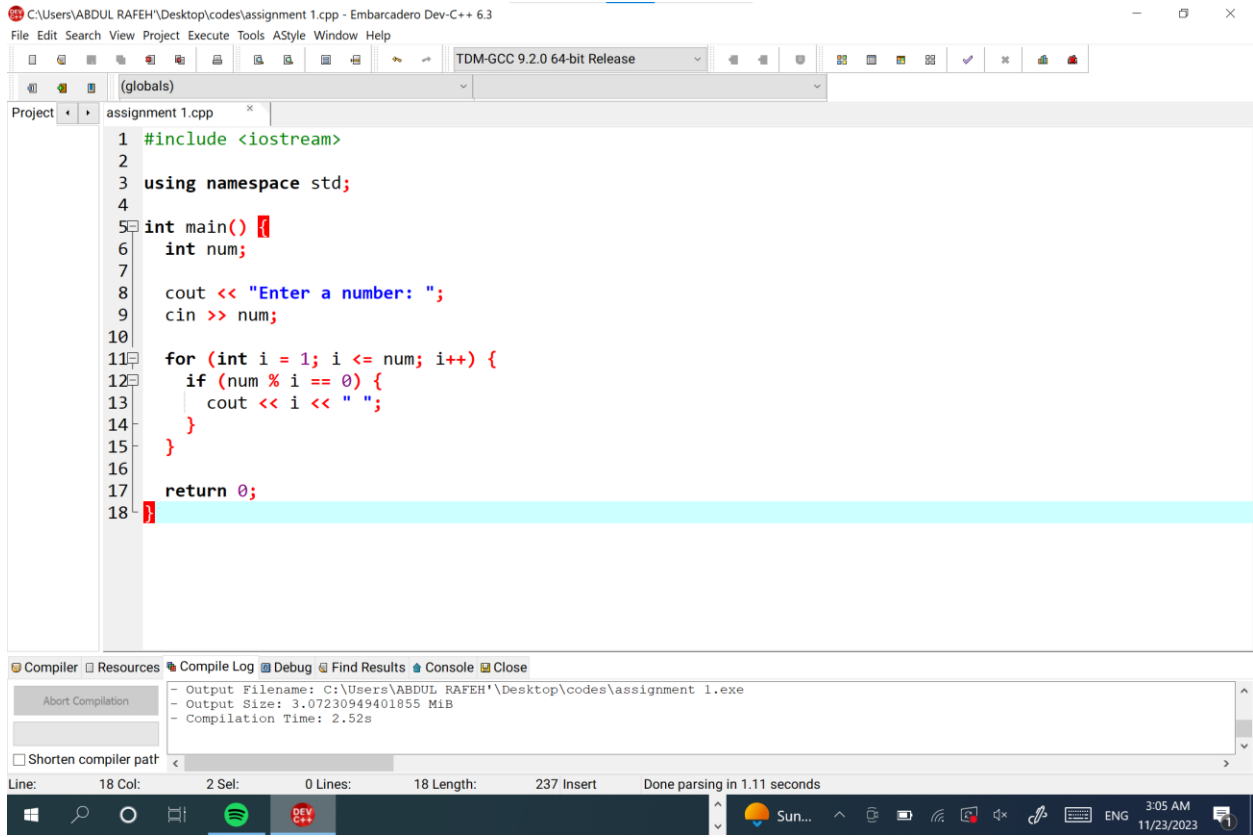


ASSIGNMENT-1

PROGRAM-1:

Write a C++ program to display factors of a number using for loops.



The screenshot shows the Embarcadero Dev-C++ 6.3 IDE. The main window displays a C++ program in 'assignment 1.cpp'. The code is as follows:

```
1 #include <iostream>
2
3 using namespace std;
4
5 int main() {
6     int num;
7
8     cout << "Enter a number: ";
9     cin >> num;
10
11     for (int i = 1; i <= num; i++) {
12         if (num % i == 0) {
13             cout << i << " ";
14         }
15     }
16
17     return 0;
18 }
```

The bottom panel shows the 'Compiler' tab with the following output:

```
- Output Filename: C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.exe
- Output Size: 3.07230949401855 Mib
- Compilation Time: 2.52s
```

The status bar at the bottom indicates 'Line: 18 Col: 2 Sel: 0 Lines: 18 Length: 237 Insert Done parsing in 1.11 seconds'. The system tray shows the date and time as 'Sun... 3:05 AM 11/23/2023'.

