ASSIGNMENT NO 1
COMSATS UNIVERSITY ISLAMABAD

Department: Computer Science

Submitted By:

ALI SHAHZAD

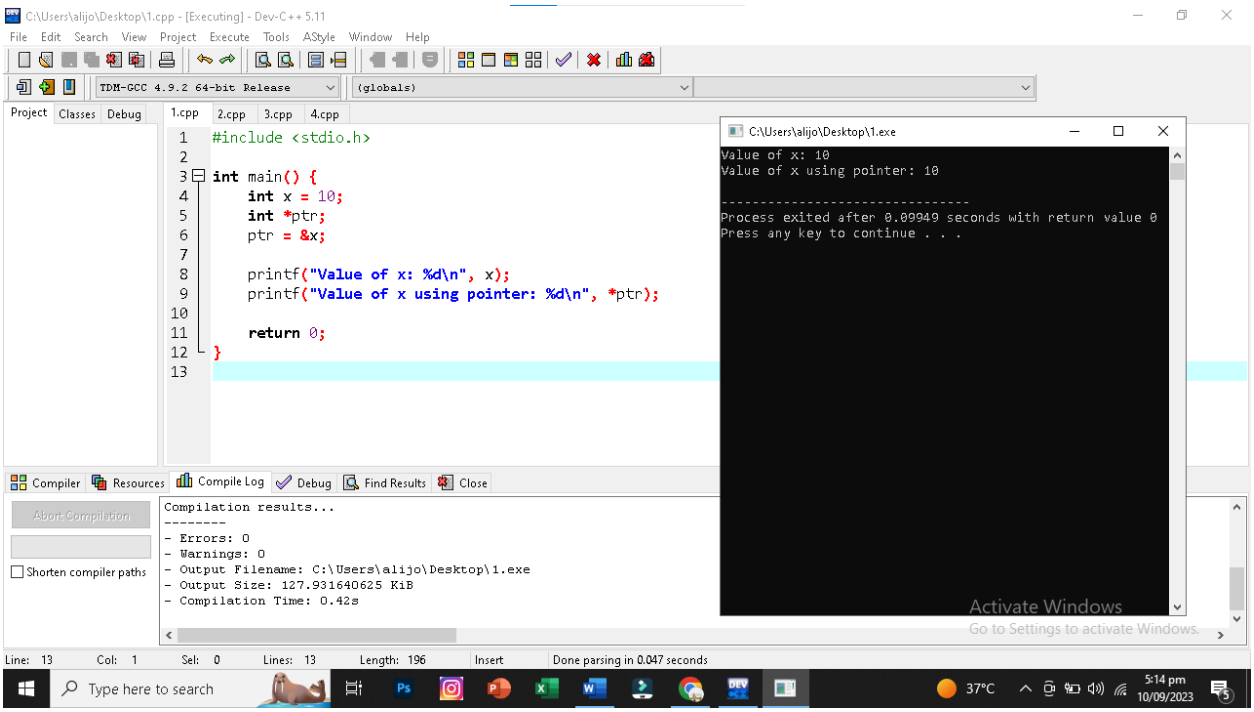
Submitted To:

MAM YASMEEN JANA

- **Course Title:** DATA STRUCTURE
- **WORK:** FOR LAB
- **Registration No:** SP22-BCS-107
- **Section:** B

Program 1

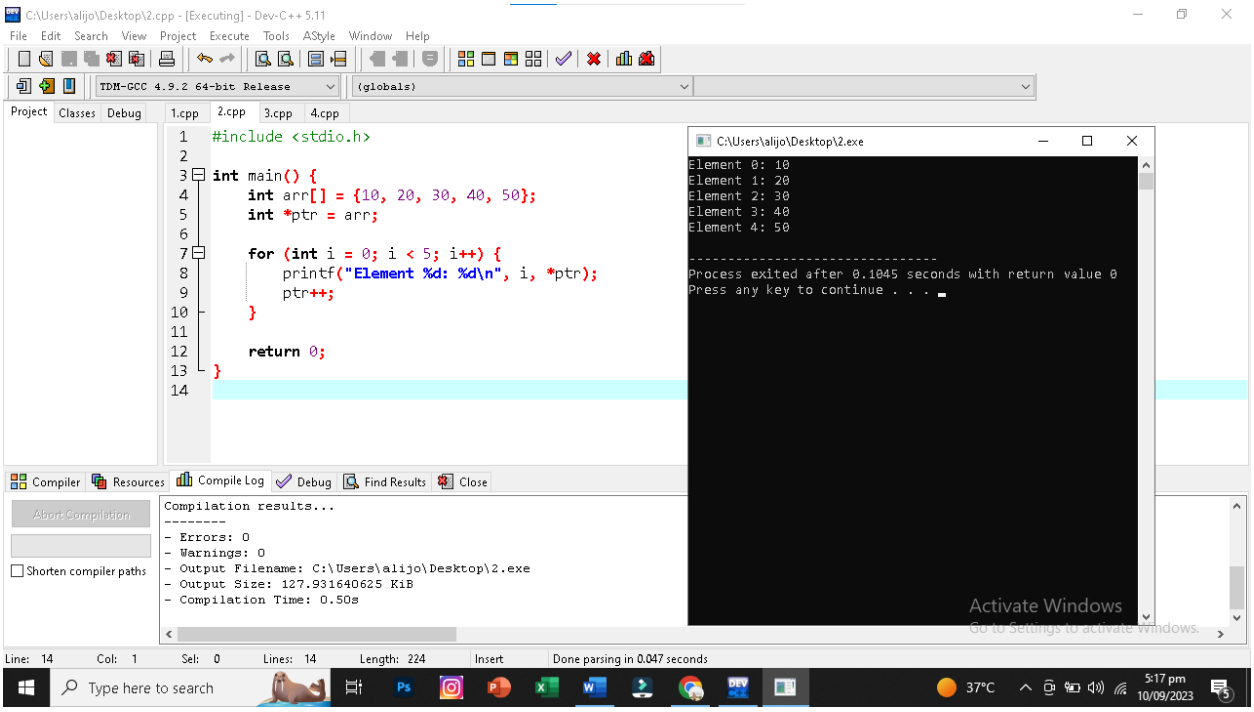
```
#include <stdio.h>

int main() {
    int x = 10;
    int *ptr;
    ptr = &x;

    printf("Value of x: %d\n", x);
    printf("Value of x using pointer: %d\n", *ptr);

    return 0;
}
```



