Assignment 01

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Subject:	Data Structure & Algorithm Lab
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Question 01: What a process to Create GitHub account?

Ans: There are six steps to create GitHub account.

- Go to https://github.com/.
- Click “Sign up”.
- Enter a username, email, and password.
- Complete the CAPTCHA
- Choose a Plat (usually “Free”).
- Verify your email.
- Your account is ready to use GitHub!

1. Go to the GitHub Website:

Open your web browser and go to the GitHub website by entering the following URL in your browser's address https://github.com/.

2. Sign Up:

On the GitHub homepage, you will see a "Sign Up" button in the upper-right corner. Click on it to start the registration process.

3. Provide Your Username:

Choose a unique username for your GitHub account. GitHub will check the availability of the username as you type it. If your desired username is already taken, you'll need to choose another one.

4. Enter Your Email Address:

Provide a valid email address that you have access to. This email address will be associated with your GitHub account and will be used for account-related notifications.

5. Choose a Password:

Create a strong and secure password for your GitHub account. GitHub will provide guidelines to help you create a secure password.

6. Verify Your Password:

Retype the password you just created to confirm it.

7. Complete CAPTCHA:

GitHub might ask you to complete a CAPTCHA to confirm that you are not a robot. Follow the on-screen instructions to complete this step.

8. Choose Your Plan:

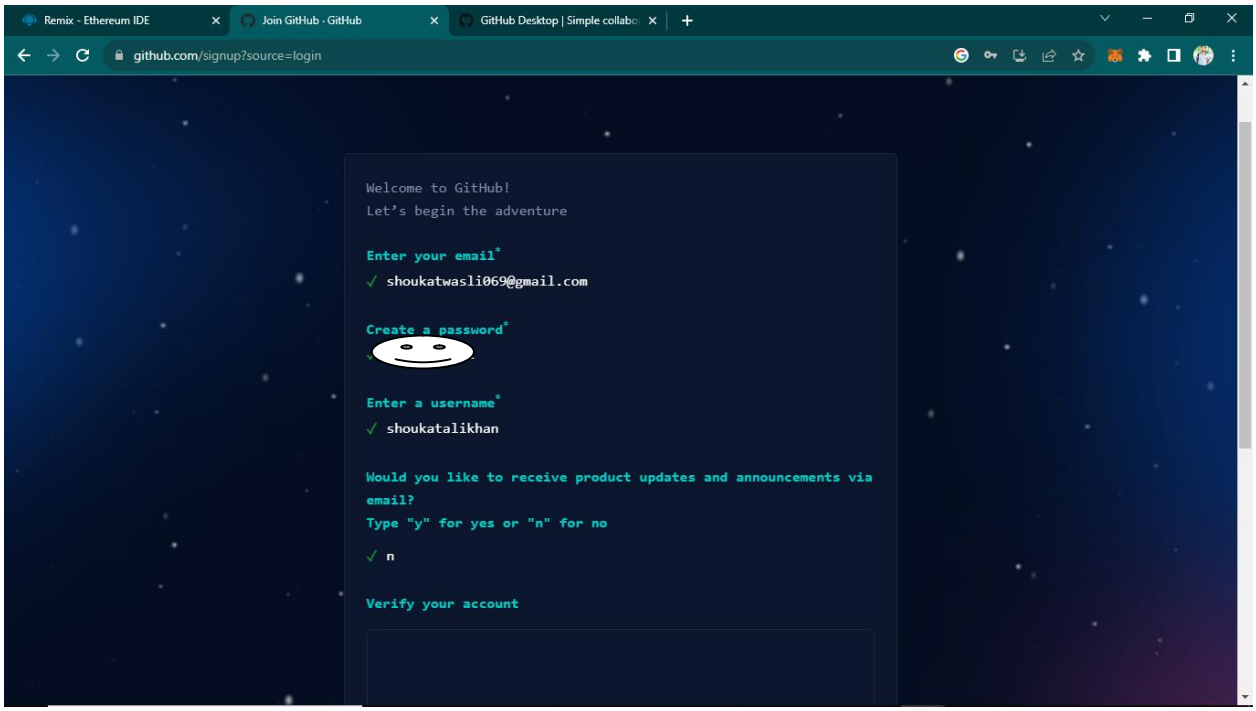
GitHub offers different plans, including a free plan. Choose the plan that best suits your needs. For most users, the free plan is sufficient. Click on the "Free" plan to select it.

9. Verify Your Email Address:

After completing the registration process, GitHub will send a verification email to the email address you provided. Open your email inbox and click on the verification link in the email from GitHub to confirm your email address. If you don't receive the email, check your spam folder.

10. Start Using GitHub:

Congratulations! Your GitHub account is now created. You can start using GitHub to create and collaborate on software projects, contribute to open-source projects, and more.