OUTPUT:

```
C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe
Enter a number: 4
1 2 4
-----
Process exited after 4.555 seconds with return value 0
Press any key to continue . . .
```

PROGRAM:2

WRITE an output to the given code:

OUTPUT:

x is 5 and y is 10

PROGRAM:3

Write a C++ program, take an integer value from user and check if it's greater than 10 and less than equal to 20. Print 1 if yes and print 0 if no. Use appropriate datatype for output

C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.cpp - 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 [assignment 1.cpp]

```
14 }
15 }
16
17 return 0;
18 */
19 #include <iostream>
20
21 using namespace std;
22
23 int main() {
24     int inputValue;
25
26     cout << "Enter an integer value: ";
27     cin >> inputValue;
28
29     if (inputValue > 10 && inputValue <= 20) {
30         cout << 1 << endl;
31     } else {
32         cout << 0 << endl;
33     }
34
35     return 0;
36 }
```

Compiler Resources Compile Log Debug Find Results Console Close

Abort Compilation

- Output Filename: C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe
- Output Size: 3.07230949401855 MiB
- Compilation Time: 2.52s

☐ Shorten compiler path

Line: 1 Col: 3 Sel: 0 Lines: 36 Length: 515 Insert Done parsing in 1.11 seconds

22°C 3:12 AM 11/23/2023

C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe

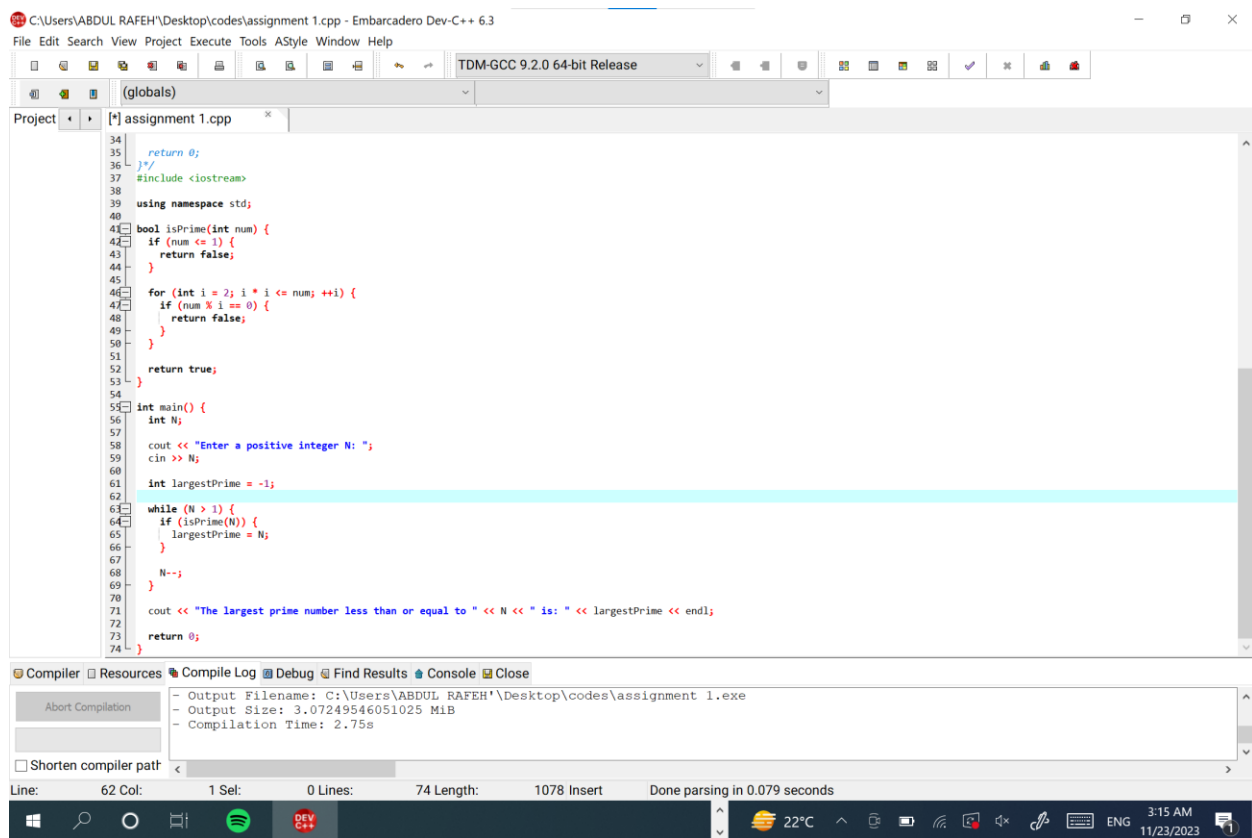
```
Enter an integer value: 5
0

-----
Process exited after 2.655 seconds with return value 0
Press any key to continue . . .
```