Program 2

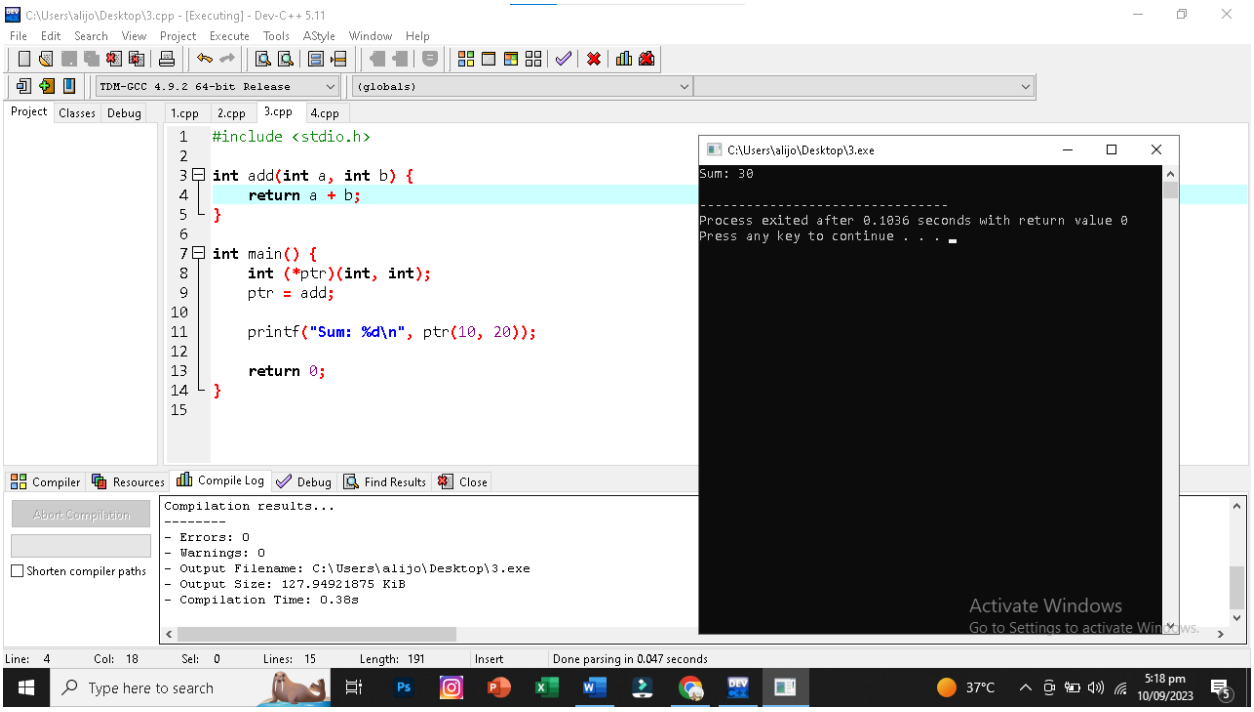
```
#include <stdio.h>

int main() {
    int arr[] = {10, 20, 30, 40, 50};
    int *ptr = arr;
```

```
    for (int i = 0; i < 5; i++) {
        printf("Element %d: %d\n", i, *ptr);
        ptr++;
    }

    return 0;
}
```



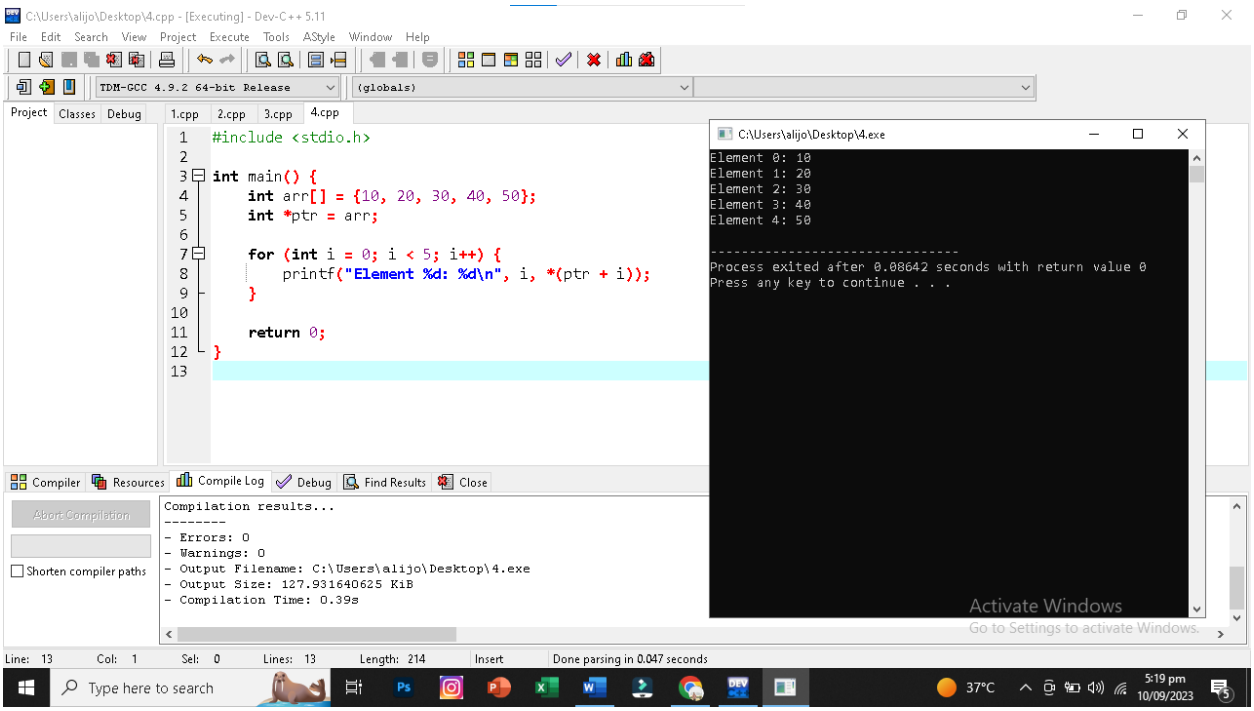
Program 3

```
#include <stdio.h>

int add(int a, int b) {
    return a + b;
}

int main() {
    int (*ptr)(int, int);
    ptr = add;

    printf("Sum: %d\n", ptr(10, 20));

    return 0;
}
```