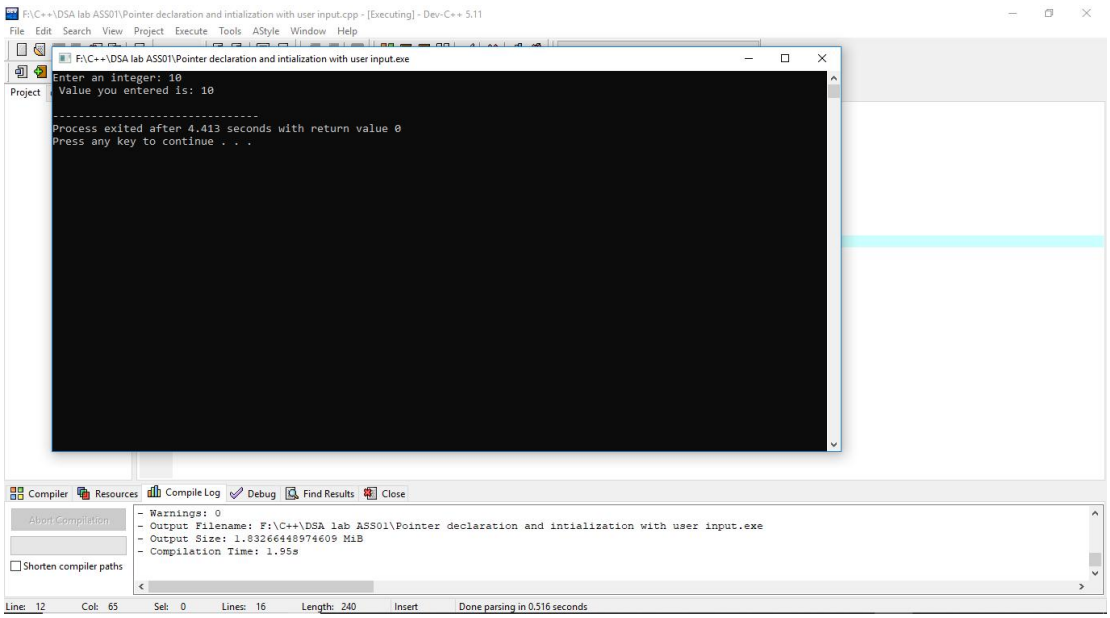

Remix - Ethereum IDE
Join GitHub · GitHub
GitHub Desktop | Simple collabo
github.com/signup?source=login
Welcome to GitHub!
Let's begin the adventure
Enter your email*
✓ shoukatwasli069@gmail.com
Create a password*
Enter a username*
✓ shoukatalikhan
Would you like to receive product updates and announcements via email?
Type "y" for yes or "n" for no
✓ n
Verify your account

Question 02: Write any 15 programs that will explain the concepts of pointer.

1: Pointer declaration and intialization with user input.

```
#include <iostream>

int main() {

    int a;

    int *ptr;

    std::cout << "Enter an integer: ";

    std::cin >> a;

    ptr = &a;

    std::cout << " Value you entered is: " << *ptr << std::endl;

    return 0;

}
```

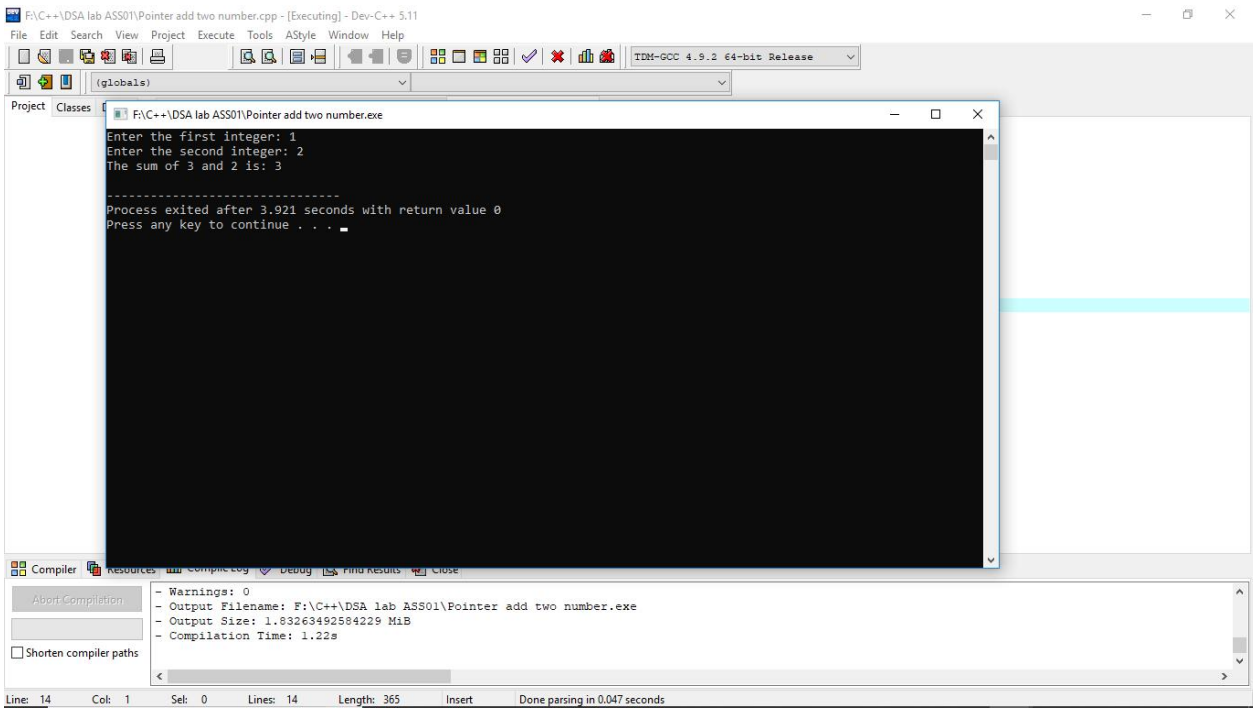
Output



02: Add two numbers.

```
#include <iostream>

int main() {

    int num1, num2;

    int *ptr;

    std::cout << "Enter the first integer: ";

    std::cin >> num1;

    std::cout << "Enter the second integer: ";

    std::cin >> num2;

    ptr = &num1;

    *ptr += num2;

        std::cout << "The sum of " << num1 << " and " << num2 << " is: " << *ptr << std::endl;

        return 0;

}
```

