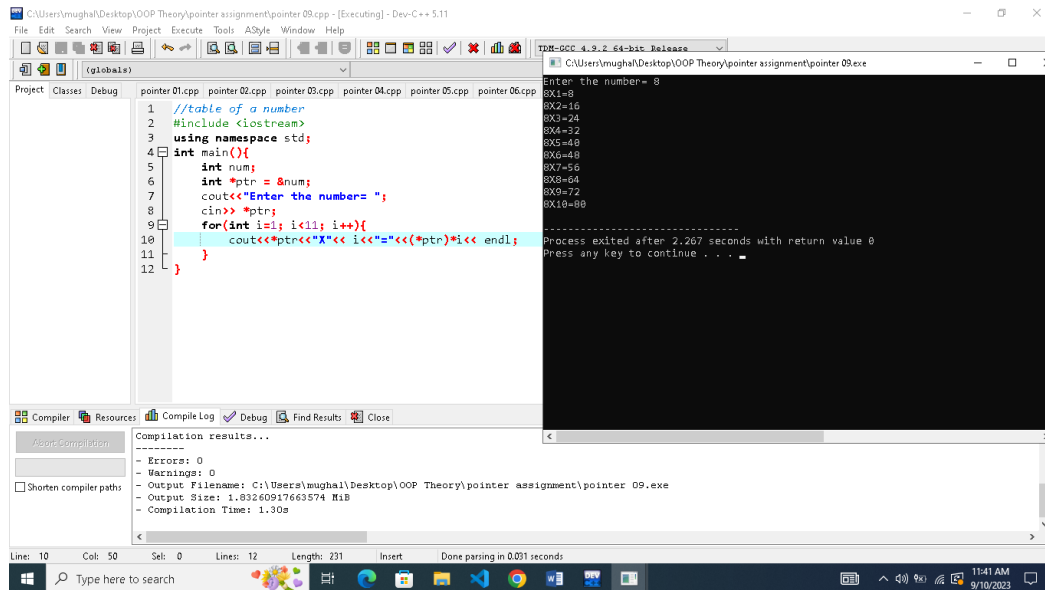
```

```

for(int i=1; i<11; i++){
    cout<<*ptr<<"X"<< i<<"="<<(*ptr)*i<< endl;
}
}

```

Output



Program 10

```

//percentage
#include <iostream>
using namespace std;
int main()
{
    int a=78, b=69, c=87;

    int *p= &a;

    int *q= &b;

    int *r= &c;

    int sum= (*p)+(*q)+(*r);
}

```

```

float per= (sum *100)/300;

cout<<"percentage of the 3 subjects marks= "<<per;

return 0;

}

```

Output

The screenshot shows a C++ IDE with the following source code in `pointer10.cpp`:

```

1 //percentage
2 #include <iostream>
3 using namespace std;
4 int main()
5 {
6     int a=78, b=59, c=87;
7     int *p= &a;
8     int *q= &b;
9     int *r= &c;
10    int sum= (*p)+(*q)+(*r);
11    float per= (sum *100)/300;
12    cout<<"percentage of the 3 subjects marks= "<<per;
13    return 0;
14 }

```

The output window displays the following text:

```

percentage of the 3 subjects marks= 0
Process exited after 0.3981 seconds with return value 0
Press any key to continue . . .

```

The compilation results at the bottom show:

```

Compilation results...
-----
Errors: 0
Warnings: 0
Output Filename: C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 10.exe
Output Size: 1,832,423,210,144,04 B
Compilation Time: 4.20s

```

Program 11

```

#include <iostream>

#include <conio.h>

using namespace std;

int main()

{

    int i,*ptr;

    ptr=&i;

    for(*ptr=0; *ptr<=500; *ptr=*ptr+5)

    {

```

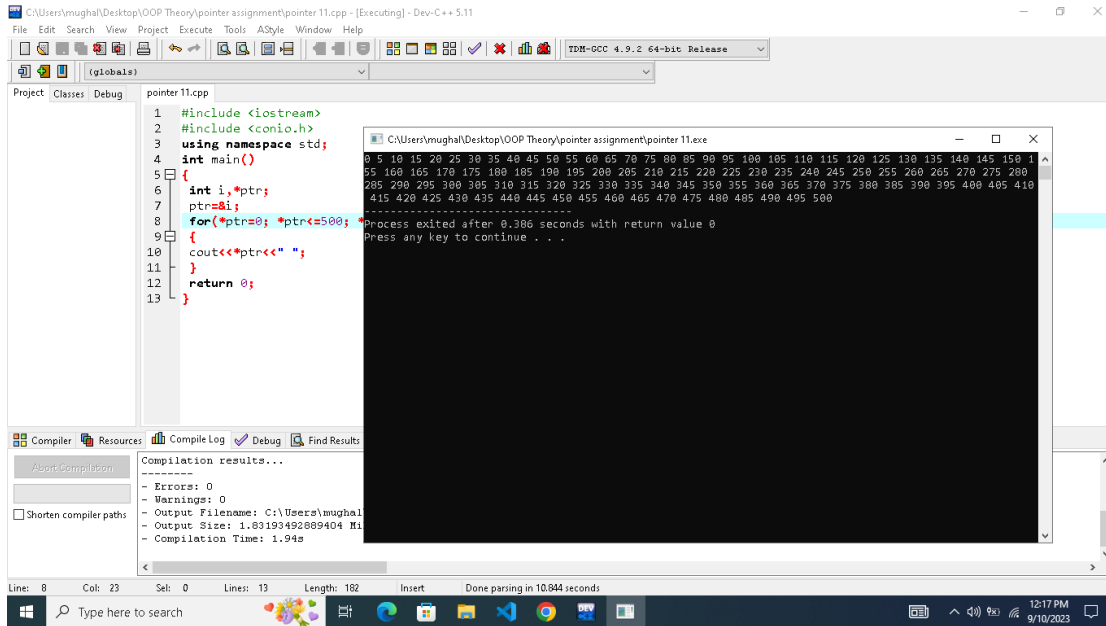
```

cout<<*ptr<<" ";
}

return 0;
}

```

Output



Program 12

```

#include <iostream>

using namespace std;

int main() {

    int *ip;

    int arr[] = { 10, 34, 13, 76, 5, 46 };

    ip = arr;

    for (int x = 0; x < 6; x++) {

        cout << *ip << endl;
    }
}

```

```

        ip++;
    }
    return 0;
}

```

Output

The screenshot shows the Dev-C++ IDE with a C++ program in the editor and its output in the console. The program defines an array of integers and iterates through it using a pointer.

```

1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int *ip;
6     int arr[] = { 10, 34, 13, 76, 5, 46 };
7     ip = arr;
8     for (int x = 0; x < 6; x++) {
9         cout << *ip << endl;
10        ip++;
11    }
12    return 0;
13 }

```

The console output shows the elements of the array: 10, 34, 13, 76, 5, 46. Below the output, it states: "Process exited after 0.3682 seconds with return value 0. Press any key to continue . . .".

The compilation results window at the bottom shows: "Compilation results... Errors: 0, Warnings: 0, Output Filename: C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 12.exe, Output Size: 1.83208656311035 KiB, Compilation Time: 1.04s".

Program 13

```

#include <iostream>
using namespace std;
int main()
{
    int num1, num2;
    cout << "Enter the first number: ";
    cin >> num1;
    cout << "Enter the second number: ";
    cin >> num2;
    int* ptr1 = &num1;

```

```

int* ptr2 = &num2;

if (*ptr1 == *ptr2) {

cout << "The numbers are equal." << endl;

}

else {

cout << "The numbers are not equal." << endl;

}

return 0;

}

```

Output

The screenshot shows the Dev-C++ IDE with a C++ program open. The program prompts the user to enter two numbers. The first number entered is 65, and the second number entered is 76. The program then compares the two numbers and outputs "The numbers are not equal." The output window also shows the process exiting after 7.311 seconds with a return value of 0.

```

C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 13.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools ASStyle Window Help
TDM-GCC 4.9.2 64-bit Release
Project Classes Debug pointer 11.cpp pointer 12.cpp pointer 13.cpp
2 using namespace std;
3 int main()
4 {
5     int num1, num2;
6     cout << "Enter the first number:" << endl;
7     cin >> num1;
8     cout << "Enter the second number:" << endl;
9     cin >> num2;
10    int* ptr1 = &num1;
11    int* ptr2 = &num2;
12    if (*ptr1 == *ptr2) {
13        cout << "The numbers are equal." << endl;
14    }
15    else {
16        cout << "The numbers are not equal." << endl;
17    }
18    return 0;
19 }
20
21
Compiler Resources Compile Log Debug Find Results Close
About Compilation
Shorten compiler paths
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 13.exe
- Output Size: 1.83260917663574 MiB
- Compilation Time: 2.97s
Line: 20 Col: 1 Sel: 0 Lines: 21 Length: 377 Insert Done parsing in 0.171 seconds
Type here to search 12:57 PM 9/10/2023

```

Program 14

```

#include <iostream>

using namespace std;

int main(){

    int length=10, width =10;

```



```

int *a= &length;

int *b= &width;

int area;

area= (*a)*(*b);

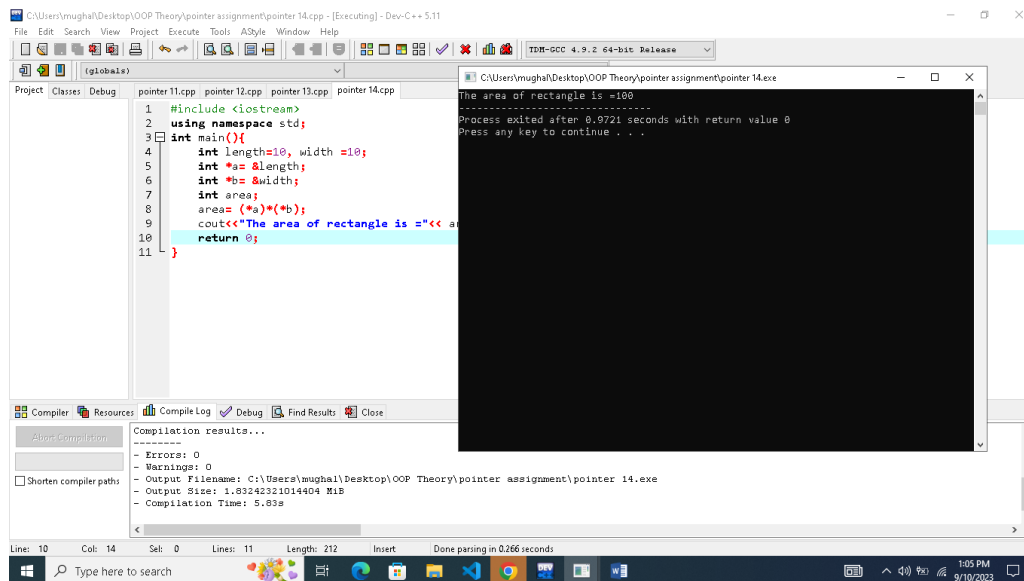
cout<<"The area of rectangle is ="<< area;

return 0;

}

```

Output



Program 15

```

#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;

}

```

Output

The screenshot displays a C++ IDE with the following components:

- Source Code (pointer 15.cpp):**

```

1 #include <iostream>
2 using namespace std;
3 int main() {
4     int ar[5], i, sum = 0;
5     int *ptr;
6     cout << "Enter any 5 numbers i:";
7     for (i = 0; i < 5; i++) {
8         cin >> ar[i];
9     }
10    ptr = ar;
11    for (i = 0; i < 5; i++) {
12        sum = sum + *(ptr + i);
13    }
14    cout << "\nSum of the array elements :" << sum;
15    return 0;
16 }
17

```
- Output Window:**

```

Enter any 5 numbers i:6
7
8
9
6
6
Sum of the array elements :36
-----
Process exited after 7.147 seconds with return value 0
Press any key to continue . . .

```
- Compiler Output:**

```

Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\mughal\Desktop\OOP Theory\pointer assignment\pointer 15.exe
- Output Size: 1.83242321014404 KiB
- Compilation Time: 4.13s

```