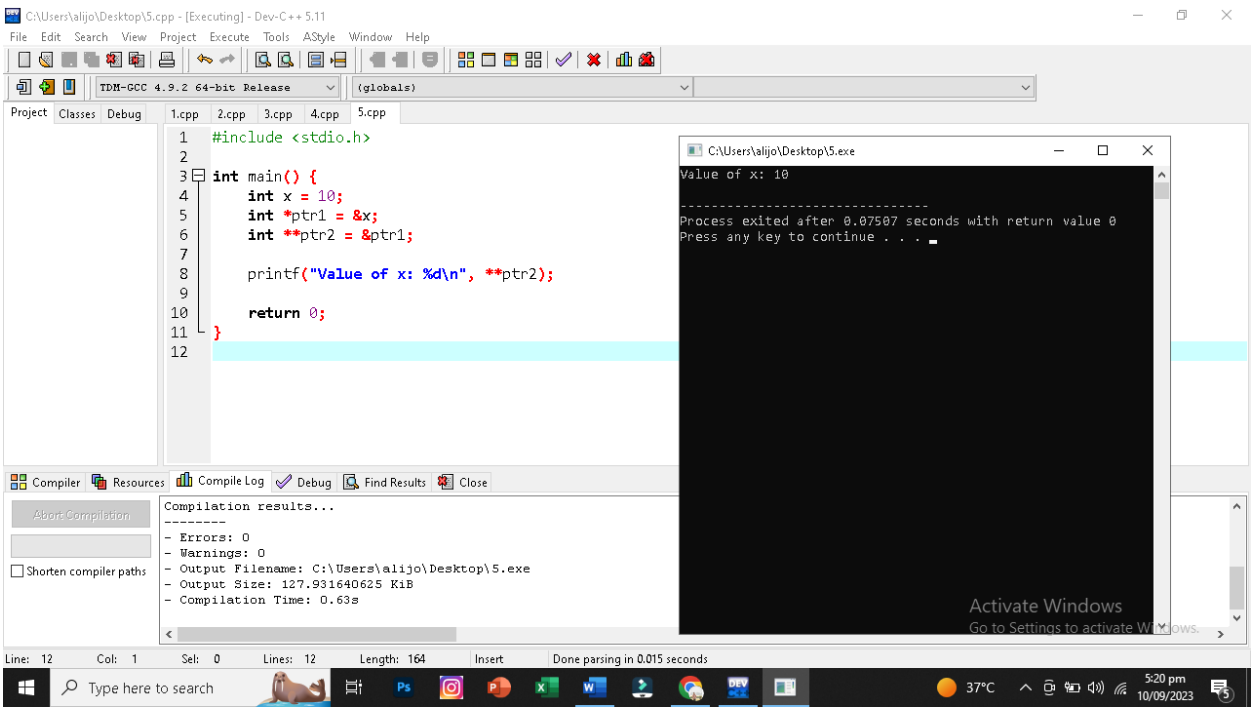
Program 4

```
#include <stdio.h>

int main() {
    int arr[] = {10, 20, 30, 40, 50};
    int *ptr = arr;

    for (int i = 0; i < 5; i++) {
        printf("Element %d: %d\n", i, *(ptr + i));
    }

    return 0;
}
```



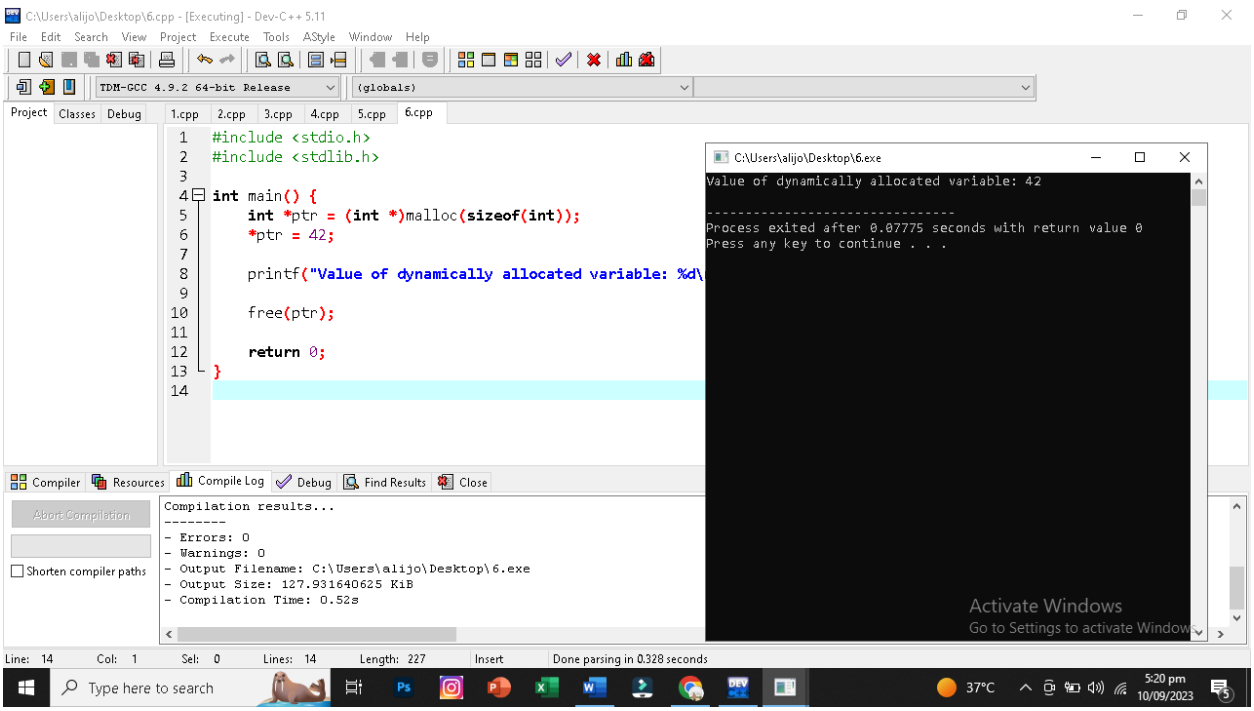
Program 5

```
#include <stdio.h>

int main() {
    int x = 10;
    int *ptr1 = &x;
    int **ptr2 = &ptr1;

    printf("Value of x: %d\n", **ptr2);

    return 0;
}
```