Output

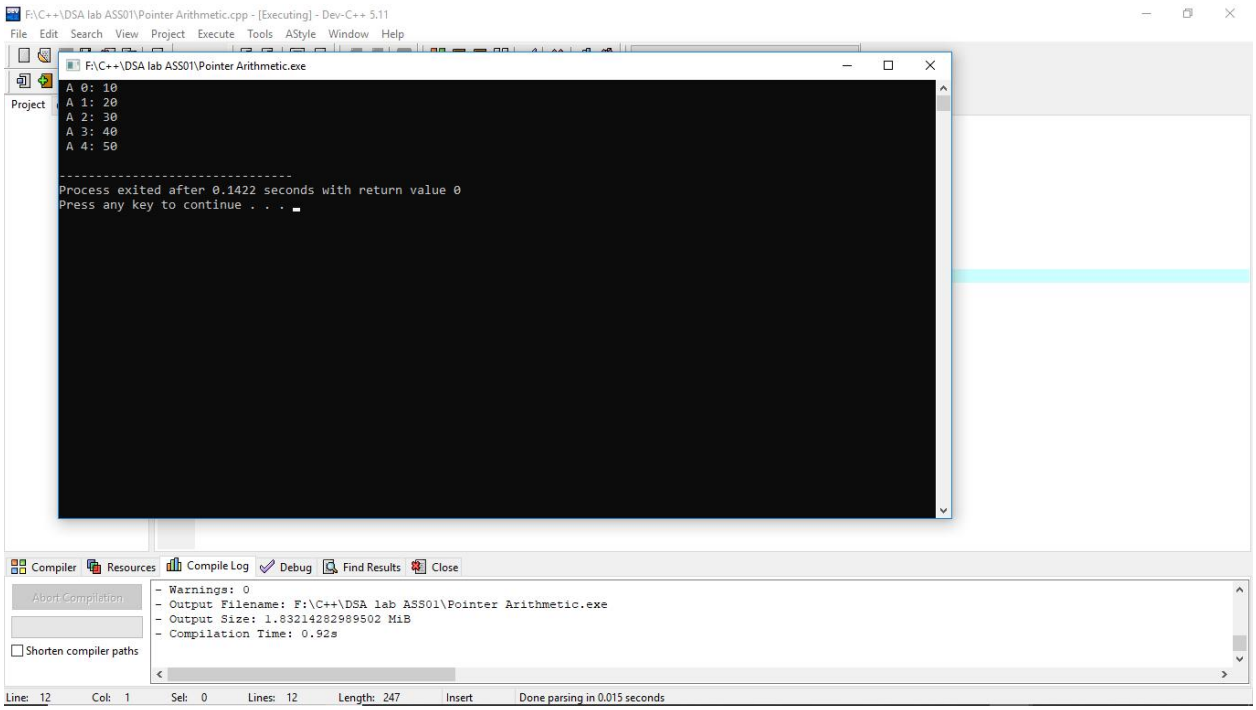


03: Pointer Aritmatic.

```
#include <iostream>

int main() {

    int numbers[] = {10, 20, 30, 40, 50};

    int *ptr = numbers;

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

        std::cout << " A " << i << ": " << *ptr << std::endl;

        ptr++;

    }
```

```
 return 0;

}
```

Output:

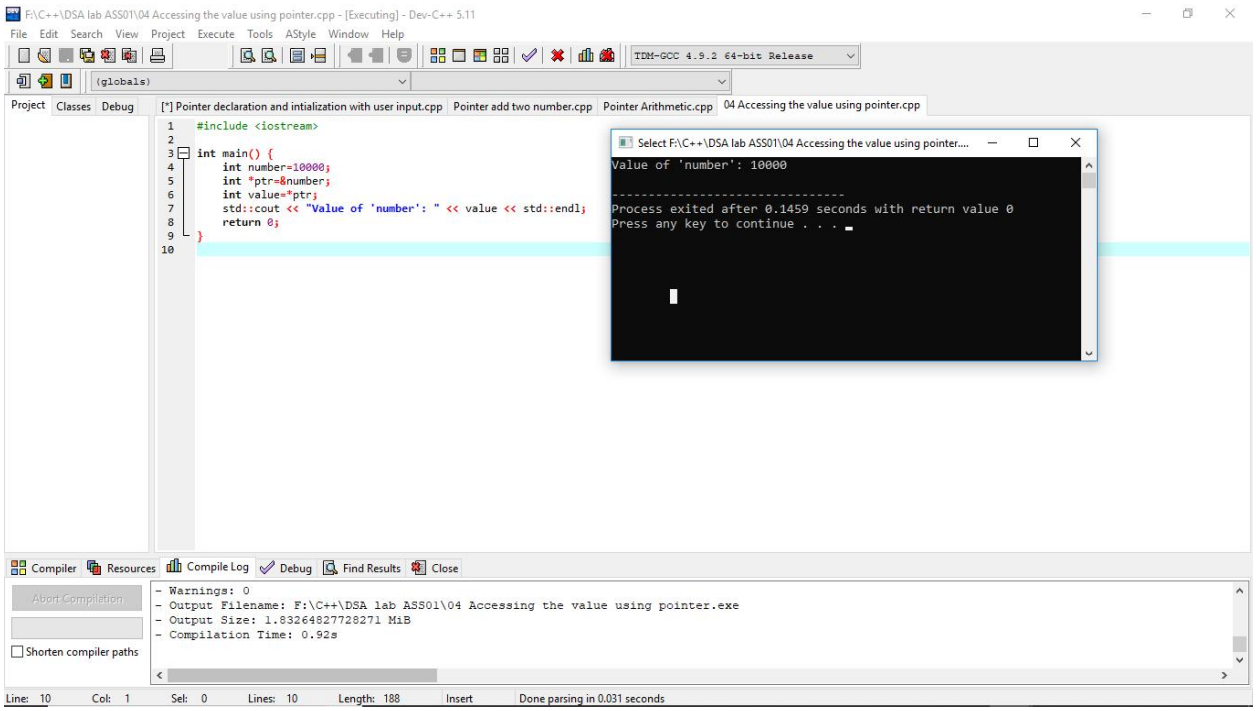


04: Accessing the value.

```
#include <iostream>

int main() {

    int number=10000;

    int *ptr=&number;

    int value=*ptr;

    std::cout << "Value of 'number': " << value << std::endl;

    return 0;
```

}

Output:

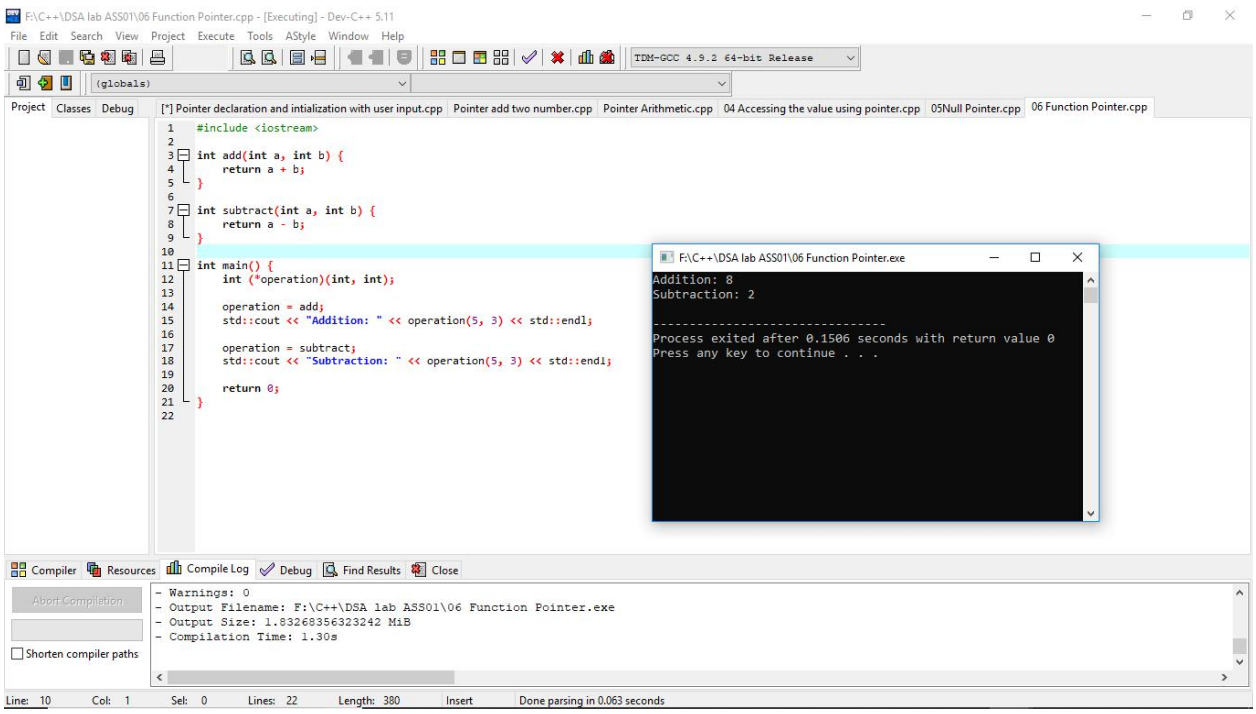


05: Function Pointer.

```
#include <iostream>


int add(int a, int b) {

    return a + b;

}


int subtract(int a, int b) {

    return a - b;

}
```

```
int main() {
    int (*operation)(int, int);

    operation = add;
    std::cout << "Addition: " << operation(5, 3) << std::endl;

    operation = subtract;
    std::cout << "Subtraction: " << operation(5, 3) << std::endl;

    return 0;
}
```

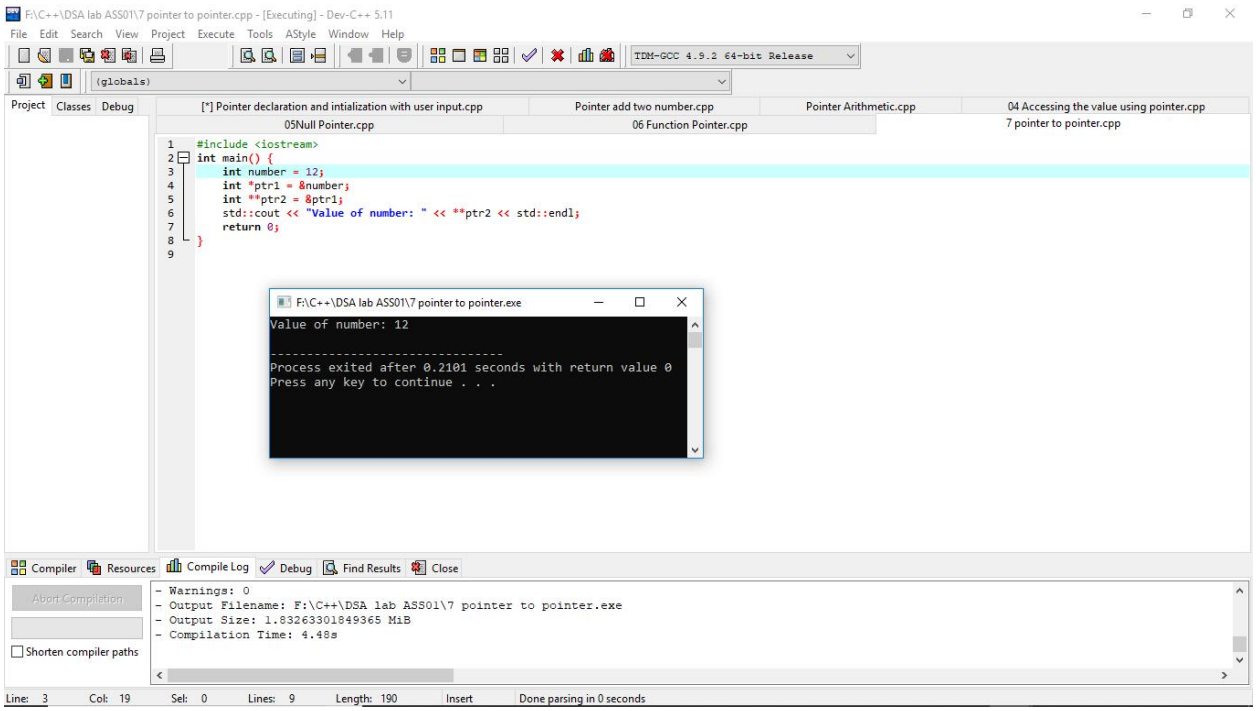
Output:



06: Pointer to pointer.

```
#include <iostream>

int main() {

    int number = 12;

    int *ptr1 = &number;

    int **ptr2 = &ptr1;

    std::cout << "Value of number: " << **ptr2 << std::endl;

    return 0;

}
```

