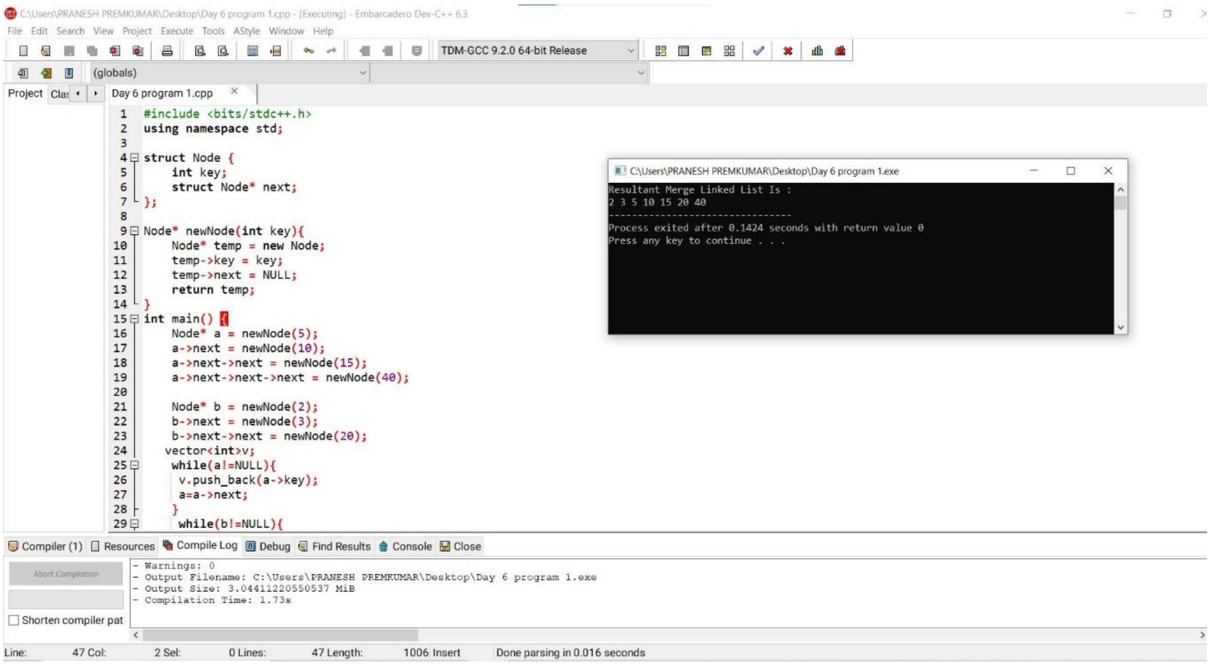
1.


C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project Clas
Day 6 program 1.cpp
C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
Compiler (1) Resources Compile Log Debug Find Results Console Close
Abort Compilation
□ Shorten compiler pat

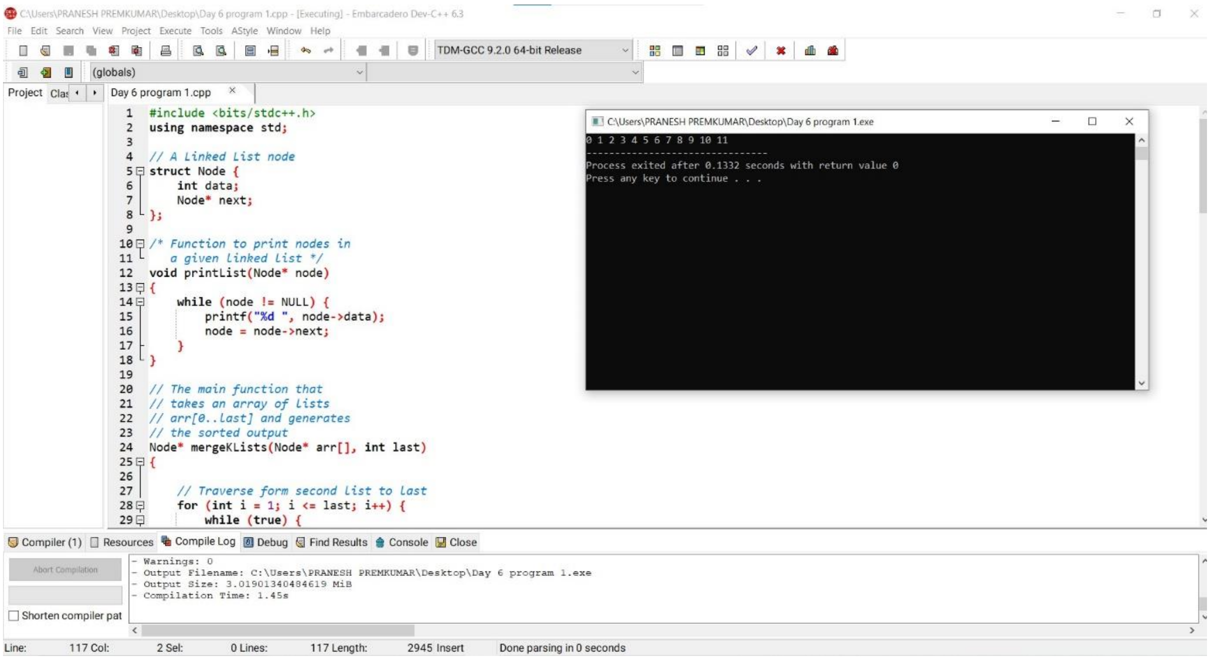
```cpp
#include <bits/stdc++.h>
using namespace std;

struct Node {
    int key;
    struct Node* next;
};

Node* newNode(int key){
    Node* temp = new Node;
    temp->key = key;
    temp->next = NULL;
    return temp;
}
int main() {
    Node* a = newNode(5);
    a->next = newNode(10);
    a->next->next = newNode(15);
    a->next->next->next = newNode(40);

    Node* b = newNode(2);
    b->next = newNode(3);
    b->next->next = newNode(20);
   vector<int>v;
    while(a!=NULL){
     v.push_back(a->key);
     a=a->next;
    }
     while(b!=NULL){
```

```
Resultant Merge Linked List Is :
2 3 5 10 15 20 40
--------------------------------
Process exited after 0.1424 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 3.04411220550537 MiB
- Compilation Time: 1.73s
```

Line: 47 Col: 2 Sel: 0 Lines: 47 Length: 1006 Insert Done parsing in 0.016 seconds

2.