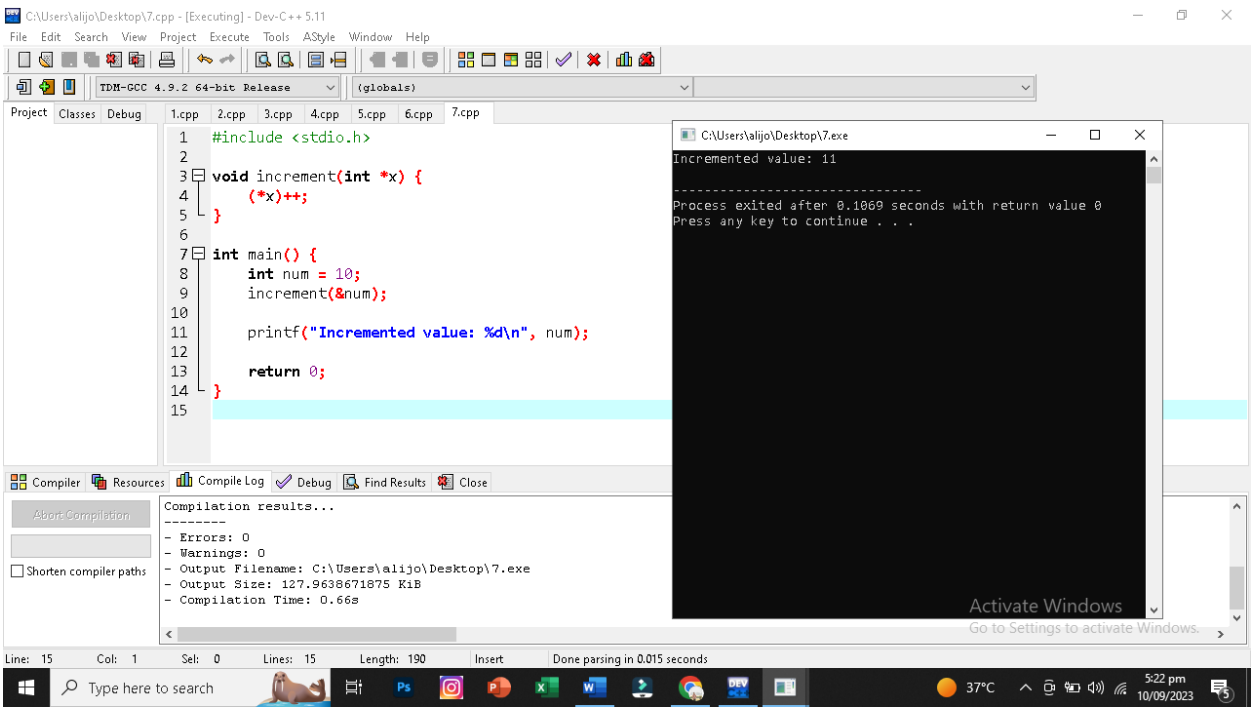
Program 6

```
#include <stdio.h>
#include <stdlib.h>

int main() {
    int *ptr = (int *)malloc(sizeof(int));
    *ptr = 42;

    printf("Value of dynamically allocated variable: %d\n", *ptr);

    free(ptr);

    return 0;
}
```



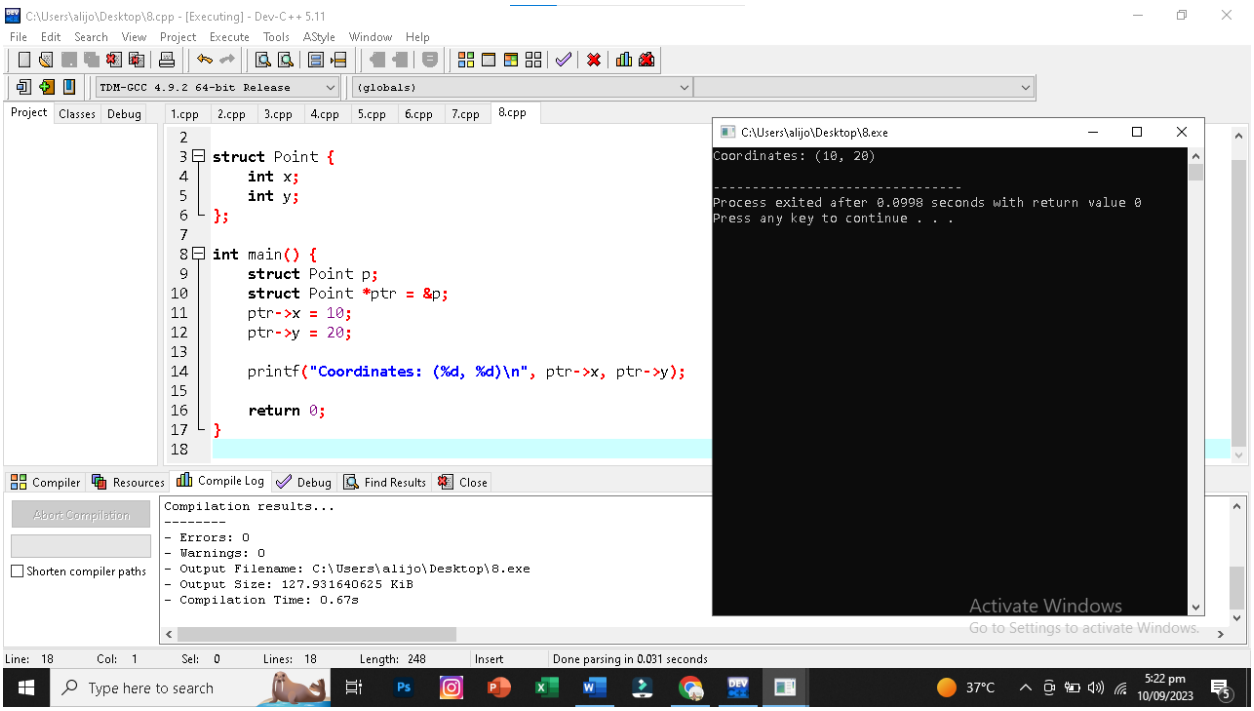
Program 7

```
#include <stdio.h>

void increment(int *x) {
    (*x)++;
}

int main() {
    int num = 10;
    increment(&num);

    printf("Incremented value: %d\n", num);

    return 0;
}
```