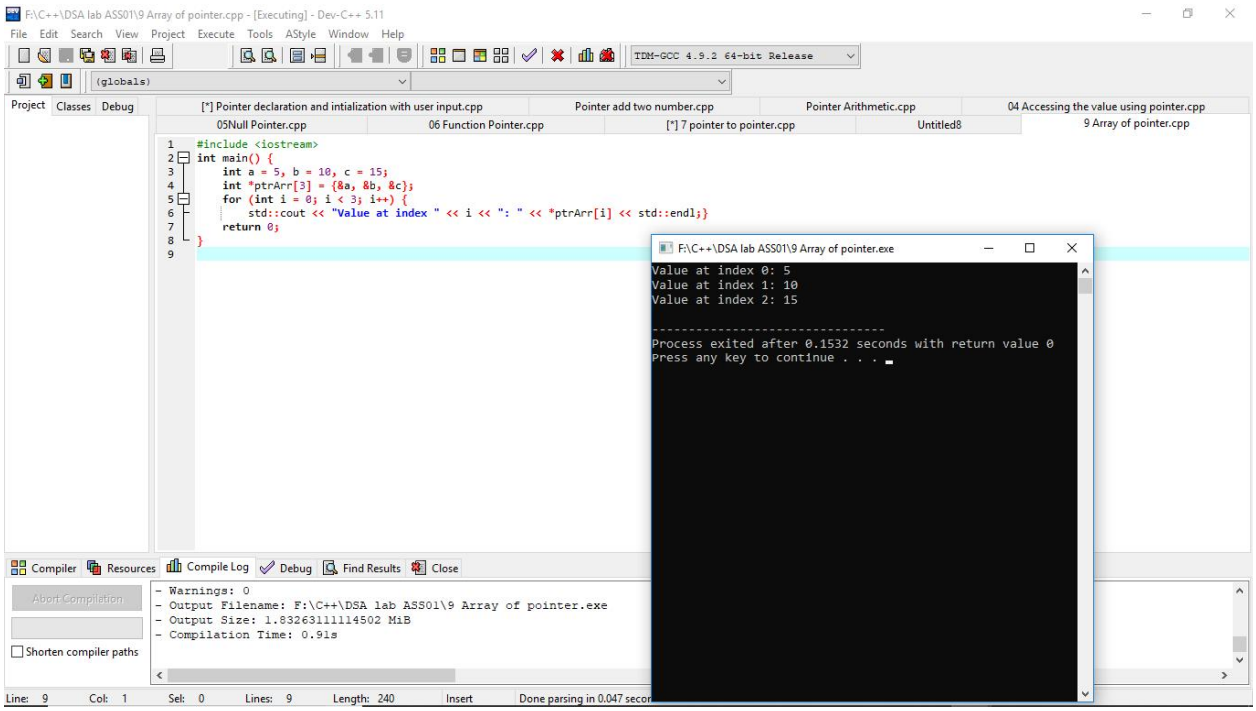
Output:



07: Array of pointer.

```
#include <iostream>

int main() {

    int a = 5, b = 10, c = 15;

    int *ptrArr[3] = {&a, &b, &c};

    for (int i = 0; i < 3; i++) {

        std::cout << "Value at index " << i << ": " << *ptrArr[i] << std::endl;}

    return 0;

}
```

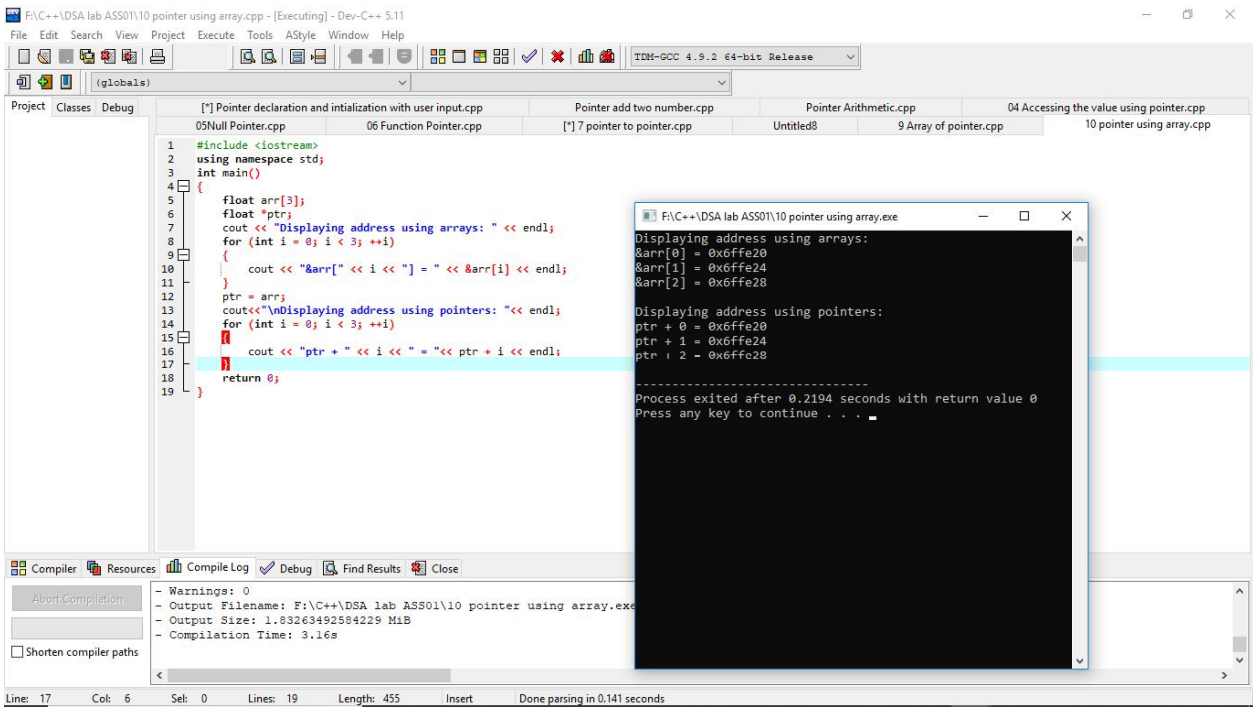
Output:



08: Pointer using Array.

```
#include <iostream>

using namespace std;

int main()

{

   float arr[3];

   float *ptr;

   cout << "Displaying address using arrays: " << endl;

   for (int i = 0; i < 3; ++i)

   {

      cout << "&arr[" << i << "] = " << &arr[i] << endl;

   }

   ptr = arr;

   cout<<"\nDisplaying address using pointers: "<< endl;

         for (int i = 0; i < 3; ++i)

   {

      cout << "ptr + " << i << " = "<< ptr + i << endl;

   }

   return 0;

}
```