C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project Clas
Day 6 program 1.cpp
C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
Compiler (1) Resources Compile Log Debug Find Results Console Close
Abort Compilation
□ Shorten compiler pat

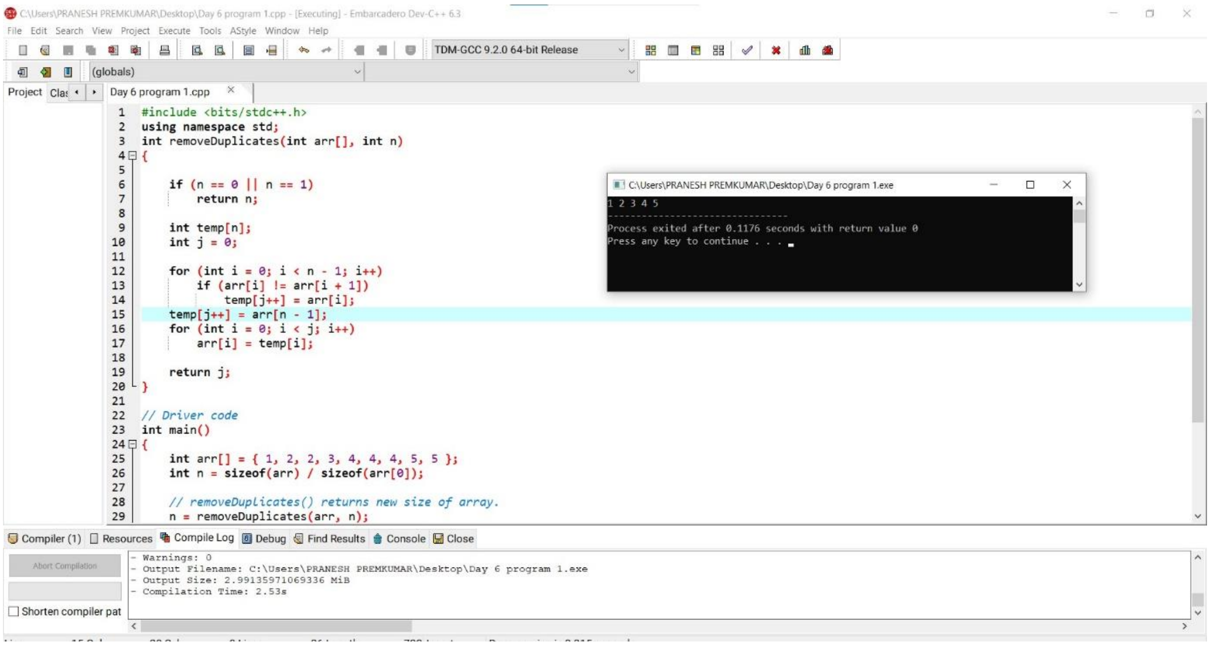
```cpp
#include <bits/stdc++.h>
using namespace std;

// A Linked List node
struct Node {
    int data;
    Node* next;
};

/* Function to print nodes in
   a given linked list */
void printList(Node* node)
{
    while (node != NULL) {
        printf("%d ", node->data);
        node = node->next;
    }
}

// The main function that
// takes an array of lists
// arr[0..last] and generates
// the sorted output
Node* mergeKLists(Node* arr[], int last)
{

    // Traverse form second list to last
    for (int i = 1; i <= last; i++) {
        while (true) {
```

```
0 1 2 3 4 5 6 7 8 9 10 11
--------------------------------
Process exited after 0.1332 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 3.01901340484619 MiB
- Compilation Time: 1.45s
```

Line: 117 Col: 2 Sel: 0 Lines: 117 Length: 2945 Insert Done parsing in 0 seconds

3.



C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project Clas
Day 6 program 1.cpp

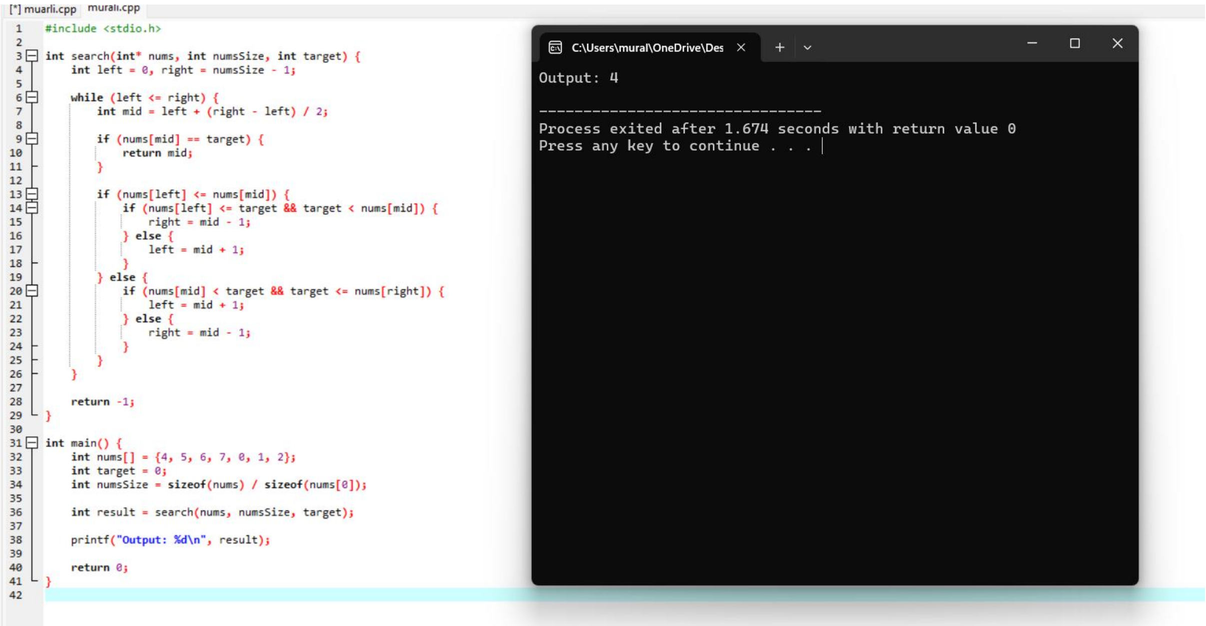
```cpp
#include <bits/stdc++.h>
using namespace std;
int removeDuplicates(int arr[], int n)
{

    if (n == 0 || n == 1)
        return n;

    int temp[n];
    int j = 0;

    for (int i = 0; i < n - 1; i++)
        if (arr[i] != arr[i + 1])
            temp[j++] = arr[i];
    temp[j++] = arr[n - 1];
    for (int i = 0; i < j; i++)
        arr[i] = temp[i];

    return j;
}

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

    // removeDuplicates() returns new size of array.
    n = removeDuplicates(arr, n);
```

C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe

```
1 2 3 4 5
--------------------------------
Process exited after 0.1176 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 2.99135971069336 MiB
- Compilation Time: 2.53s
```

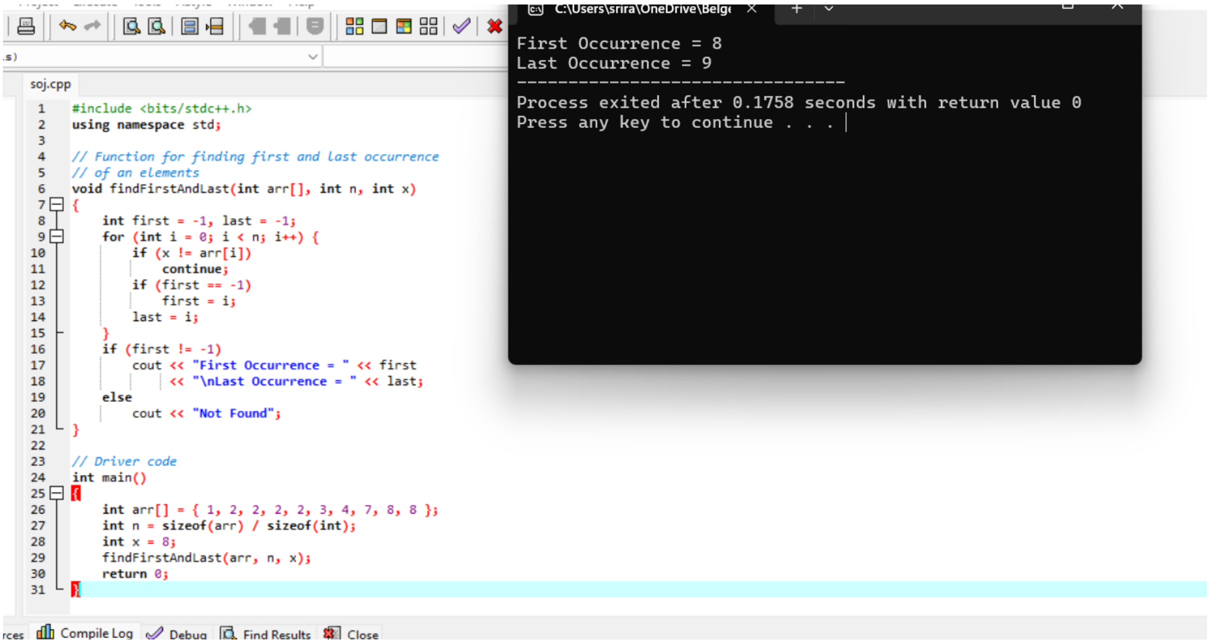
4.



```c
#include <stdio.h>

int search(int* nums, int numsSize, int target) {
    int left = 0, right = numsSize - 1;

    while (left <= right) {
        int mid = left + (right - left) / 2;

        if (nums[mid] == target) {
            return mid;
        }

        if (nums[left] <= nums[mid]) {
            if (nums[left] <= target && target < nums[mid]) {
                right = mid - 1;
            } else {
                left = mid + 1;
            }
        } else {
            if (nums[mid] < target && target <= nums[right]) {
                left = mid + 1;
            } else {
                right = mid - 1;
            }
        }
    }

    return -1;
}

int main() {
    int nums[] = {4, 5, 6, 7, 0, 1, 2};
    int target = 0;
    int numsSize = sizeof(nums) / sizeof(nums[0]);

    int result = search(nums, numsSize, target);

    printf("Output: %d\n", result);

    return 0;
}
```

```
Output: 4

--------------------------------
Process exited after 1.674 seconds with return value 0
Press any key to continue . . .
```

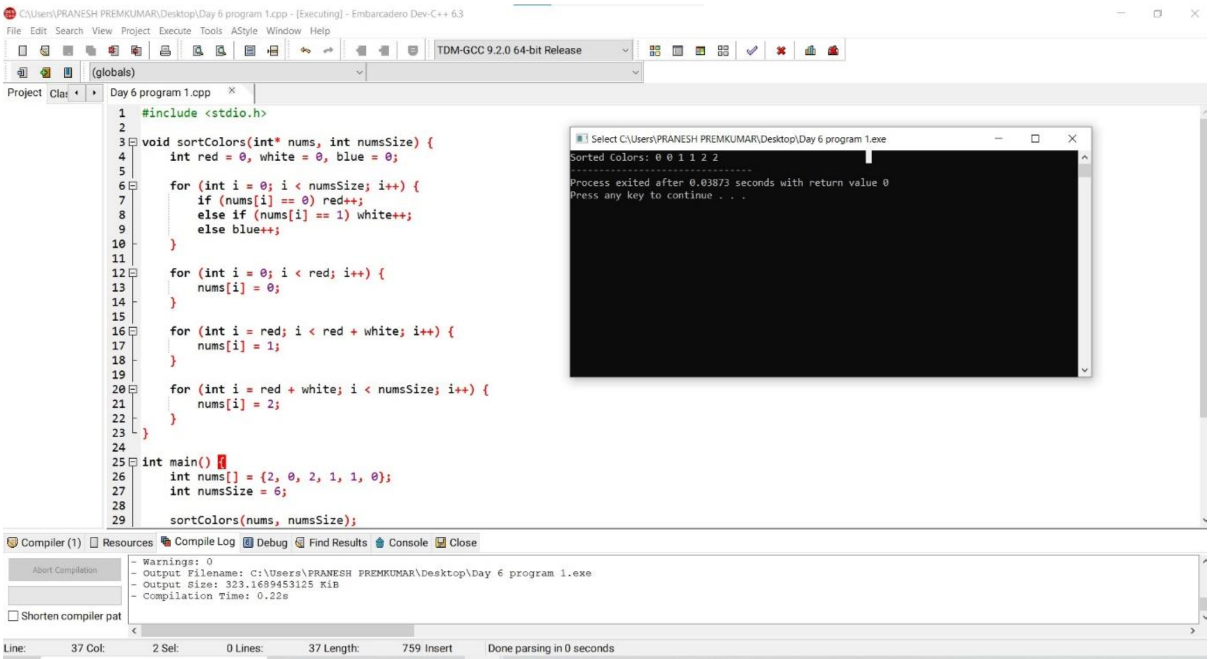
5.



```cpp
#include <bits/stdc++.h>
using namespace std;

// Function for finding first and last occurrence
// of an elements
void findFirstAndLast(int arr[], int n, int x)
{
    int first = -1, last = -1;
    for (int i = 0; i < n; i++) {
        if (x != arr[i])
            continue;
        if (first == -1)
            first = i;
        last = i;
    }
    if (first != -1)
        cout << "First Occurrence = " << first
             << "\nLast Occurrence = " << last;
    else
        cout << "Not Found";
}

// Driver code
int main()
{
    int arr[] = { 1, 2, 2, 2, 2, 3, 4, 7, 8, 8 };
    int n = sizeof(arr) / sizeof(int);
    int x = 8;
    findFirstAndLast(arr, n, x);
    return 0;
}
```

```
First Occurrence = 8
Last Occurrence = 9
--------------------------------
Process exited after 0.1758 seconds with return value 0
Press any key to continue . . .
```

6.



C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
Clas
Day 6 program 1.cpp
Select C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
Compiler (1)
Resources
Compile Log
Debug
Find Results
Console
Close
Abort Compilation
Shorten compiler pat

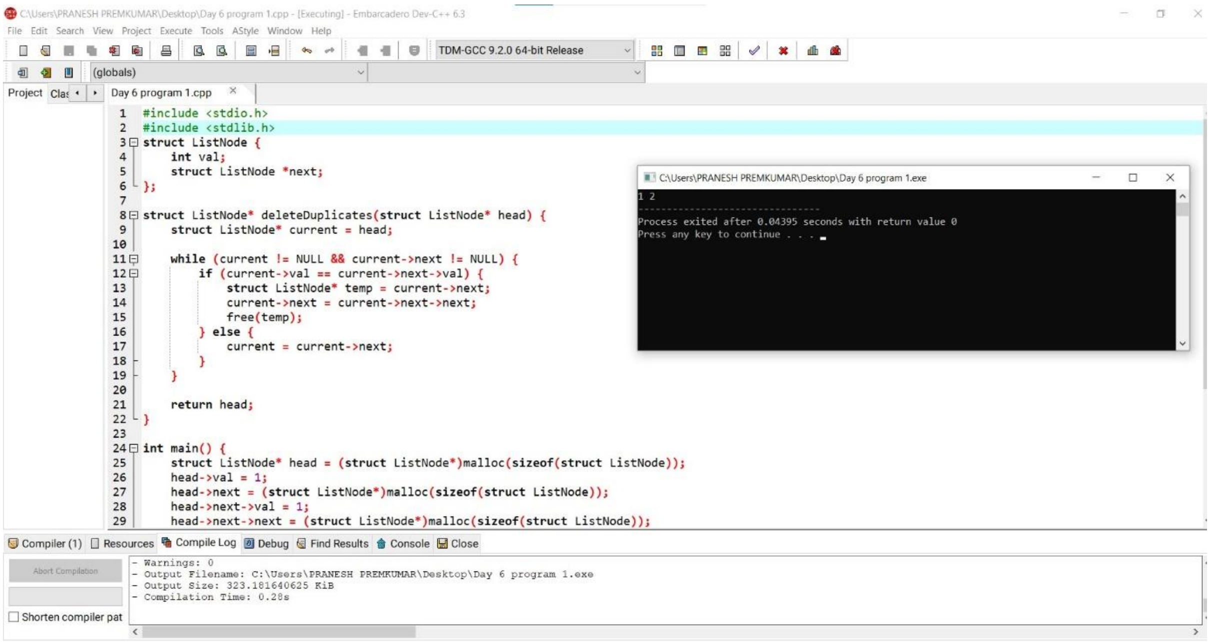
```c
#include <stdio.h>

void sortColors(int* nums, int numsSize) {
    int red = 0, white = 0, blue = 0;

    for (int i = 0; i < numsSize; i++) {
        if (nums[i] == 0) red++;
        else if (nums[i] == 1) white++;
        else blue++;
    }

    for (int i = 0; i < red; i++) {
        nums[i] = 0;
    }

    for (int i = red; i < red + white; i++) {
        nums[i] = 1;
    }

    for (int i = red + white; i < numsSize; i++) {
        nums[i] = 2;
    }
}

int main() {
    int nums[] = {2, 0, 2, 1, 1, 0};
    int numsSize = 6;

    sortColors(nums, numsSize);
```

```
Sorted Colors: 0 0 1 1 2 2
--------------------------------
Process exited after 0.03873 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 323.1689453125 KiB
- Compilation Time: 0.22s
```

Line: 37 Col: 2 Sel: 0 Lines: 37 Length: 759 Insert Done parsing in 0 seconds

7.

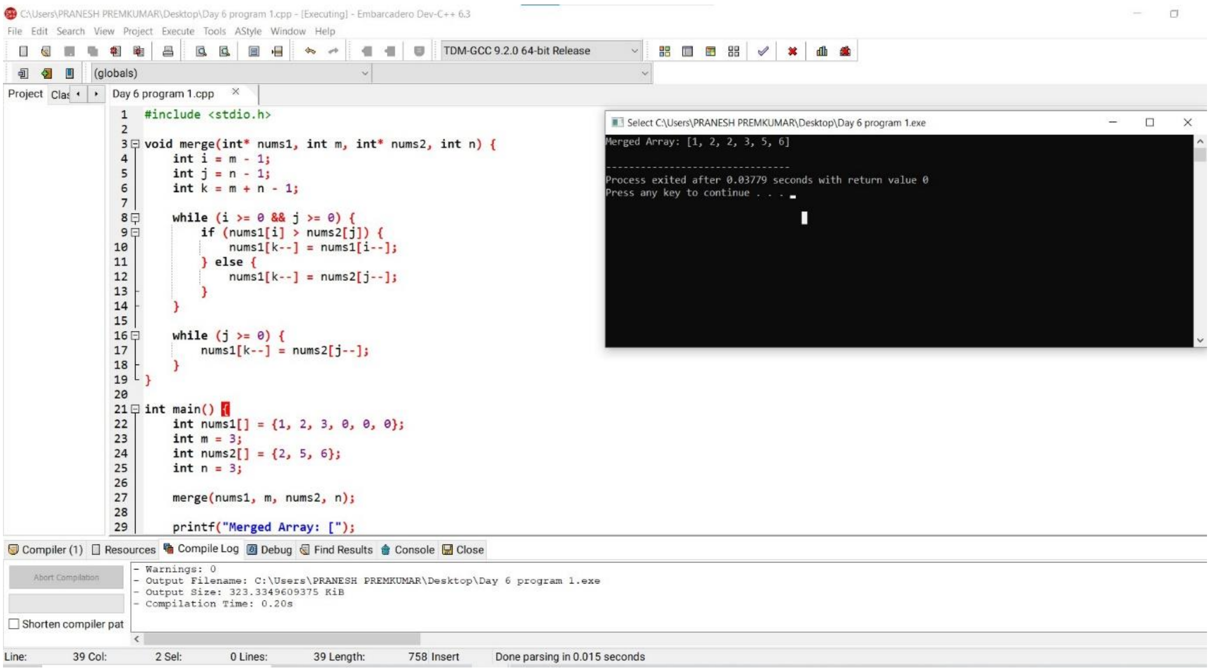

C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project Clas
Day 6 program 1.cpp
C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
Compiler (1) Resources Compile Log Debug Find Results Console Close
Abort Compilation
Shorten compiler pat

```c
#include <stdio.h>
#include <stdlib.h>
struct ListNode {
    int val;
    struct ListNode *next;
};

struct ListNode* deleteDuplicates(struct ListNode* head) {
    struct ListNode* current = head;

    while (current != NULL && current->next != NULL) {
        if (current->val == current->next->val) {
            struct ListNode* temp = current->next;
            current->next = current->next->next;
            free(temp);
        } else {
            current = current->next;
        }
    }

    return head;
}

int main() {
    struct ListNode* head = (struct ListNode*)malloc(sizeof(struct ListNode));
    head->val = 1;
    head->next = (struct ListNode*)malloc(sizeof(struct ListNode));
    head->next->val = 1;
    head->next->next = (struct ListNode*)malloc(sizeof(struct ListNode));
```

```
1 2
--------------------------------
Process exited after 0.04395 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 323.181640625 KiB
- Compilation Time: 0.28s
```

8.


C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project Clas
Day 6 program 1.cpp
Select C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
Compiler (1) Resources Compile Log Debug Find Results Console Close
Abort Compilation
Shorten compiler pat

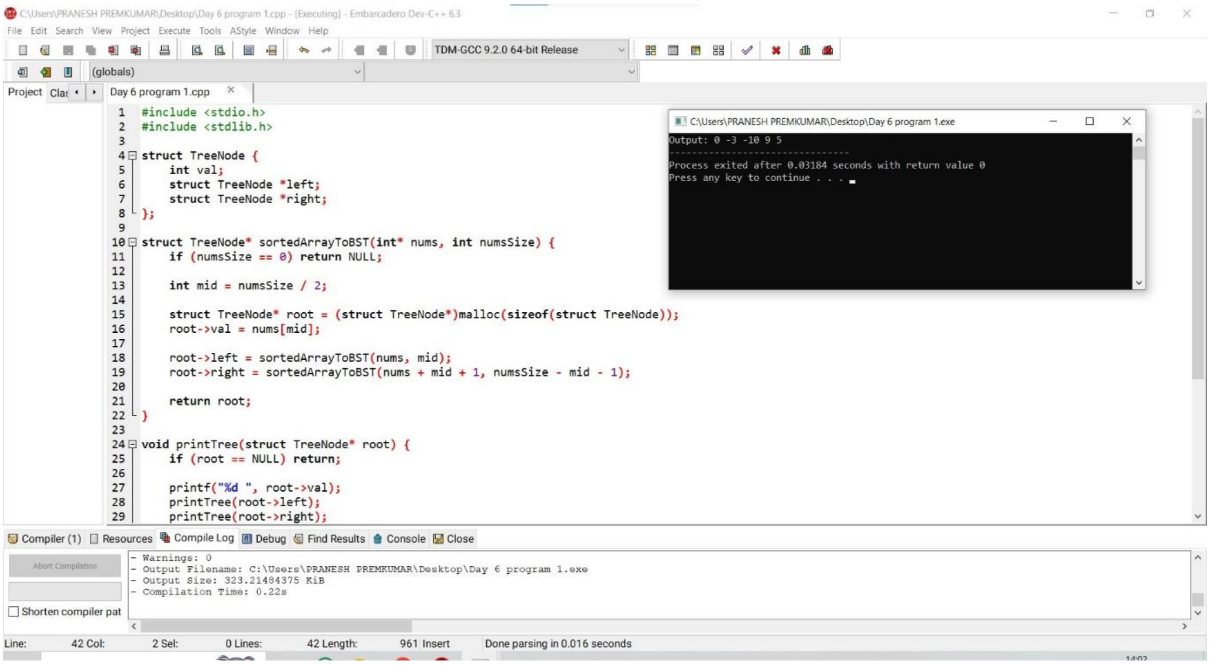
```c
#include <stdio.h>

void merge(int* nums1, int m, int* nums2, int n) {
    int i = m - 1;
    int j = n - 1;
    int k = m + n - 1;

    while (i >= 0 && j >= 0) {
        if (nums1[i] > nums2[j]) {
            nums1[k--] = nums1[i--];
        } else {
            nums1[k--] = nums2[j--];
        }
    }

    while (j >= 0) {
        nums1[k--] = nums2[j--];
    }
}

int main() {
    int nums1[] = {1, 2, 3, 0, 0, 0};
    int m = 3;
    int nums2[] = {2, 5, 6};
    int n = 3;

    merge(nums1, m, nums2, n);

    printf("Merged Array: [");
```

```
Merged Array: [1, 2, 2, 3, 5, 6]

--------------------------------
Process exited after 0.03779 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 323.3349609375 KiB
- Compilation Time: 0.20s
```

Line: 39 Col: 2 Sel: 0 Lines: 39 Length: 758 Insert Done parsing in 0.015 seconds

9.


C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project Clas
Day 6 program 1.cpp
C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
Compiler (1) Resources Compile Log Debug Find Results Console Close
Abort Compilation
Shorten compiler pat

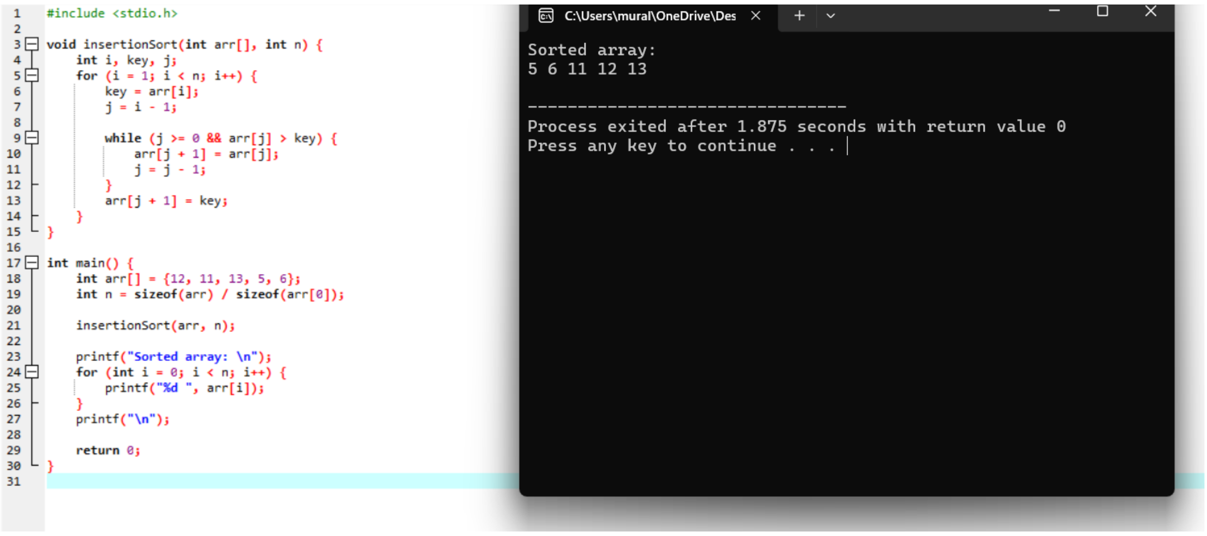
```c
#include <stdio.h>
#include <stdlib.h>

struct TreeNode {
    int val;
    struct TreeNode *left;
    struct TreeNode *right;
};

struct TreeNode* sortedArrayToBST(int* nums, int numsSize) {
    if (numsSize == 0) return NULL;

    int mid = numsSize / 2;

    struct TreeNode* root = (struct TreeNode*)malloc(sizeof(struct TreeNode));
    root->val = nums[mid];

    root->left = sortedArrayToBST(nums, mid);
    root->right = sortedArrayToBST(nums + mid + 1, numsSize - mid - 1);

    return root;
}

void printTree(struct TreeNode* root) {
    if (root == NULL) return;

    printf("%d ", root->val);
    printTree(root->left);
    printTree(root->right);
```

```
Output: 0 -3 -10 9 5
--------------------------------
Process exited after 0.03184 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 323.21484375 KiB
- Compilation Time: 0.22s
```

Line: 42 Col: 2 Sel: 0 Lines: 42 Length: 961 Insert Done parsing in 0.016 seconds

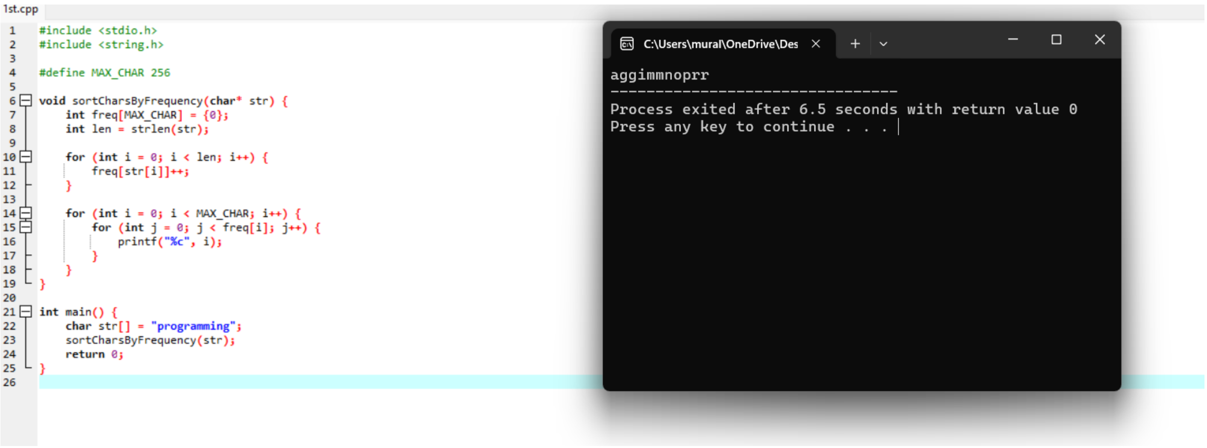
10.



```c
#include <stdio.h>

void insertionSort(int arr[], int n) {
    int i, key, j;
    for (i = 1; i < n; i++) {
        key = arr[i];
        j = i - 1;

        while (j >= 0 && arr[j] > key) {
            arr[j + 1] = arr[j];
            j = j - 1;
        }
        arr[j + 1] = key;
    }
}

int main() {
    int arr[] = {12, 11, 13, 5, 6};
    int n = sizeof(arr) / sizeof(arr[0]);

    insertionSort(arr, n);

    printf("Sorted array: \n");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    return 0;
}
```

```
Sorted array:
5 6 11 12 13

--------------------------------
Process exited after 1.875 seconds with return value 0
Press any key to continue . . .
```

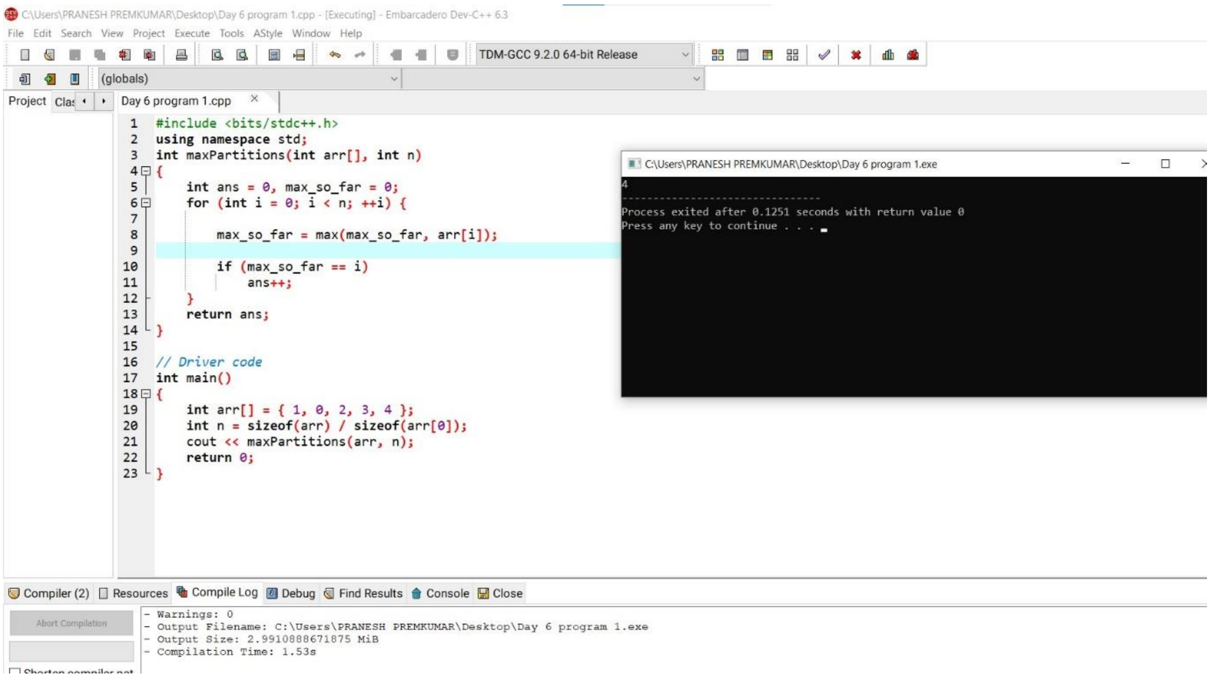
11.



```c
#include <stdio.h>
#include <string.h>

#define MAX_CHAR 256

void sortCharsByFrequency(char* str) {
    int freq[MAX_CHAR] = {0};
    int len = strlen(str);

    for (int i = 0; i < len; i++) {
        freq[str[i]]++;
    }

    for (int i = 0; i < MAX_CHAR; i++) {
        for (int j = 0; j < freq[i]; j++) {
            printf("%c", i);
        }
    }
}

int main() {
    char str[] = "programming";
    sortCharsByFrequency(str);
    return 0;
}
```

```
aggimmnoprr
--------------------------------
Process exited after 6.5 seconds with return value 0
Press any key to continue . . .
```

12.



C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3

File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
Clas
Day 6 program 1.cpp

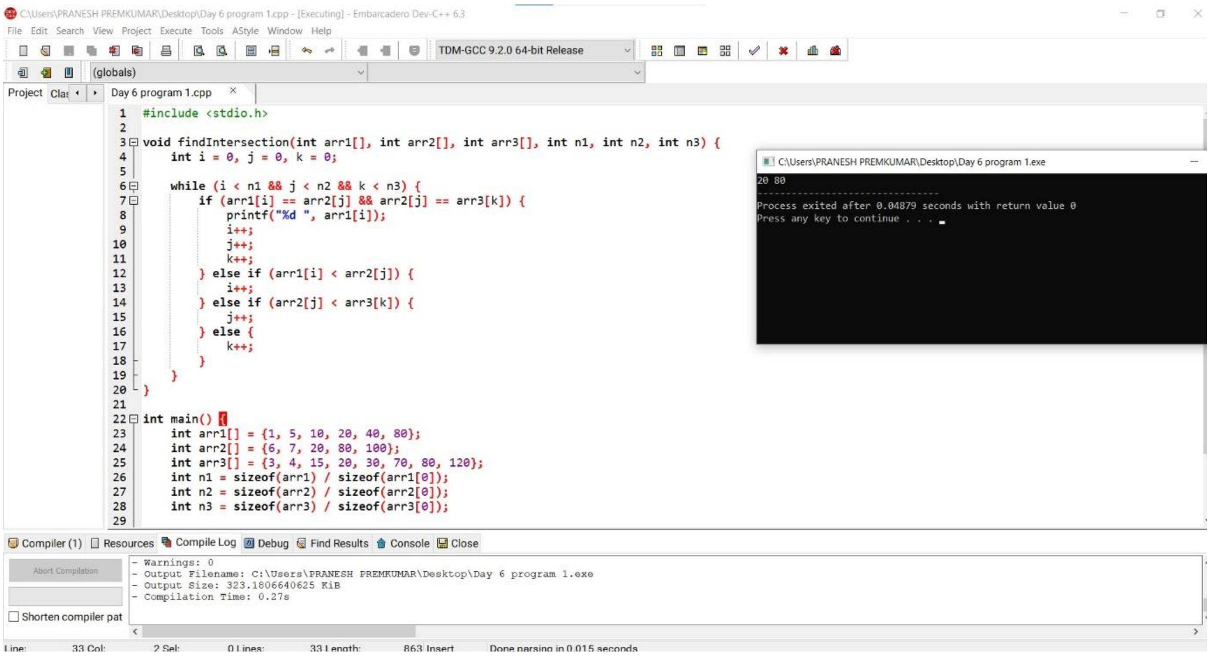
```cpp
#include <bits/stdc++.h>
using namespace std;
int maxPartitions(int arr[], int n)
{
    int ans = 0, max_so_far = 0;
    for (int i = 0; i < n; ++i) {

        max_so_far = max(max_so_far, arr[i]);

        if (max_so_far == i)
            ans++;
    }
    return ans;
}

// Driver code
int main()
{
    int arr[] = { 1, 0, 2, 3, 4 };
    int n = sizeof(arr) / sizeof(arr[0]);
    cout << maxPartitions(arr, n);
    return 0;
}
```

C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe

```
4
--------------------------------
Process exited after 0.1251 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 2.9910888671875 MiB
- Compilation Time: 1.53s
```

13.



C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3

File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
Clas
Day 6 program 1.cpp

```c
#include <stdio.h>

void findIntersection(int arr1[], int arr2[], int arr3[], int n1, int n2, int n3) {
    int i = 0, j = 0, k = 0;

    while (i < n1 && j < n2 && k < n3) {
        if (arr1[i] == arr2[j] && arr2[j] == arr3[k]) {
            printf("%d ", arr1[i]);
            i++;
            j++;
            k++;
        } else if (arr1[i] < arr2[j]) {
            i++;
        } else if (arr2[j] < arr3[k]) {
            j++;
        } else {
            k++;
        }
    }
}

int main() {
    int arr1[] = {1, 5, 10, 20, 40, 80};
    int arr2[] = {6, 7, 20, 80, 100};
    int arr3[] = {3, 4, 15, 20, 30, 70, 80, 120};
    int n1 = sizeof(arr1) / sizeof(arr1[0]);
    int n2 = sizeof(arr2) / sizeof(arr2[0]);
    int n3 = sizeof(arr3) / sizeof(arr3[0]);

```

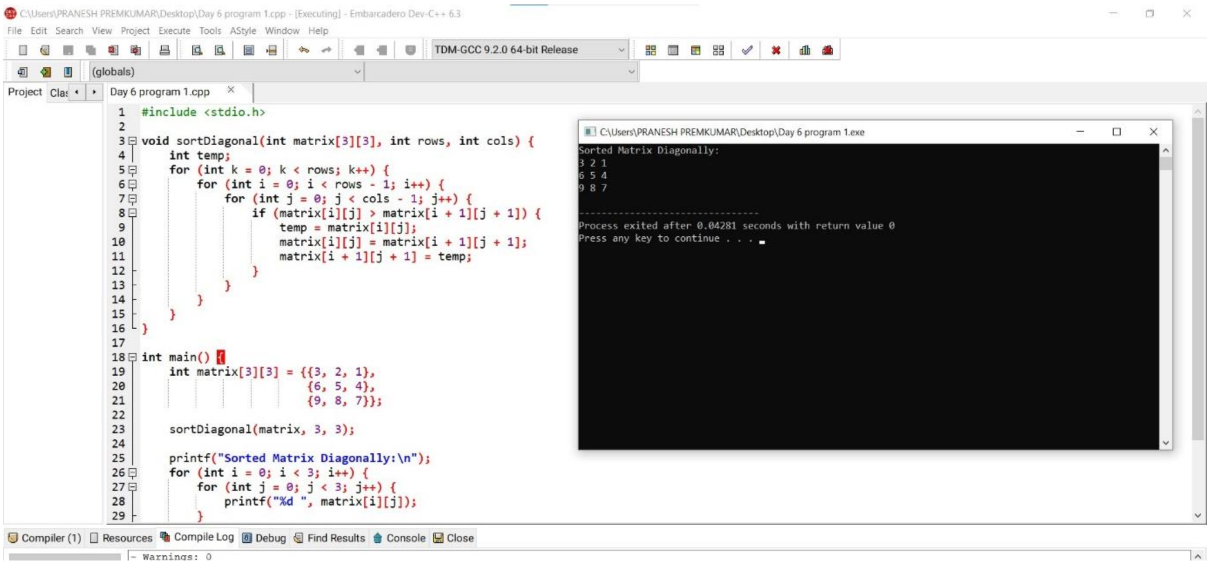
C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe

```
20 80
--------------------------------
Process exited after 0.04879 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
- Output Size: 323.1806640625 KiB
- Compilation Time: 0.27s
```

Line: 33 Col: 2 Sel: 0 Lines: 33 Length: 863 Insert Done parsing in 0.015 seconds

14.


C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project Clas
Day 6 program 1.cpp
C:\Users\PRANESH PREMKUMAR\Desktop\Day 6 program 1.exe
Compiler (1) Resources Compile Log Debug Find Results Console Close

```c
#include <stdio.h>

void sortDiagonal(int matrix[3][3], int rows, int cols) {
    int temp;
    for (int k = 0; k < rows; k++) {
        for (int i = 0; i < rows - 1; i++) {
            for (int j = 0; j < cols - 1; j++) {
                if (matrix[i][j] > matrix[i + 1][j + 1]) {
                    temp = matrix[i][j];
                    matrix[i][j] = matrix[i + 1][j + 1];
                    matrix[i + 1][j + 1] = temp;
                }
            }
        }
    }
}

int main() {
    int matrix[3][3] = {{3, 2, 1},
                        {6, 5, 4},
                        {9, 8, 7}};

    sortDiagonal(matrix, 3, 3);

    printf("Sorted Matrix Diagonally:\n");
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            printf("%d ", matrix[i][j]);
        }
```

```
Sorted Matrix Diagonally:
3 2 1
6 5 4
9 8 7

--------------------------------
Process exited after 0.04281 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
```