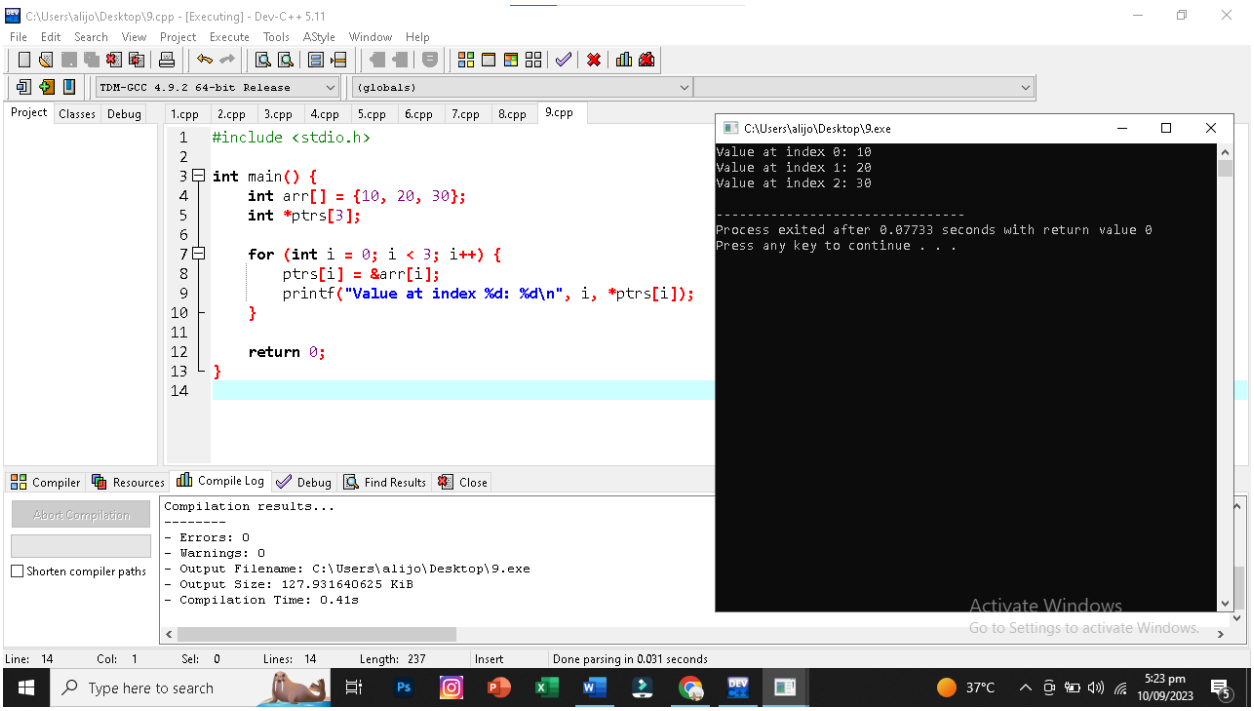
Program 8

```
#include <stdio.h>

struct Point {
    int x;
    int y;
};

int main() {
    struct Point p;
    struct Point *ptr = &p;
    ptr->x = 10;
    ptr->y = 20;

    printf("Coordinates: (%d, %d)\n", ptr->x, ptr->y);

    return 0;
}
```



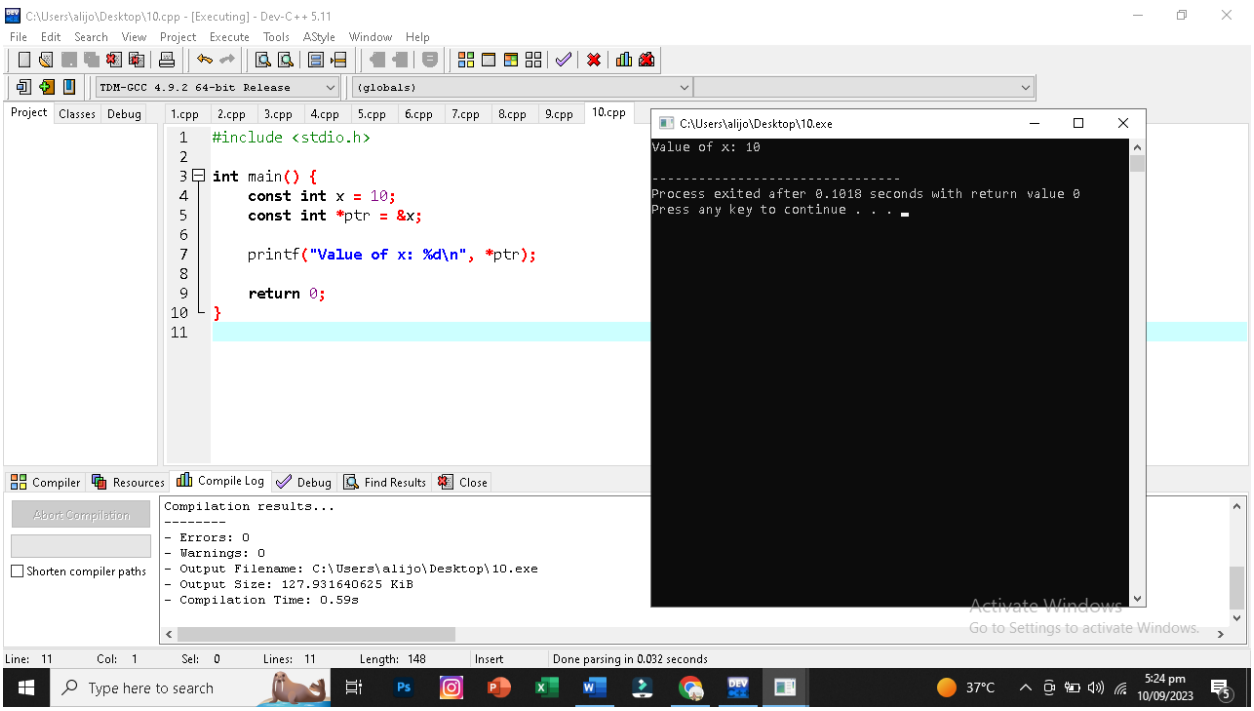
Program 9

```
#include <stdio.h>

int main() {
    int arr[] = {10, 20, 30};
    int *ptrs[3];

    for (int i = 0; i < 3; i++) {
        ptrs[i] = &arr[i];
        printf("Value at index %d: %d\n", i, *ptrs[i]);
    }

    return 0;
}
```