22°C 3:13 AM 11/23/2023

PROGRAM:4

Write a C++ program that uses a while loop to find the largest prime number less than a given positive integer N. Your program should take the value of N as input from the user and then find the largest prime number less than or equal to N. You are not allowed to use any library or pre-existing functions to check for prime numbers.



```
C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.cpp - 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 | assignment 1.cpp
34
35     return 0;
36 }
37 #include <iostream>
38 using namespace std;
39
40 bool isPrime(int num) {
41     if (num <= 1) {
42         return false;
43     }
44     for (int i = 2; i * i <= num; ++i) {
45         if (num % i == 0) {
46             return false;
47         }
48     }
49     return true;
50 }
51
52 int main() {
53     int N;
54     cout << "Enter a positive integer N: ";
55     cin >> N;
56     int largestPrime = -1;
57     while (N > 1) {
58         if (isPrime(N)) {
59             largestPrime = N;
60         }
61         N--;
62     }
63     cout << "The largest prime number less than or equal to " << N << " is: " << largestPrime << endl;
64     return 0;
65 }
```

Compiler | Resources | Compile Log | Debug | Find Results | Console | Close

Abort Compilation

Output Filename: C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.exe
Output Size: 3.07249546051025 MB
Compilation Time: 2.75s

Shorten compiler path

Line: 62 Col: 1 Sel: 0 Lines: 74 Length: 1078 Insert Done parsing in 0.079 seconds

22°C 3:15 AM 11/23/2023

```
C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe
Enter a positive integer N: 56
The largest prime number less than or equal to 1 is: 2

-----
Process exited after 6.082 seconds with return value 0
Press any key to continue . . .
```

PROGRAM:5

Write a C++ program, take two string as input from user and check if both strings are equal or not. If they are equal make them unequal by rotating string. e.g., Hello is turned into olleH etc.

C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.cpp - 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 [assignment 1.cpp]

```
76 #include <algorithm>
77
78 using namespace std;
79
80 bool areEqual(string str1, string str2) {
81     if (str1.length() != str2.length()) {
82         return false;
83     }
84
85     for (int i = 0; i < str1.length(); i++) {
86         if (str1[i] != str2[i]) {
87             return false;
88         }
89     }
90
91     return true;
92 }
93
94 string rotateString(string str) {
95     string rotatedString = str.substr(str.length() - 1, 1) + str.substr(0, str.length() - 1);
96     return rotatedString;
97 }
98
99 int main() {
100     string str1, str2;
101
102     cout << "Enter the first string: ";
103     cin >> str1;
104
105     cout << "Enter the second string: ";
106     cin >> str2;
107
108     if (areEqual(str1, str2)) {
109         str1 = rotateString(str1);
110         cout << "Strings are equal, modified string1 is: " << str1 << endl;
111     } else {
112         cout << "Strings are not equal" << endl;
113     }
114
115     return 0;
116 }
```

Compiler Resources Compile Log Debug Find Results Console Close

Abort Compilation

Output Filename: C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.exe
Output Size: 3.07301902770996 MiB
Compilation Time: 1.39s

Shorten compiler path

Line: 116 Col: 2 Sel: 0 Lines: 116 Length: 1917 Insert Done parsing in 0.063 seconds