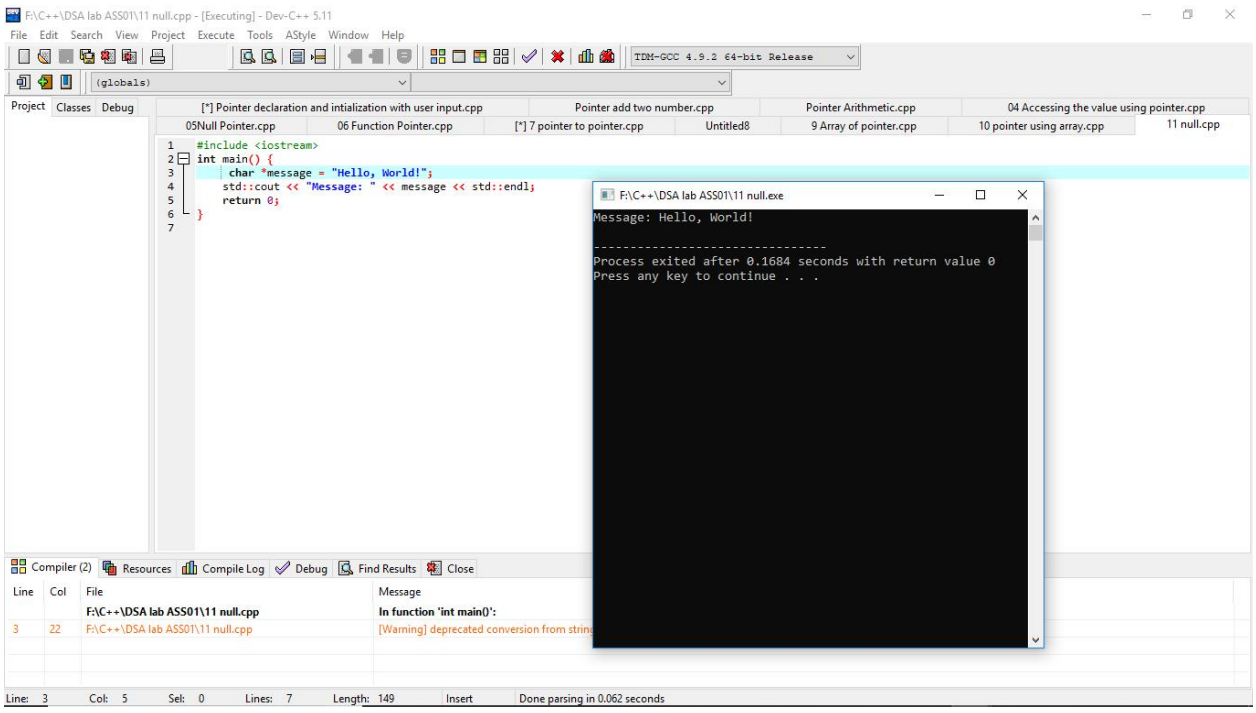
Output:



09:

```
#include <iostream>

int main() {

    char *message = "Hello, World!";

   std::cout << "Message: " << message << std::endl;

   return 0;

}
```

Output:

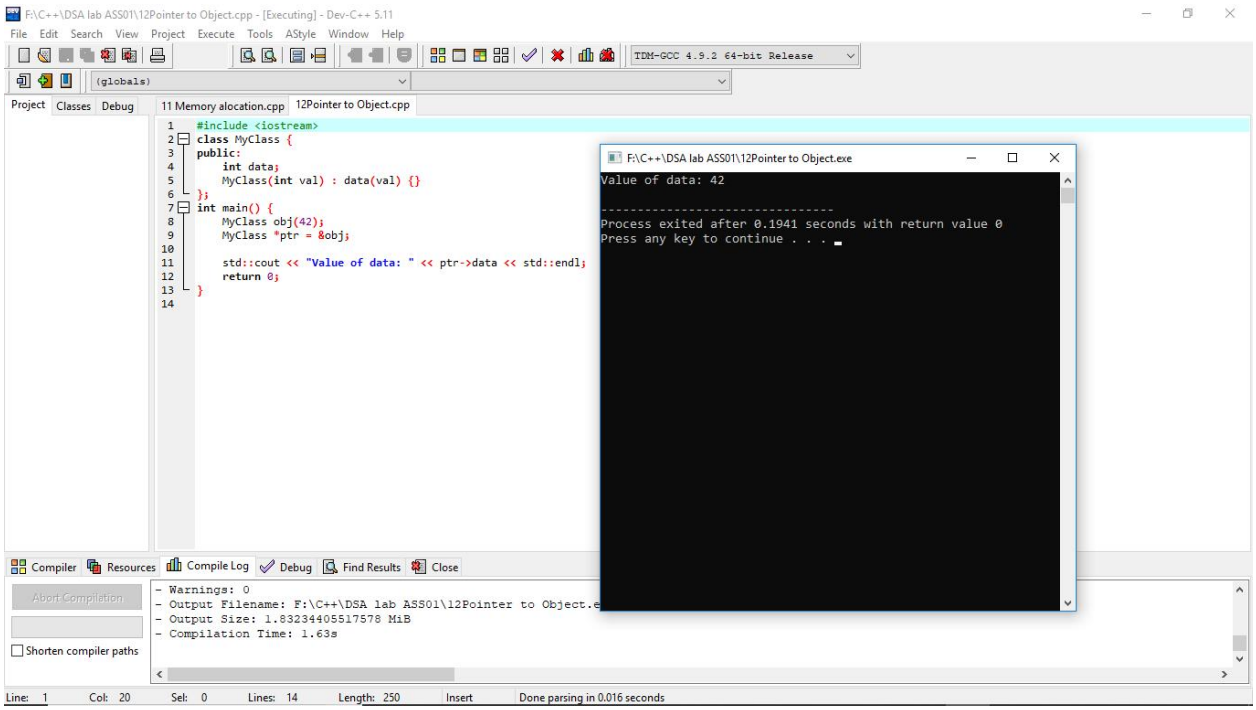


10: Pointer to Object.

```
#include <iostream>

class MyClass {

public:

    int data;

    MyClass(int val) : data(val) {}

};

int main() {

    MyClass obj(42);

    MyClass *ptr = &obj;


    std::cout << "Value of data: " << ptr->data << std::endl;
```

```
    return 0;
}
```