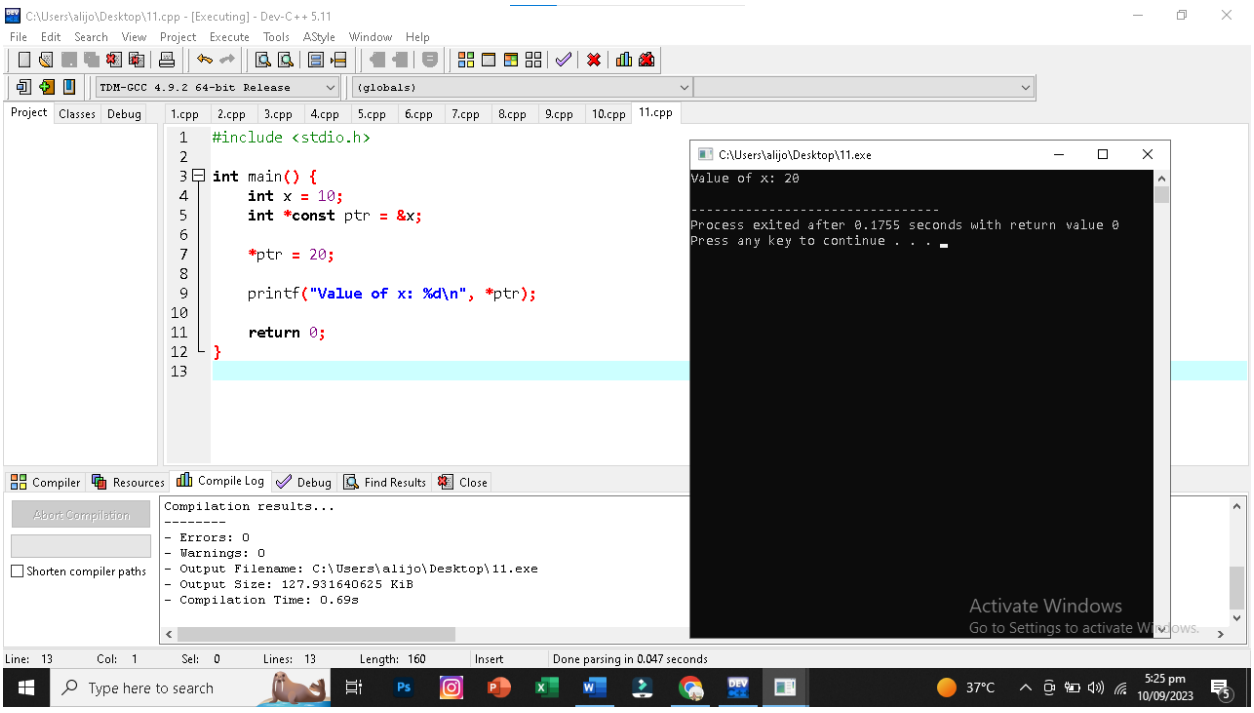
Program 10

```
#include <stdio.h>

int main() {
    const int x = 10;
    const int *ptr = &x;

    printf("Value of x: %d\n", *ptr);

    return 0;
}
```



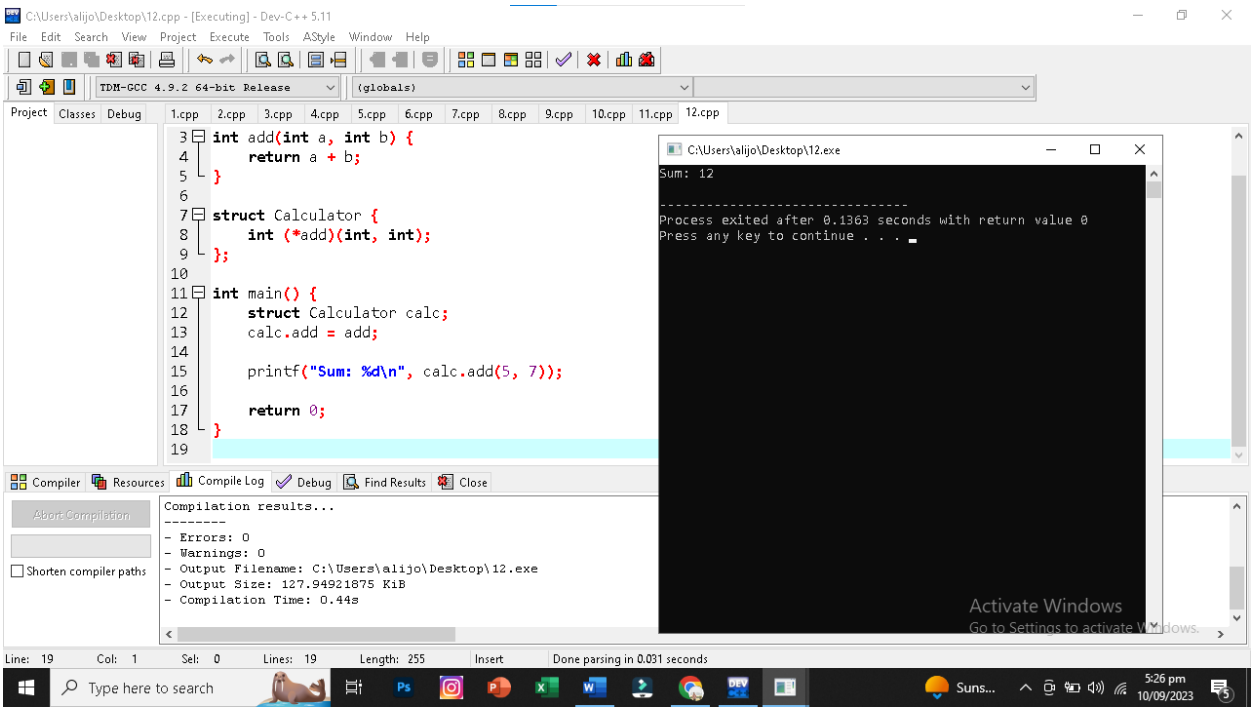
Program 11

```
#include <stdio.h>

int main() {
    int x = 10;
    int *const ptr = &x;

    *ptr = 20;

    printf("Value of x: %d\n", *ptr);

    return 0;
}
```



Program 12

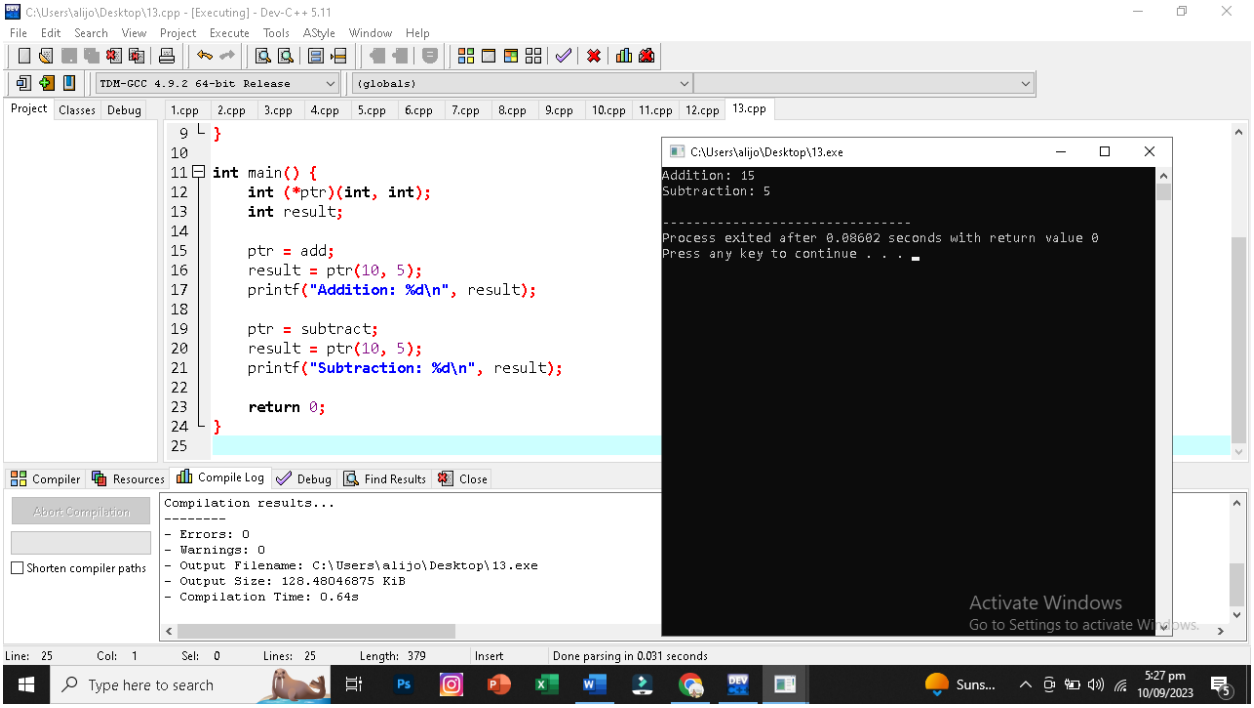
```
#include <stdio.h>

int add(int a, int b) {
    return a + b;
}

struct Calculator {
    int (*add)(int, int);
};

int main() {
    struct Calculator calc;
    calc.add = add;

    printf("Sum: %d\n", calc.add(5, 7));

    return 0;
}
```



Program 13

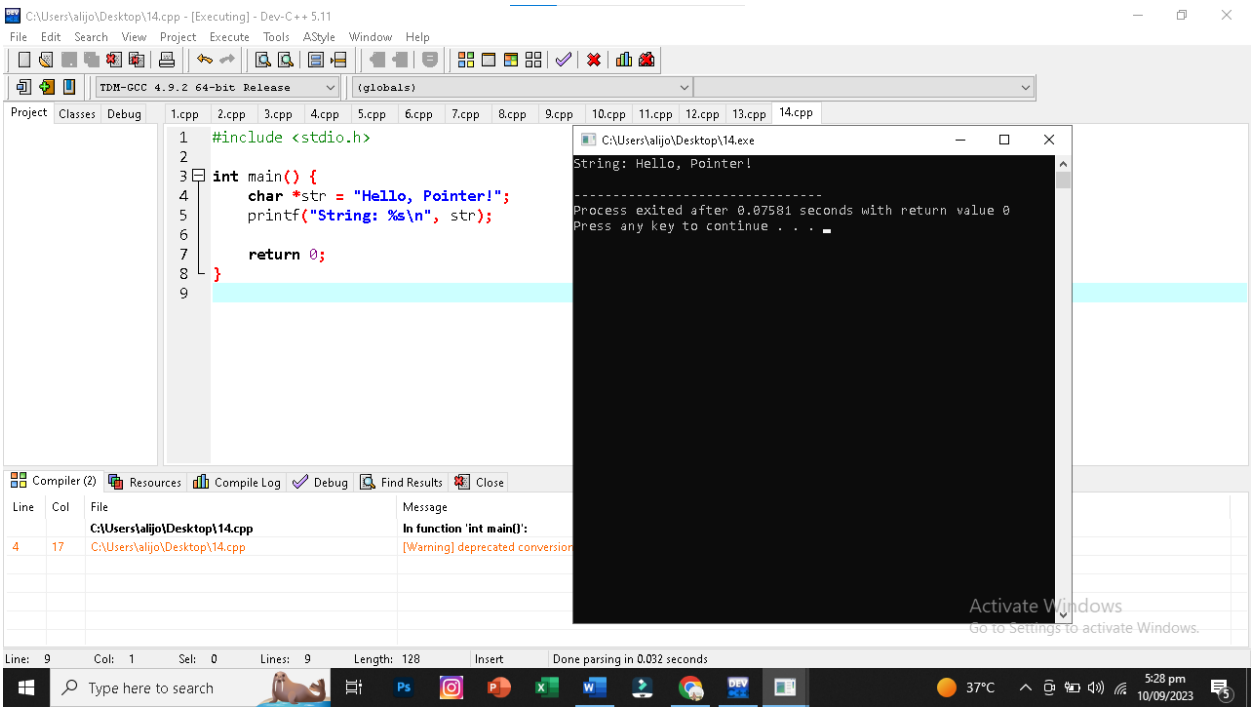
```
#include <stdio.h>

int add(int a, int b) {
    return a + b;
}

int subtract(int a, int b) {
    return a - b;
}

int main() {
    int (*ptr)(int, int);
    int result;

    ptr = add;
    result = ptr(10, 5);
    printf("Addition: %d\n", result);

    ptr = subtract;
    result = ptr(10, 5);
    printf("Subtraction: %d\n", result);

    return 0;
```

}



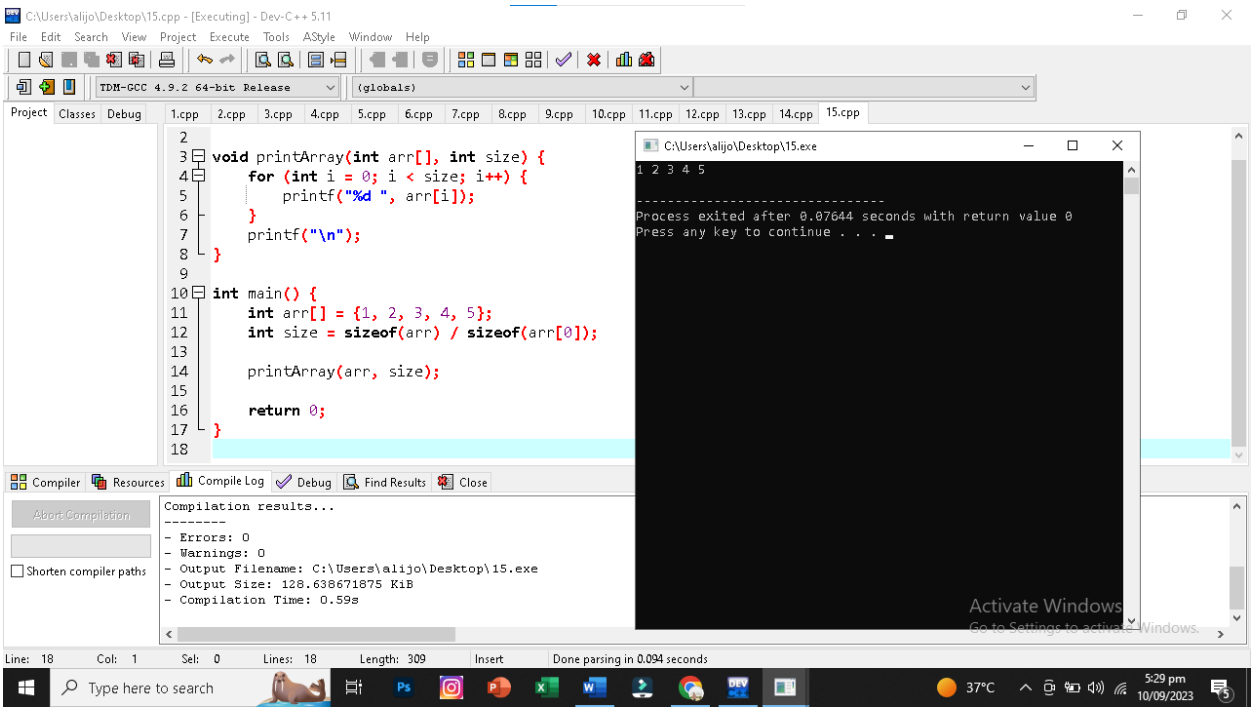
Program 14

```
#include <stdio.h>

int main() {
    char *str = "Hello, Pointer!";
    printf("String: %s\n", str);

    return 0;
}
```



Program 15

```
#include <stdio.h>

void printArray(int arr[], int size) {
    for (int i = 0; i < size; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");
}

int main() {
    int arr[] = {1, 2, 3, 4, 5};
    int size = sizeof(arr) / sizeof(arr[0]);

    printArray(arr, size);

    return 0;
}
```


C:\Users\alijo\Desktop\15.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
1.cpp 2.cpp 3.cpp 4.cpp 5.cpp 6.cpp 7.cpp 8.cpp 9.cpp 10.cpp 11.cpp 12.cpp 13.cpp 14.cpp 15.cpp
2
3 void printArray(int arr[], int size) {
4 for (int i = 0; i < size; i++) {
5 printf("%d ", arr[i]);
6 }
7 printf("\n");
8 }
9
10 int main() {
11 int arr[] = {1, 2, 3, 4, 5};
12 int size = sizeof(arr) / sizeof(arr[0]);
13
14 printArray(arr, size);
15
16 return 0;
17 }
18
C:\Users\alijo\Desktop\15.exe
1 2 3 4 5

Process exited after 0.07644 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\alijo\Desktop\15.exe
- Output Size: 128.638671875 KiB
- Compilation Time: 0.59s
Activate Windows
Go to Settings to activate Windows.
Line: 18 Col: 1 Sel: 0 Lines: 18 Length: 309 Insert Done parsing in 0.094 seconds
Type here to search
37°C
5:29 pm
10/09/2023