22°C 3:18 AM 11/23/2023

C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.exe

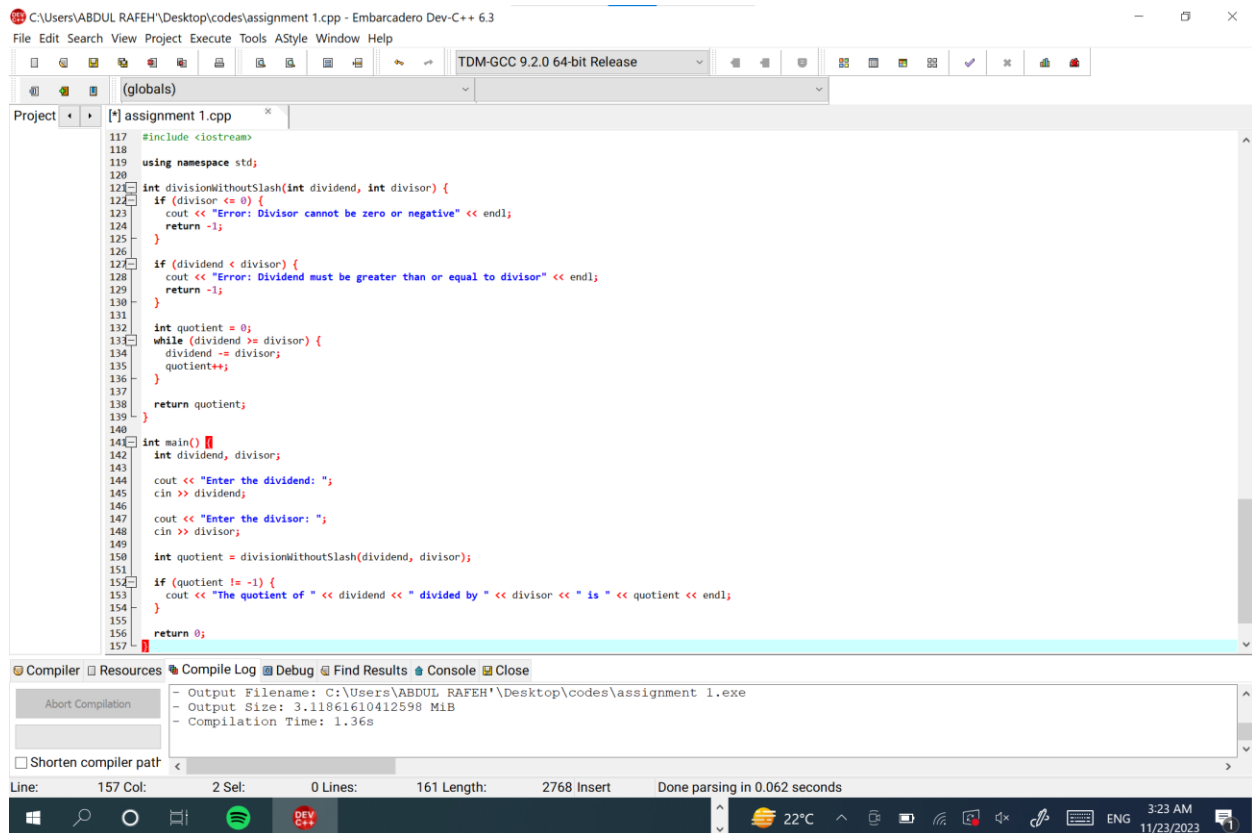
```
Enter the first string: hello
Enter the second string: hello
Strings are equal, modified string1 is: ohell

-----
Process exited after 7.563 seconds with return value 0
Press any key to continue . . .
```

22°C 3:20 AM 11/23/2023

PROGRAM 6:

Perform division in C++ without / using for loops. You can use / only to display the final results. Your dividend must be greater than divisor.



The screenshot shows the Embarcadero Dev-C++ 6.3 IDE. The main window displays a C++ program named 'assignment 1.cpp'. The program implements a division function without using the division operator (/). It includes error handling for zero or negative divisors and a dividend less than the divisor. The main function prompts the user for a dividend and divisor, then calls the division function and displays the result.

```
117 #include <iostream>
118
119 using namespace std;
120
121 int divisionWithoutSlash(int dividend, int divisor) {
122     if (divisor <= 0) {
123         cout << "Error: Divisor cannot be zero or negative" << endl;
124         return -1;
125     }
126
127     if (dividend < divisor) {
128         cout << "Error: Dividend must be greater than or equal to divisor" << endl;
129         return -1;
130     }
131
132     int quotient = 0;
133     while (dividend >= divisor) {
134         dividend -= divisor;
135         quotient++;
136     }
137
138     return quotient;
139 }
140
141 int main() {
142     int dividend, divisor;
143
144     cout << "Enter the dividend: ";
145     cin >> dividend;
146
147     cout << "Enter the divisor: ";
148     cin >> divisor;
149
150     int quotient = divisionWithoutSlash(dividend, divisor);
151
152     if (quotient != -1) {
153         cout << "The quotient of " << dividend << " divided by " << divisor << " is " << quotient << endl;
154     }
155
156     return 0;
157 }
```

The bottom panel shows the Compiler output window with the following text:

```
- Output Filename: C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.exe
- Output Size: 3.11861610412598 MIB
- Compilation Time: 1.36s
```

The status bar at the bottom indicates the current line and column: Line: 157 Col: 2 Sel: 0 Lines: 161 Length: 2768 Insert Done parsing in 0.062 seconds. The system tray shows the date and time: 3:23 AM 11/23/2023.

```
C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe
Enter the dividend: 54
Enter the divisor: 2
The quotient of 54 divided by 2 is 27

-----
Process exited after 6.85 seconds with return value 0
Press any key to continue . . .
```

PROGRAM:7

Write a C++program for a string which may contain lowercase and uppercase characters. The task is to remove all duplicate characters from the string and find the resultant string.

C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.cpp - 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 | assignment 1.cpp

```
147 cout << "Enter the divisor: ";
148 cin >> divisor;
149
150 int quotient = divisionWithoutSlash(dividend, divisor);
151
152 if (quotient != -1) {
153     cout << "The quotient of " << dividend << " divided by " << divisor << " is " << quotient << endl;
154 }
155
156 return 0;
157 }
158 #include <iostream>
159 #include <unordered_set>
160
161 using namespace std;
162
163 string removeDuplicates(string str) {
164     unordered_set<char> uniqueChars;
165     string result;
166
167     for (char c : str) {
168         if (uniqueChars.find(c) == uniqueChars.end()) {
169             uniqueChars.insert(c);
170             result.push_back(c);
171         }
172     }
173
174     return result;
175 }
176
177 int main() {
178     string str;
179
180     cout << "Enter the string: ";
181     cin >> str;
182
183     string result = removeDuplicates(str);
184     cout << "The resultant string after removing duplicates is: " << result << endl;
185
186     return 0;
187 }
```

Compiler | Resources | Compile Log | Debug | Find Results | Console | Close

Abort Compilation

Output Filename: C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.exe
Output Size: 3.07304763793945 MiB
Compilation Time: 1.23s

Shorten compiler path

Line: 187 Col: 2 Sel: 0 Lines: 191 Length: 3333 Insert Done parsing in 0.047 seconds

C:\Users\ABDUL RAFAH\Desktop\codes\assignment 1.exe

```
Enter the string: pakistan
The resultant string after removing duplicates is: pakistn

-----
Process exited after 13.02 seconds with return value 0
Press any key to continue . . .
```

PROGRAM 8:

Suppose an integer array $a[5] = \{1,2,3,4,5\}$. Add more elements to it and display them in C++.

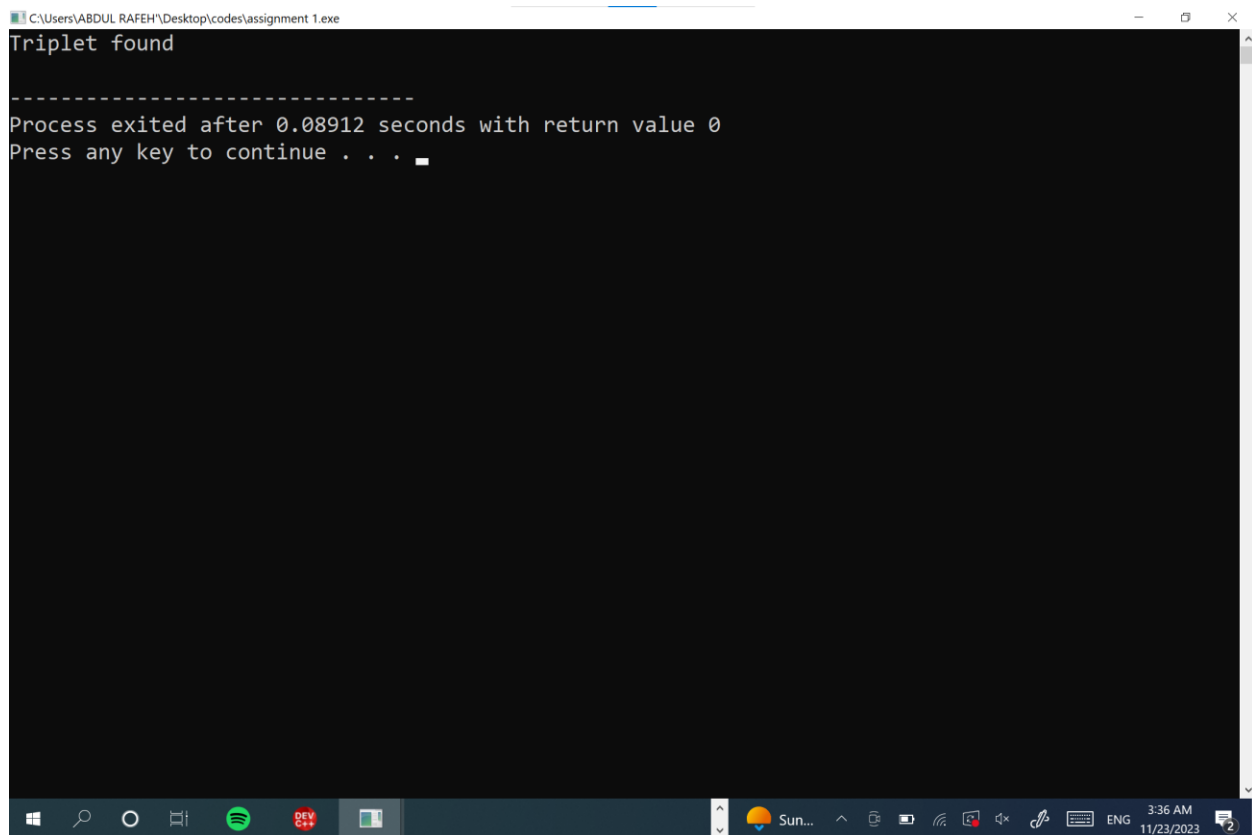
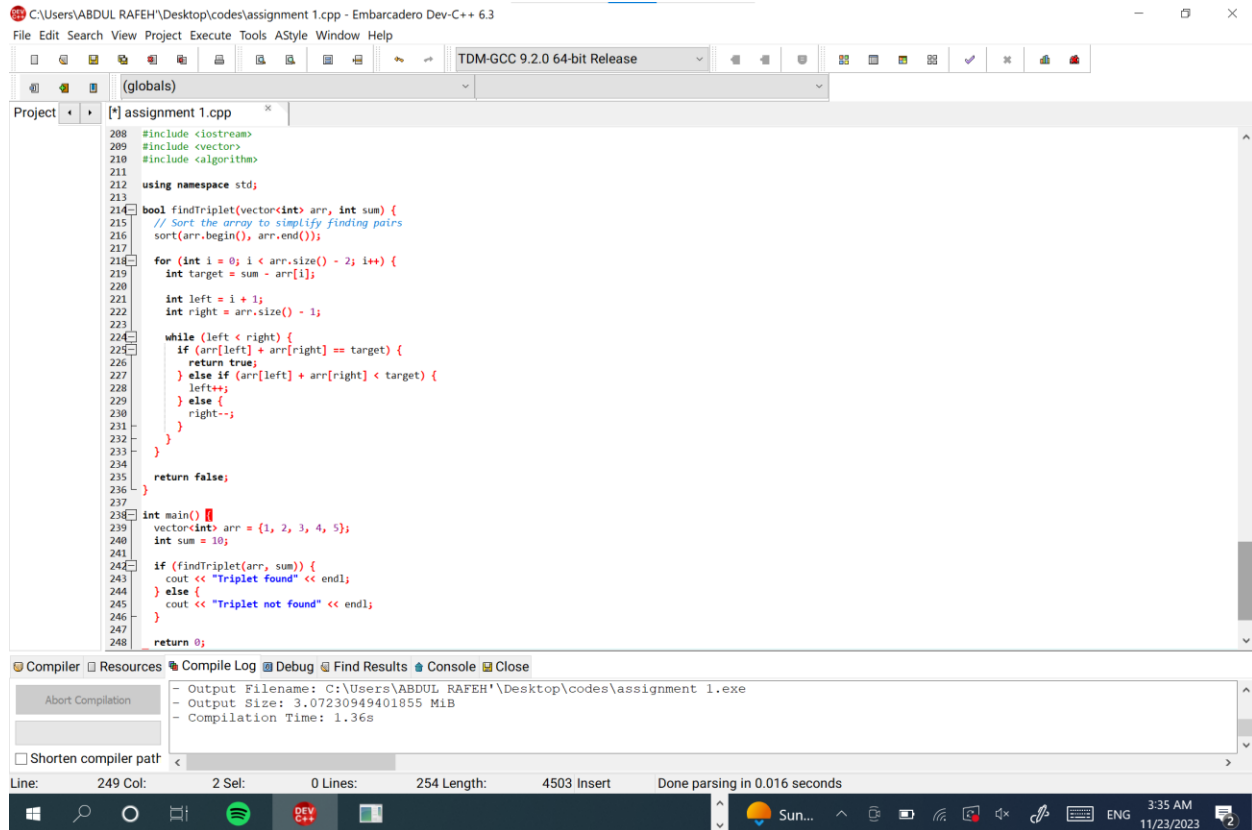
```
C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.cpp - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project [assignment 1.cpp]
179
180 cout << "Enter the string: ";
181 cin >> str;
182
183 string result = removeDuplicates(str);
184 cout << "The resultant string after removing duplicates is: " << result << endl;
185
186 return 0;
187 }*/
188 #include <iostream>
189
190 using namespace std;
191
192 int main() {
193     int a[] = {1, 2, 3, 4, 5};
194     int size = sizeof(a) / sizeof(a[0]);
195
196     // Add more elements to the array
197     a[size] = 6;
198     a[size + 1] = 7;
199     a[size + 2] = 8;
200
201     // Display the modified array
202     for (int i = 0; i < size + 3; i++) {
203         cout << a[i] << " ";
204     }
205
206     return 0;
207 }
208
209
210
211
212
213
Compiler Resources Compile Log Debug Find Results Console Close
- Output Filename: C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe
- Output Size: 3.28976249694824 MiB
- Compilation Time: 1.61s
Shorten compiler path
Line: 208 Col: 1 Sel: 0 Lines: 212 Length: 3685 Insert Done parsing in 0.062 seconds
22°C 3:31 AM 11/23/2023
```

Windows Update
Let's get back on track
We couldn't update Windows because your device wasn't free at the scheduled time 3:31 AM Today.
Device was actively in use at the scheduled time.
Restart now Wait an hour

```
C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe
1 2 3 4 5 6 7 7 0 8
-----
Process exited after 0.08498 seconds with return value 0
Press any key to continue . . .
```

PROGRAM 9:

Given an integer array and an integer X. Find if there's a triplet in the array which sums up to the given integer X.



PROGRAM 10:

Implement Bubble Sort on an array of 6 integers.

C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.cpp - 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 assignment 1.cpp

```
246 }
247
248 return 0;
249 }*/
250 #include <iostream>
251
252 using namespace std;
253
254 void bubbleSort(int arr[], int n) {
255     bool swapped = true;
256     for (int i = 0; i < n - 1 && swapped; i++) {
257         swapped = false;
258         for (int j = 0; j < n - 1 - i; j++) {
259             if (arr[j] > arr[j + 1]) {
260                 swap(arr[j], arr[j + 1]);
261                 swapped = true;
262             }
263         }
264     }
265 }
266
267 int main() {
268     int arr[] = {64, 34, 25, 12, 22, 11};
269     int n = sizeof(arr) / sizeof(arr[0]);
270
271     cout << "Unsorted array: ";
272     for (int i = 0; i < n; i++) {
273         cout << arr[i] << " ";
274     }
275     bubbleSort(arr, n);
276
277     cout << "Sorted array: ";
278     for (int i = 0; i < n; i++) {
279         cout << arr[i] << " ";
280     }
281     return 0;
282 }
```

Compiler Resources Compile Log Debug Find Results Console Close

Abort Compilation

Output Filename: C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe
Output Size: 3.2008752822876 MiB
Compilation Time: 1.39s

Shorten compiler path

Line: 286 Col: 2 Sel: 0 Lines: 286 Length: 5249 Insert Done parsing in 0.046 seconds

22°C 3:45 AM 11/23/2023

C:\Users\ABDUL RAFEH\Desktop\codes\assignment 1.exe

Unsorted array: 64 34 25 12 22 11
Sorted array: 11 12 22 25 34 64

Process exited after 0.07226 seconds with return value 0
Press any key to continue . . .

22°C 3:46 AM 11/23/2023