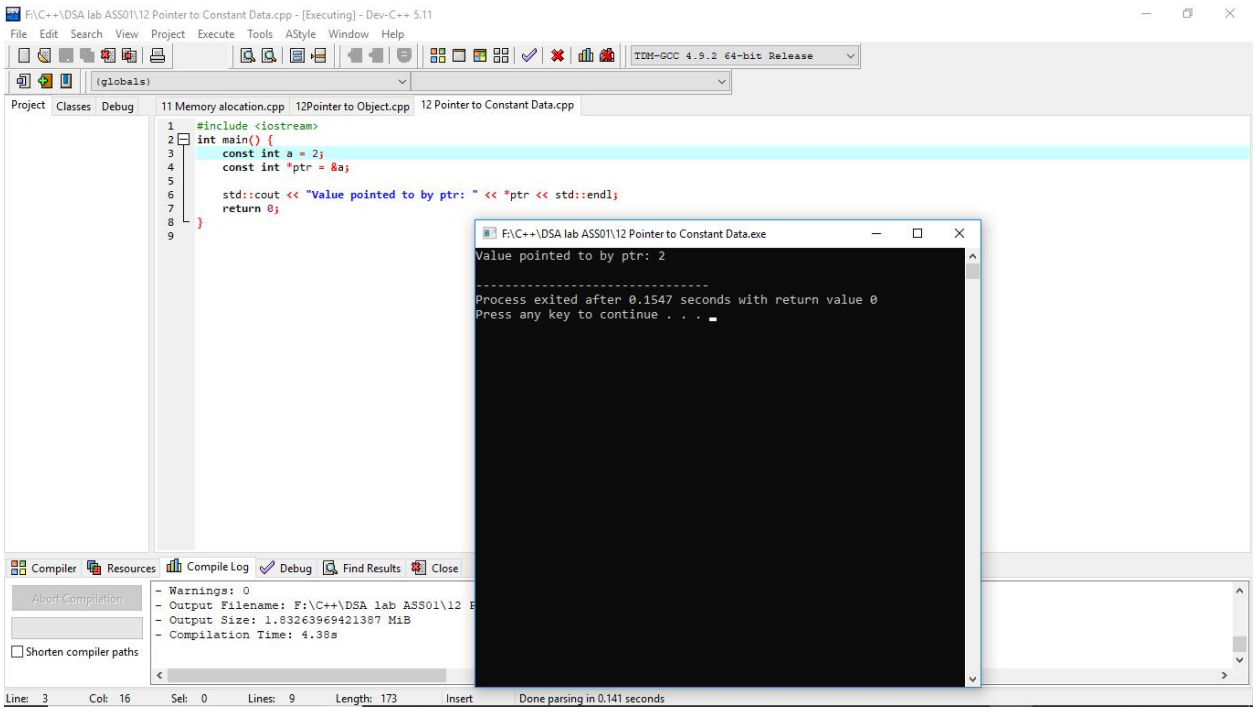
Output:



11: Pointer to constant data.

```
#include <iostream>

int main() {

    const int a = 2;

    const int *ptr = &a;


    std::cout << "Value pointed to by ptr: " << *ptr << std::endl;

    return 0;

}
```

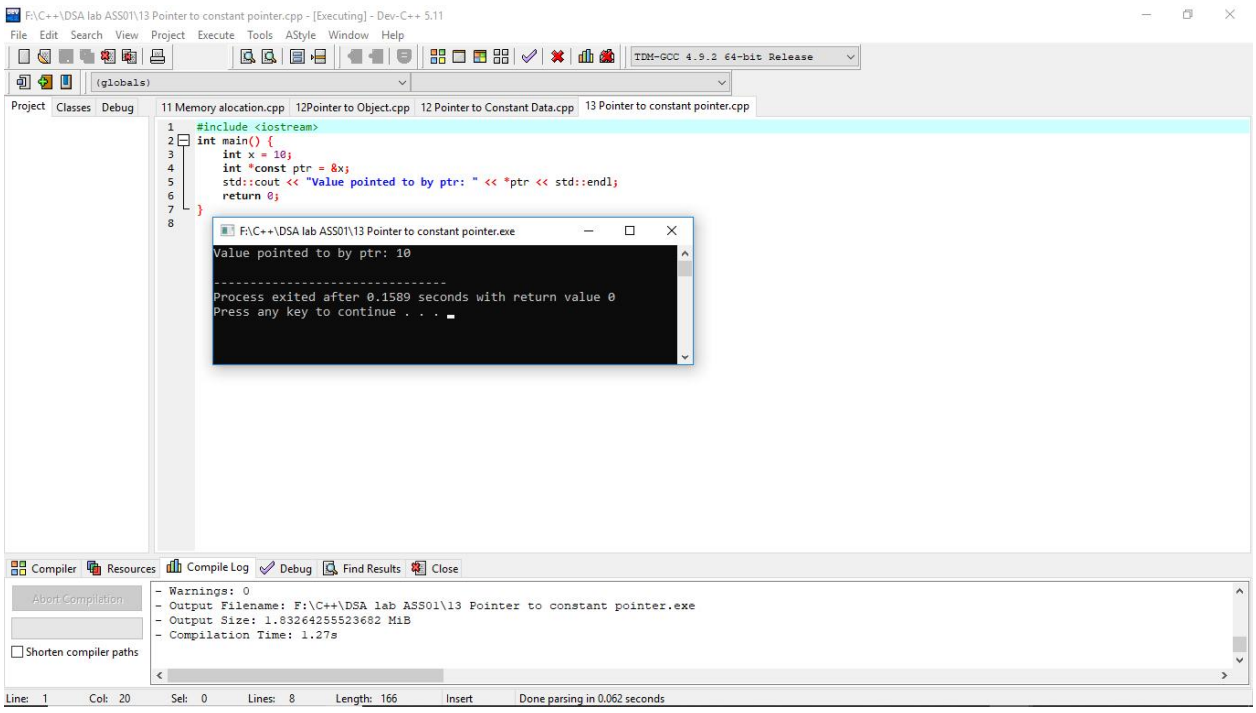
Output:



12: Pointer to constant pointer.

```
#include <iostream>

int main() {

    int x = 10;

    int *const ptr = &x;

    std::cout << "Value pointed to by ptr: " << *ptr << std::endl;

    return 0;

}
```

Output:

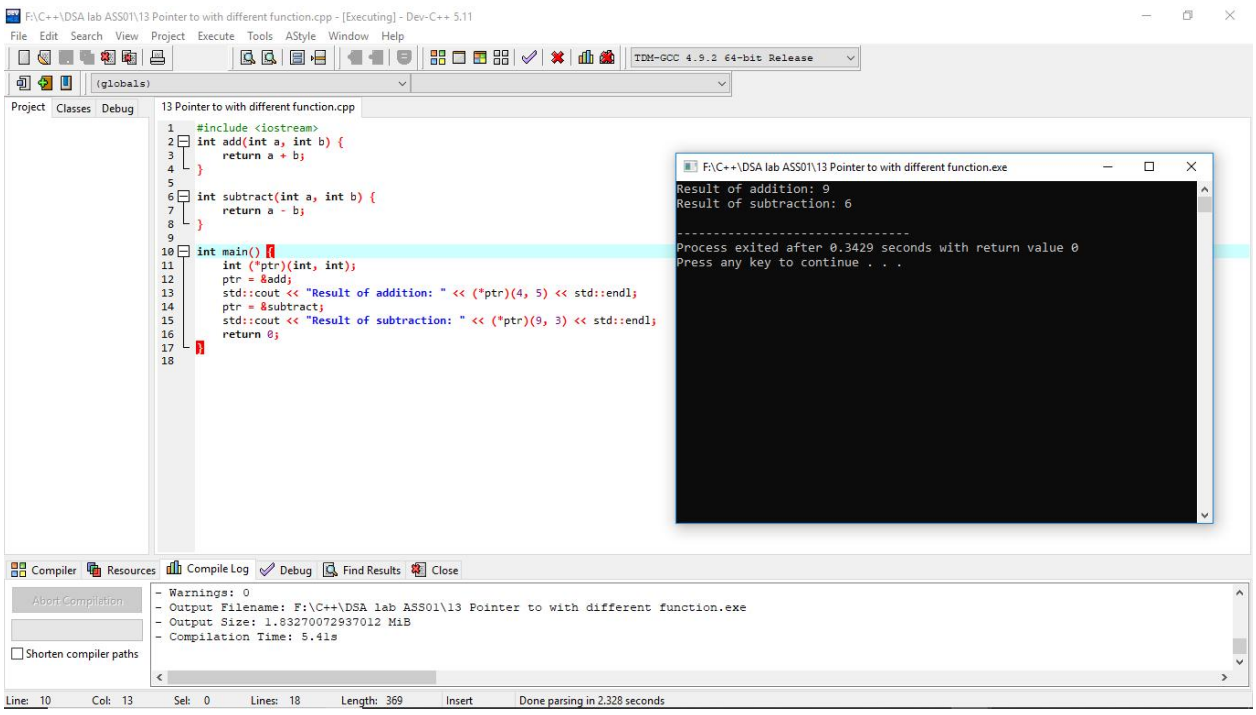


13: Pointer to with different function.

```
#include <iostream>

int add(int a, int b) {

    return a + b;

}


int subtract(int a, int b) {

    return a - b;

}


int main() {
```

```
    int (*ptr)(int, int);

    ptr = &add;

    std::cout << "Result of addition: " << (*ptr)(4, 5) << std::endl;

    ptr = &subtract;

    std::cout << "Result of subtraction: " << (*ptr)(9, 3) << std::endl;

    return 0;

}
```

Output:

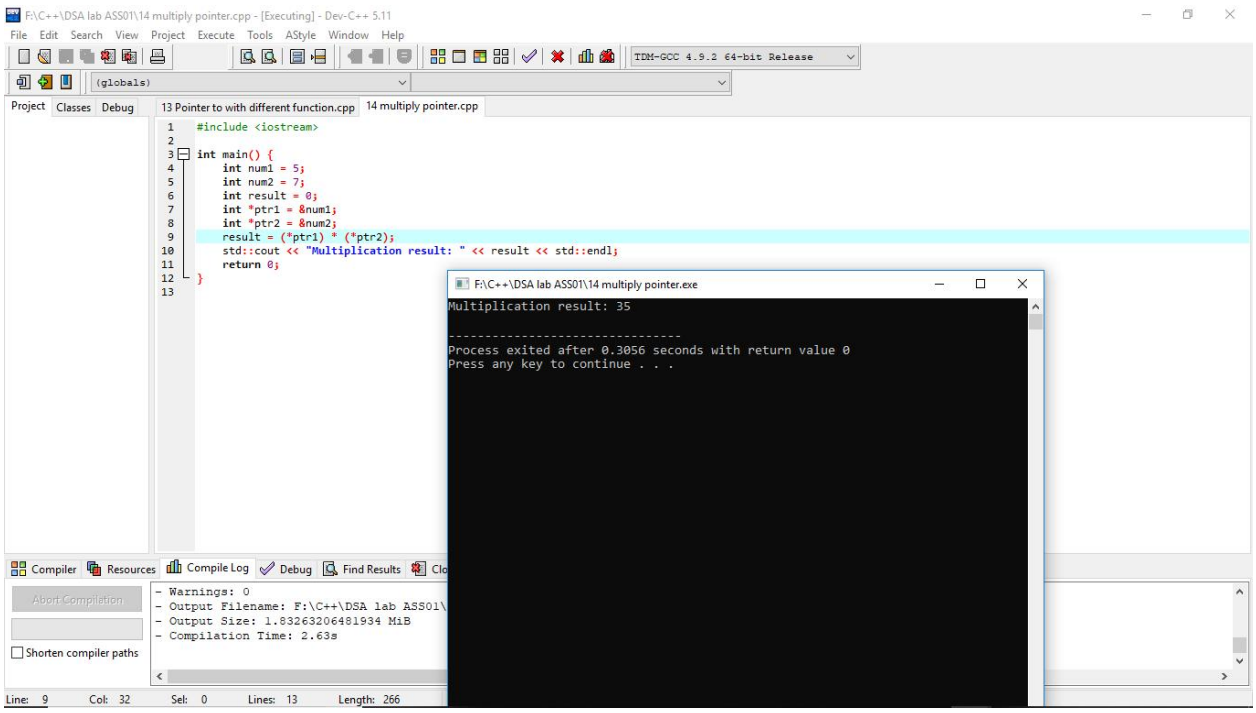


14:Multiply pointer.

```
#include <iostream>


int main() {
```

```
    int num1 = 5;
    int num2 = 7;
    int result = 0;
    int *ptr1 = &num1;
    int *ptr2 = &num2;
    result = (*ptr1) * (*ptr2);
    std::cout << "Multiplication result: " << result << std::endl;
    return 0;
}
```

Output:



15: Divide function.

```
#include <iostream>
```

```
int main() {
    int num1 = 15;
    int num2 = 7;
    int result = 0;
    int *ptr1 = &num1;
    int *ptr2 = &num2;
    result = (*ptr1) / (*ptr2);
    std::cout << "Divide result: " << result << std::endl;
    return 0;
}
```

Output: