LAB MANUAL 9

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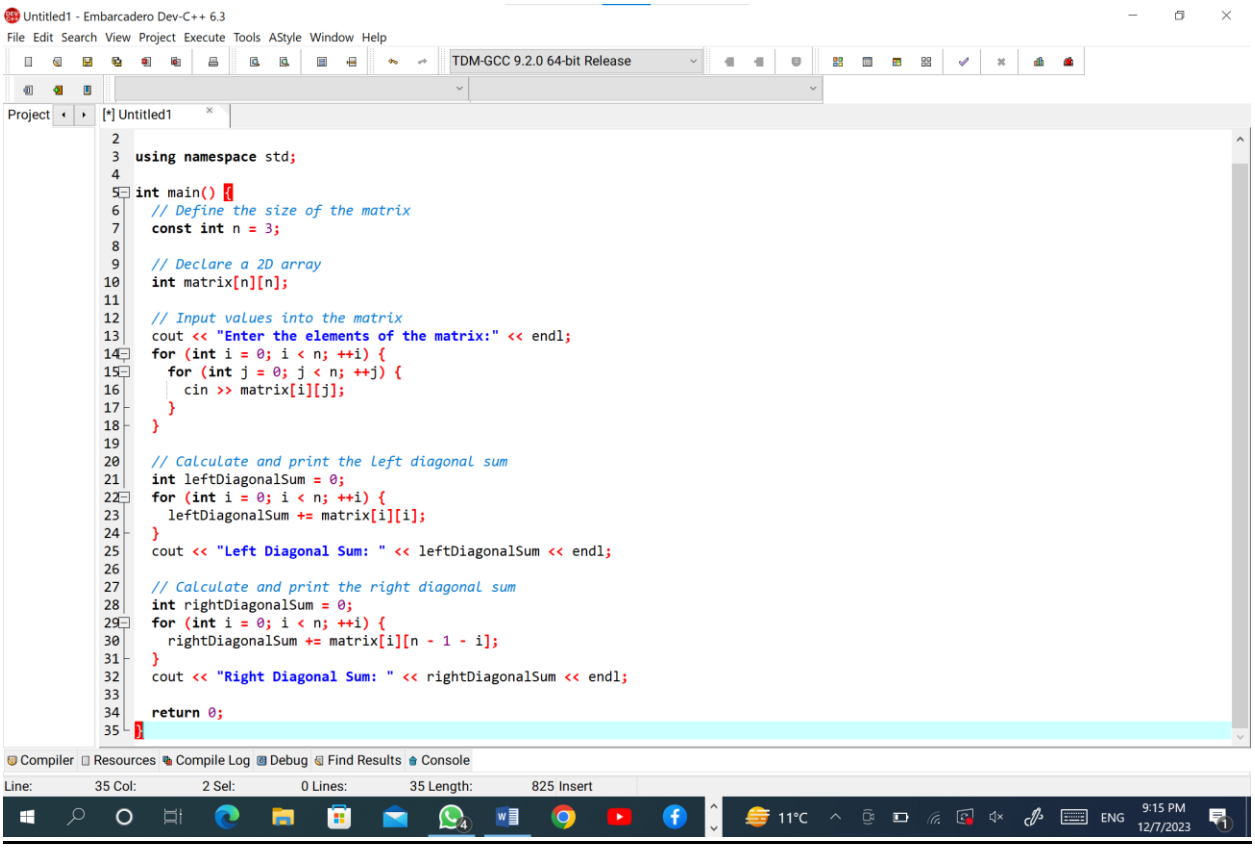
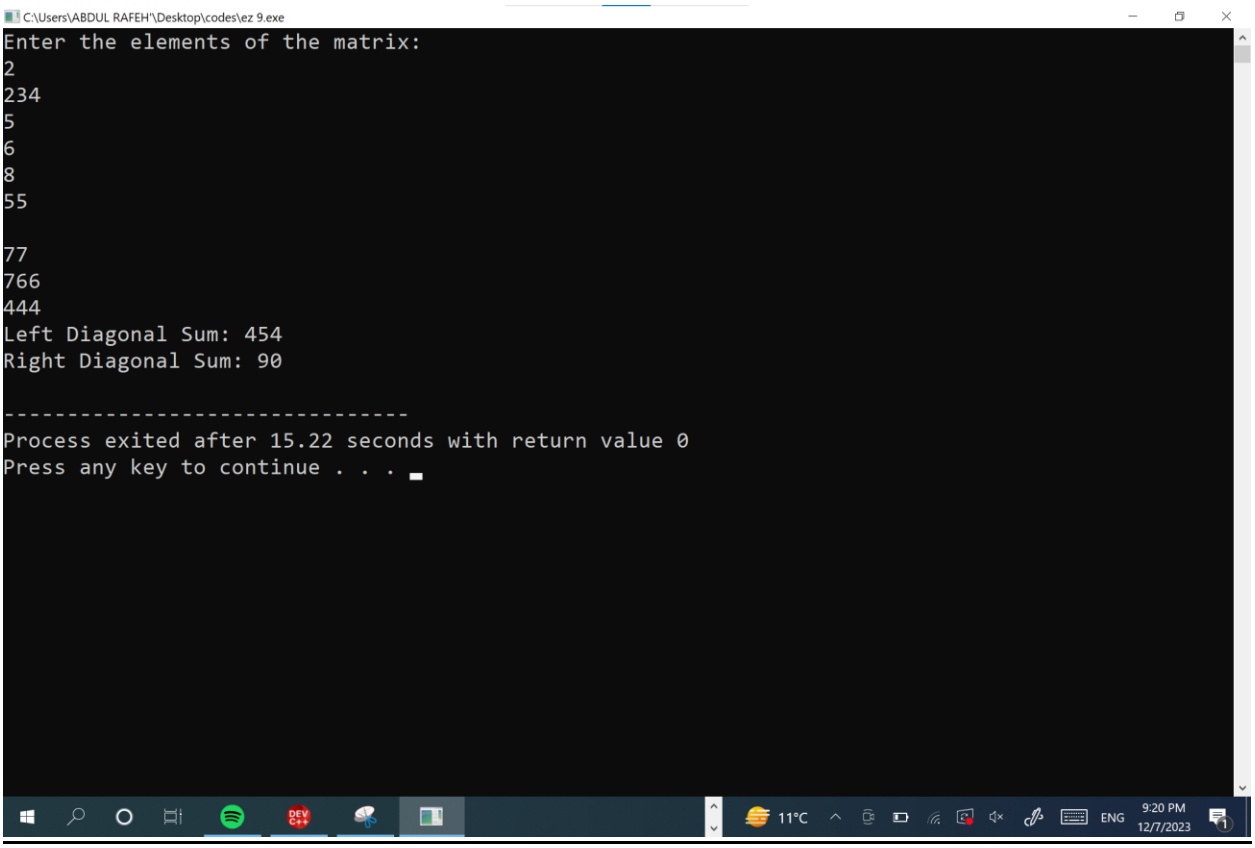
417648

SECTION C

LAB TASK:

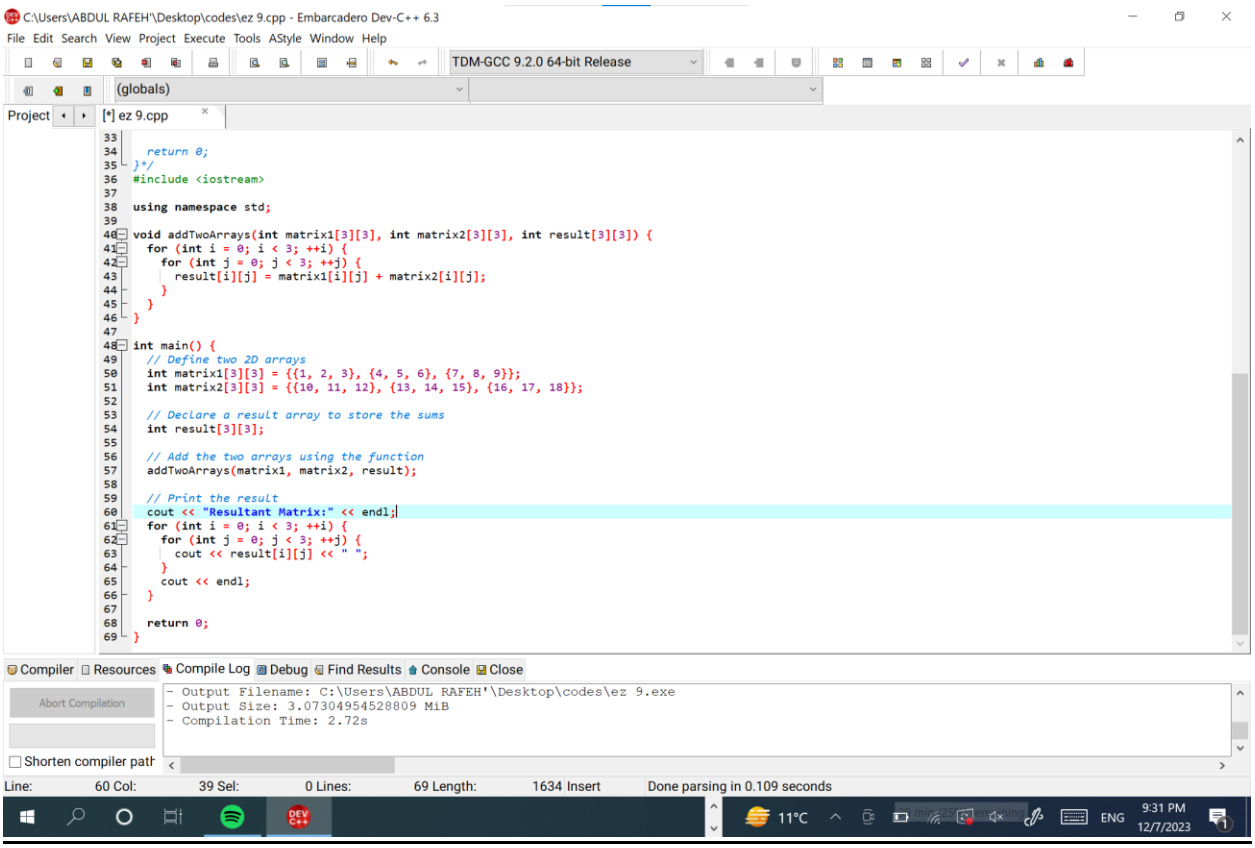
- **PROGRAM 1:**

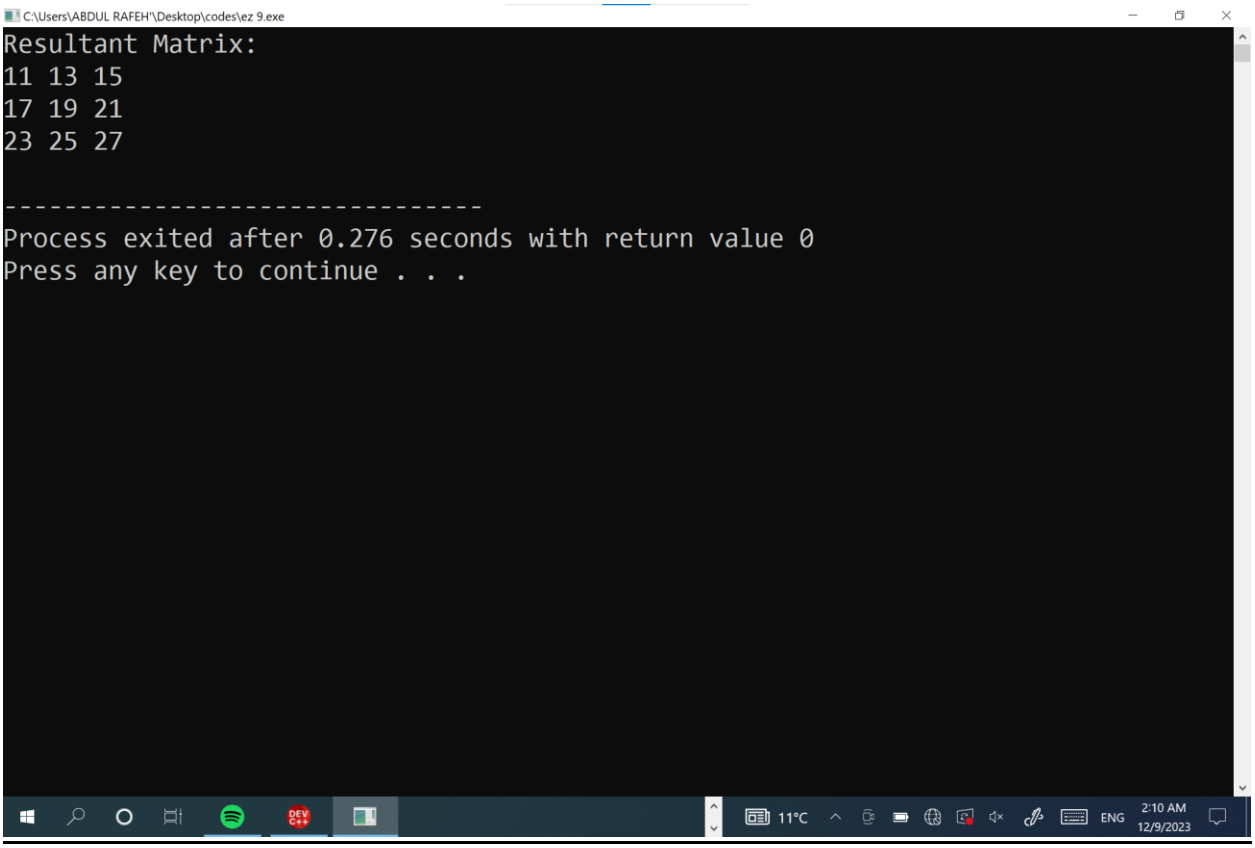



C:\Users\ABDUL RAFEH\Desktop\codes\ez 9.exe
Enter the elements of the matrix:
2
234
5
6
8
55
77
766
444
Left Diagonal Sum: 454
Right Diagonal Sum: 90

Process exited after 15.22 seconds with return value 0
Press any key to continue . . .
11°C
ENG
9:20 PM
12/7/2023

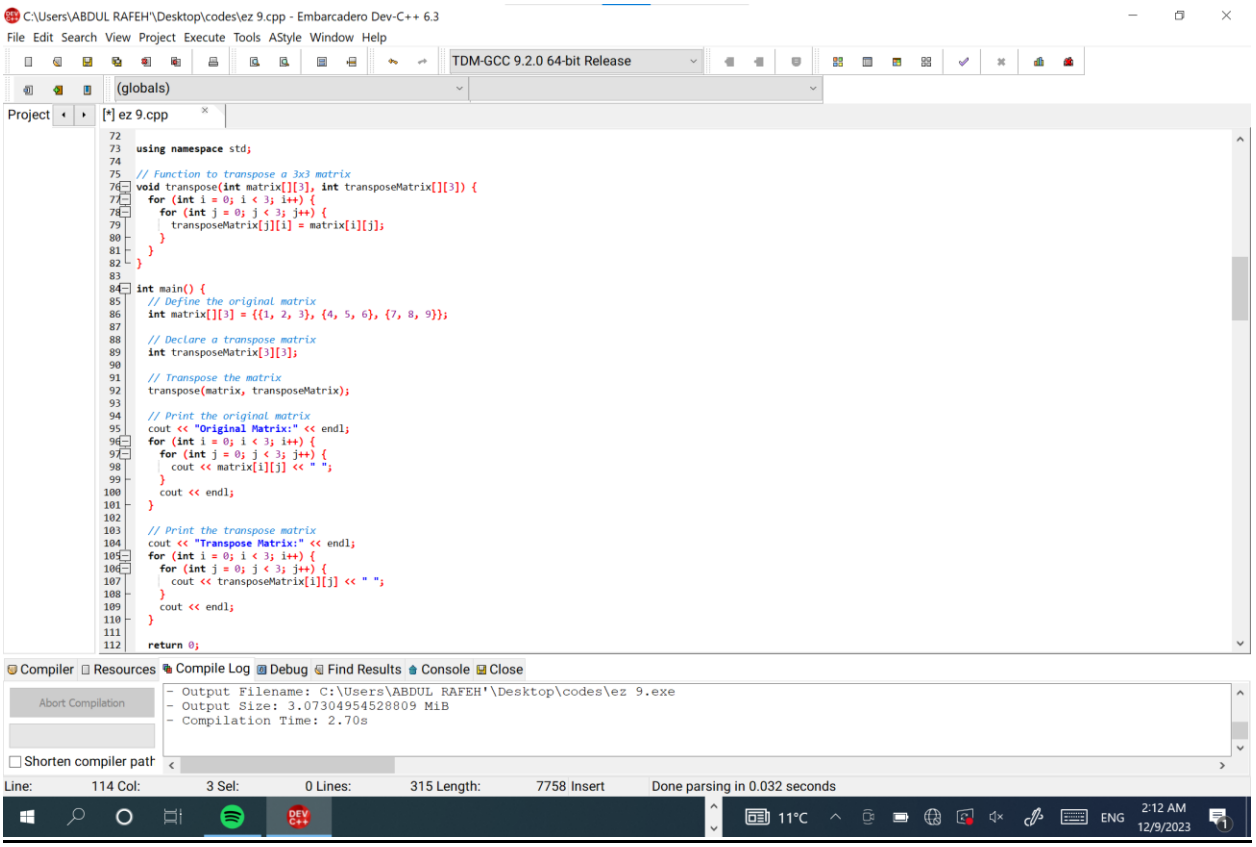
- **PROGRAM 2:**

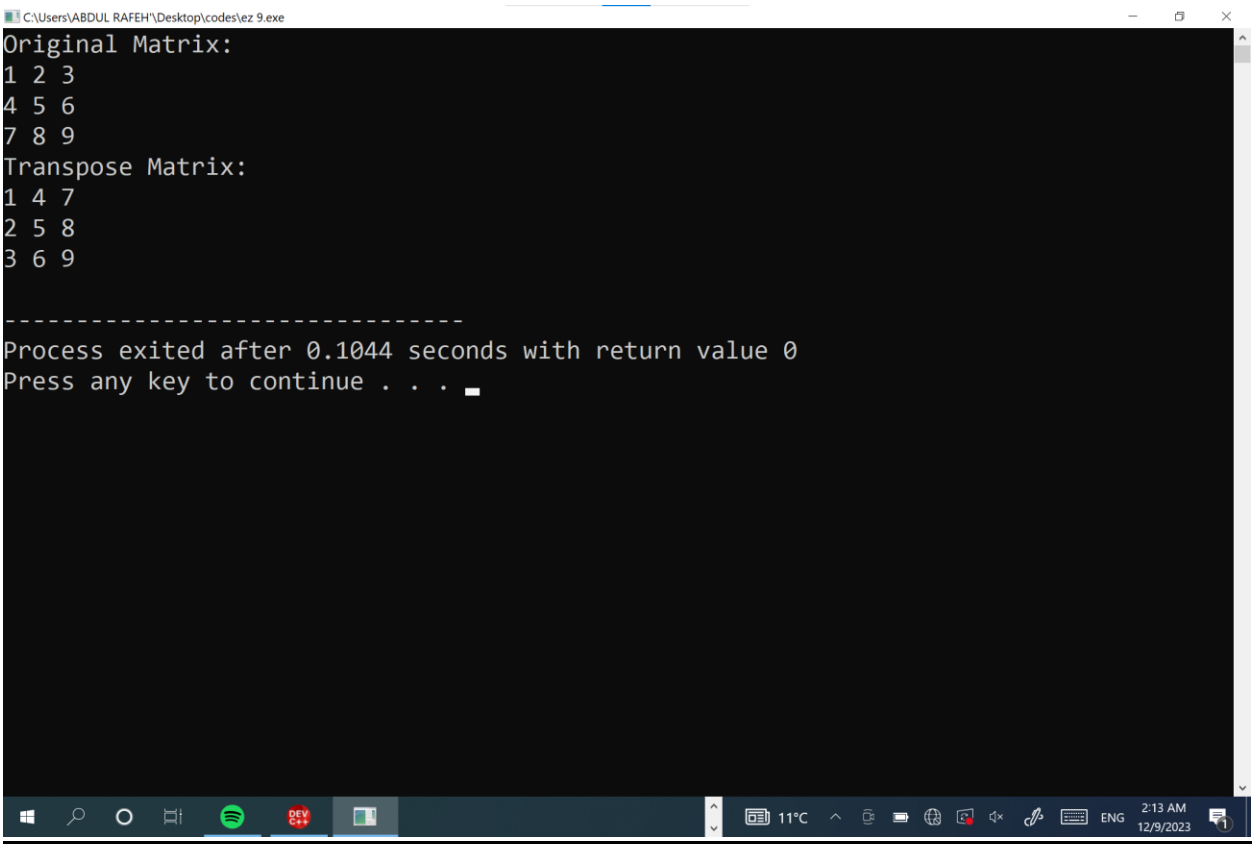

C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.cpp - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
[*] ez 9.cpp
33 return 0;
34 }*/
35 #include <iostream>
36
37 using namespace std;
38
39 void addTwoArrays(int matrix1[3][3], int matrix2[3][3], int result[3][3]) {
40 for (int i = 0; i < 3; ++i) {
41 for (int j = 0; j < 3; ++j) {
42 result[i][j] = matrix1[i][j] + matrix2[i][j];
43 }
44 }
45 }
46
47 int main() {
48 // Define two 2D arrays
49 int matrix1[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
50 int matrix2[3][3] = {{10, 11, 12}, {13, 14, 15}, {16, 17, 18}};
51
52 // Declare a result array to store the sums
53 int result[3][3];
54
55 // Add the two arrays using the function
56 addTwoArrays(matrix1, matrix2, result);
57
58 // Print the result
59 cout << "Resultant Matrix:" << endl;
60 for (int i = 0; i < 3; ++i) {
61 for (int j = 0; j < 3; ++j) {
62 cout << result[i][j] << " ";
63 }
64 cout << endl;
65 }
66
67 return 0;
68 }
Compiler Resources Compile Log Debug Find Results Console Close
Abort Compilation
- Output Filename: C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
- Output Size: 3.07304954528809 MiB
- Compilation Time: 2.72s
Shorten compiler path
Line: 60 Col: 39 Sel: 0 Lines: 69 Length: 1634 Insert Done parsing in 0.109 seconds
11°C
ENG
9:31 PM
12/7/2023


C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
Resultant Matrix:
11 13 15
17 19 21
23 25 27

Process exited after 0.276 seconds with return value 0
Press any key to continue . . .
11°C
ENG
2:10 AM
12/9/2023

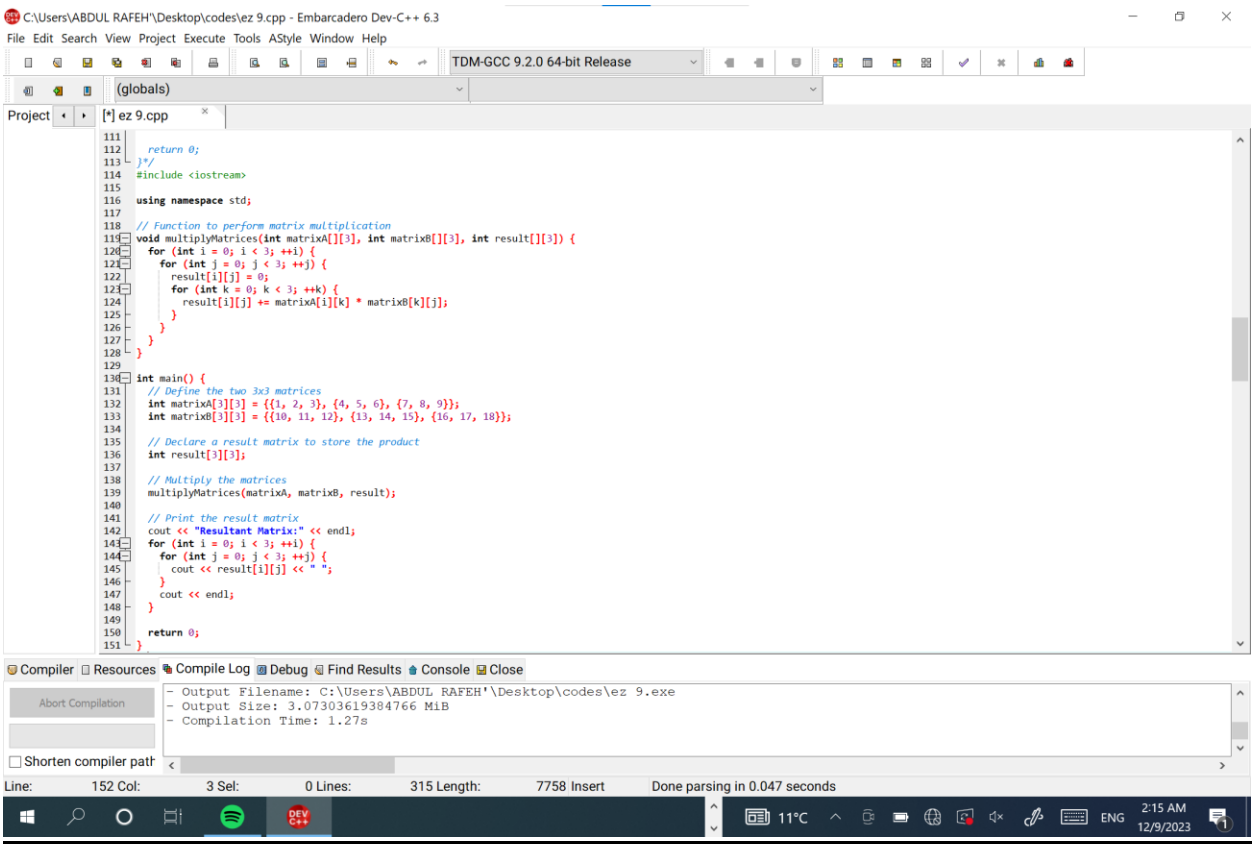
- **PROGRAM 3:**

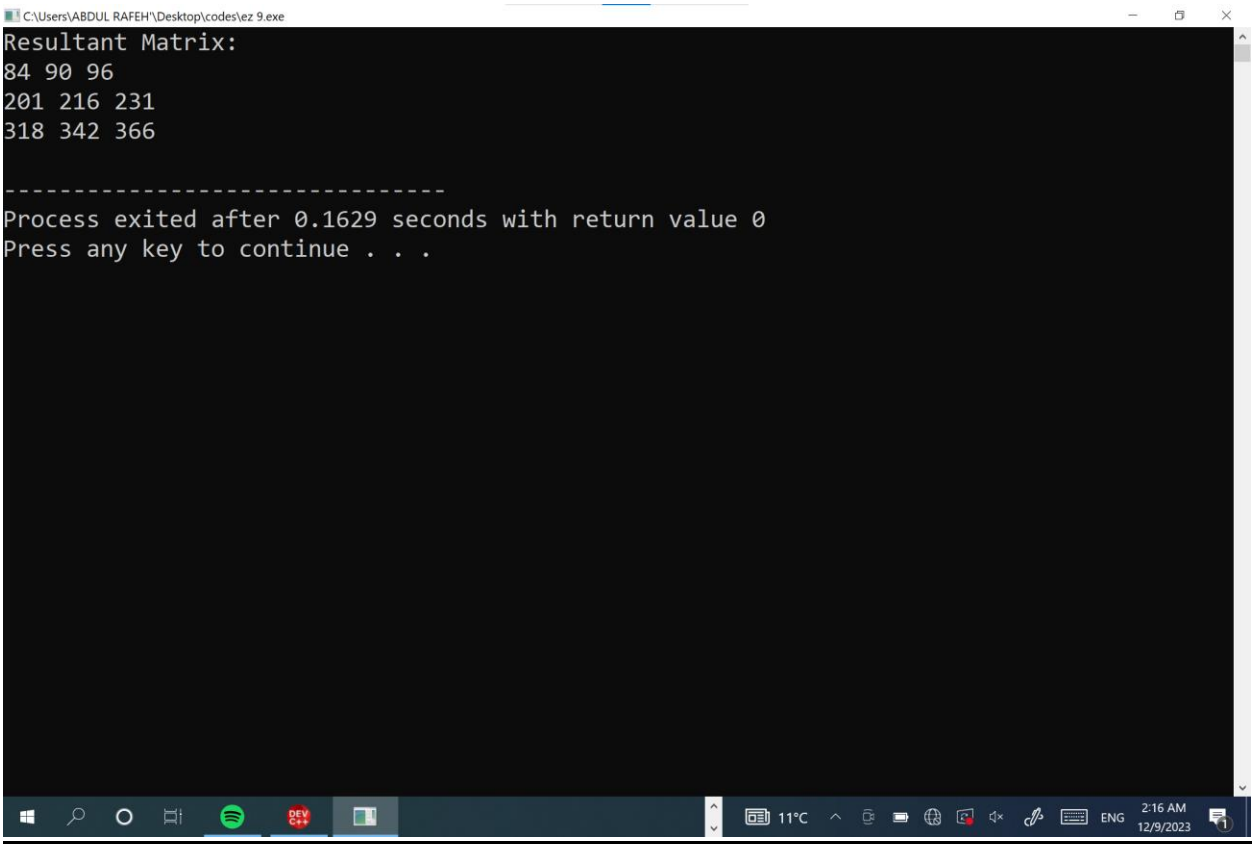

C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.cpp - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
[*] ez 9.cpp
using namespace std;
// Function to transpose a 3x3 matrix
void transpose(int matrix[][3], int transposeMatrix[][3]) {
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
transposeMatrix[j][i] = matrix[i][j];
}
}
}
int main() {
// Define the original matrix
int matrix[][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
// Declare a transpose matrix
int transposeMatrix[3][3];
// Transpose the matrix
transpose(matrix, transposeMatrix);
// Print the original matrix
cout << "Original Matrix:" << endl;
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
cout << matrix[i][j] << " ";
}
cout << endl;
}
// Print the transpose matrix
cout << "Transpose Matrix:" << endl;
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
cout << transposeMatrix[i][j] << " ";
}
cout << endl;
}
return 0;
Compiler Resources Compile Log Debug Find Results Console Close
Abort Compilation
Shorten compiler path
- Output Filename: C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
- Output Size: 3.07304954528809 MiB
- Compilation Time: 2.70s
Line: 114 Col: 3 Sel: 0 Lines: 315 Length: 7758 Insert Done parsing in 0.032 seconds
11°C
ENG
2:12 AM
12/9/2023


C:\Users\ABDUL RAFEH\Desktop\codes\ez 9.exe
Original Matrix:
1 2 3
4 5 6
7 8 9
Transpose Matrix:
1 4 7
2 5 8
3 6 9

Process exited after 0.1044 seconds with return value 0
Press any key to continue . . .
11°C
ENG
2:13 AM
12/9/2023

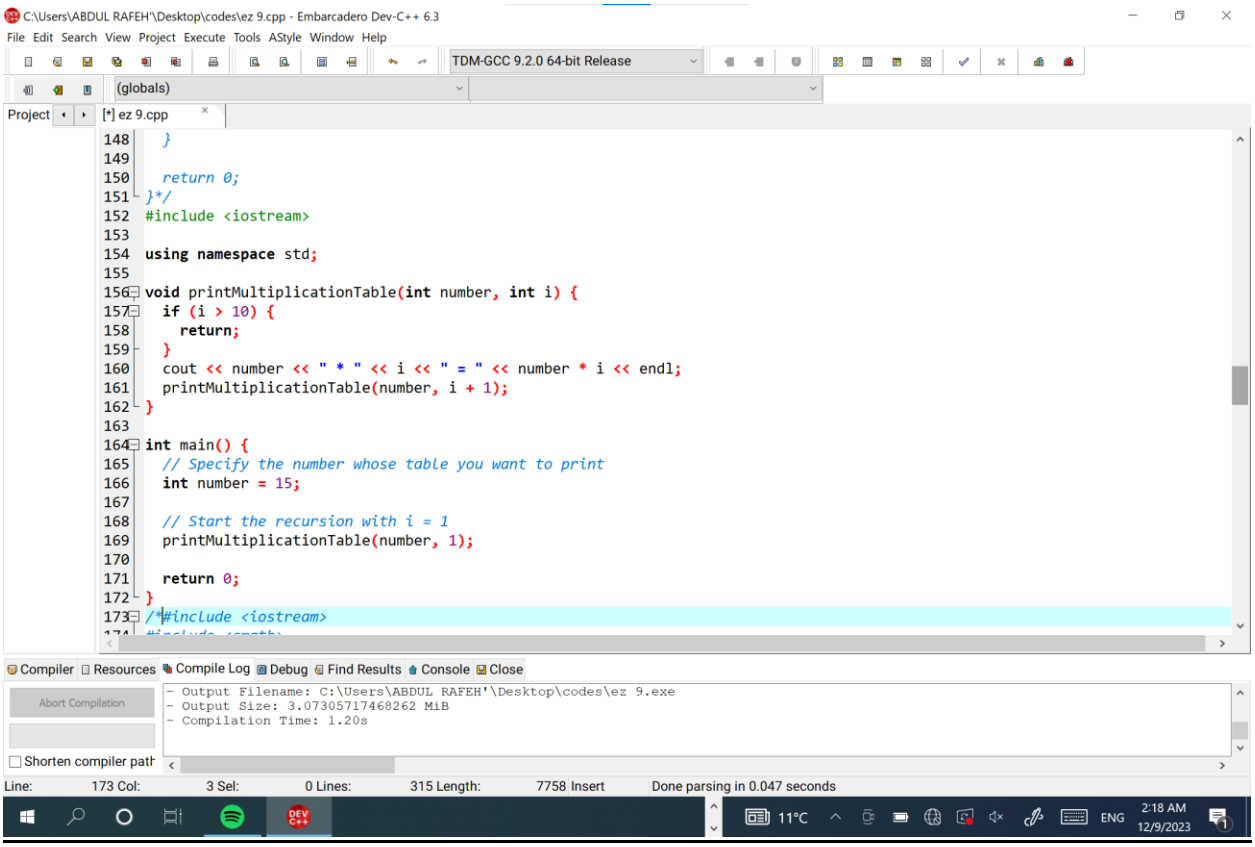
- **PROGRAM 4:**

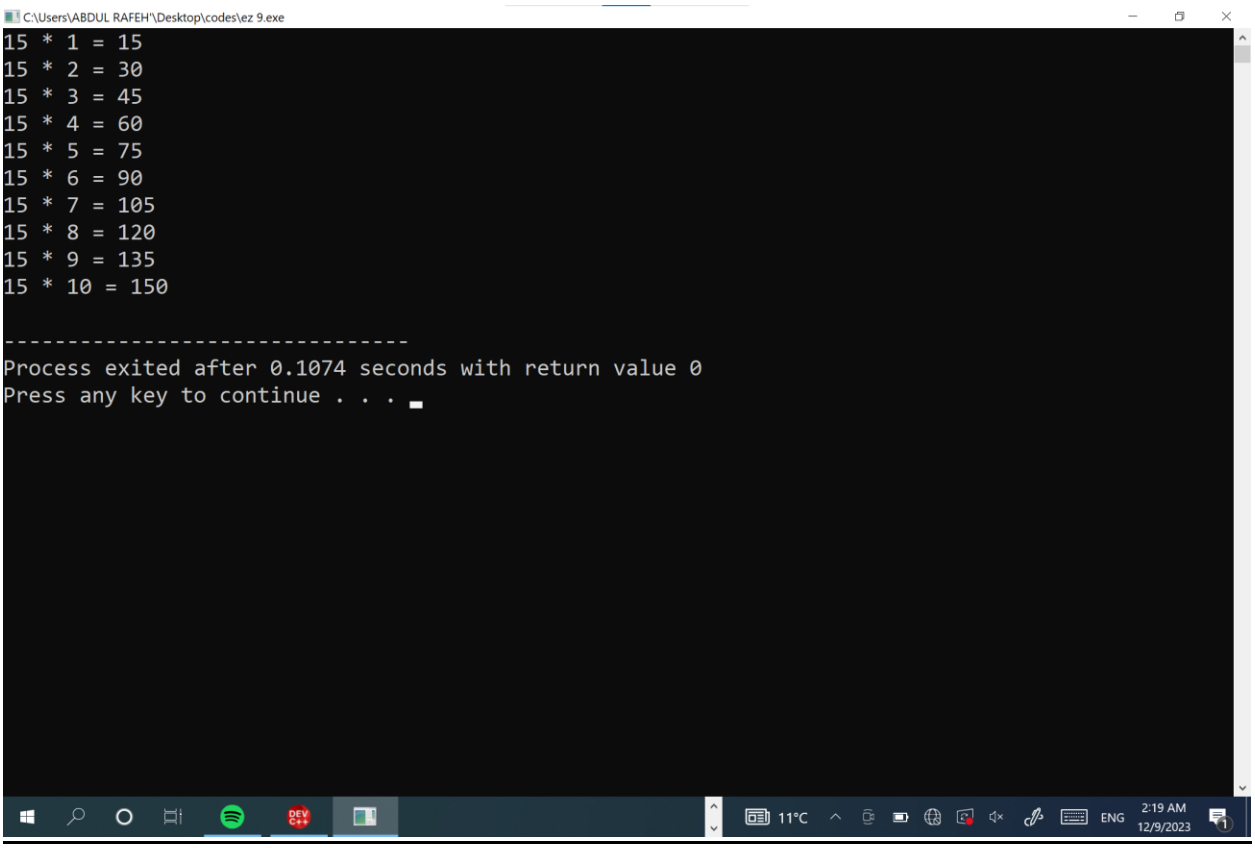

C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.cpp - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
[*] ez 9.cpp
111 return 0;
112 }*/
113 #include <iostream>
114
115 using namespace std;
116
117 // Function to perform matrix multiplication
118 void multiplyMatrices(int matrixA[][3], int matrixB[][3], int result[][3]) {
119 for (int i = 0; i < 3; ++i) {
120 for (int j = 0; j < 3; ++j) {
121 result[i][j] = 0;
122 for (int k = 0; k < 3; ++k) {
123 result[i][j] += matrixA[i][k] * matrixB[k][j];
124 }
125 }
126 }
127 }
128
129 int main() {
130 // Define the two 3x3 matrices
131 int matrixA[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
132 int matrixB[3][3] = {{10, 11, 12}, {13, 14, 15}, {16, 17, 18}};
133
134 // Declare a result matrix to store the product
135 int result[3][3];
136
137 // Multiply the matrices
138 multiplyMatrices(matrixA, matrixB, result);
139
140 // Print the result matrix
141 cout << "Resultant Matrix:" << endl;
142 for (int i = 0; i < 3; ++i) {
143 for (int j = 0; j < 3; ++j) {
144 cout << result[i][j] << " ";
145 }
146 cout << endl;
147 }
148
149 return 0;
150 }
Compiler Resources Compile Log Debug Find Results Console Close
Abort Compilation
- Output Filename: C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
- Output Size: 3.07303619384766 MiB
- Compilation Time: 1.27s
Shorten compiler path
Line: 152 Col: 3 Sel: 0 Lines: 315 Length: 7758 Insert Done parsing in 0.047 seconds
11°C ENG 2:15 AM 12/9/2023


C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
Resultant Matrix:
84 90 96
201 216 231
318 342 366

Process exited after 0.1629 seconds with return value 0
Press any key to continue . . .
11°C ENG 2:16 AM 12/9/2023

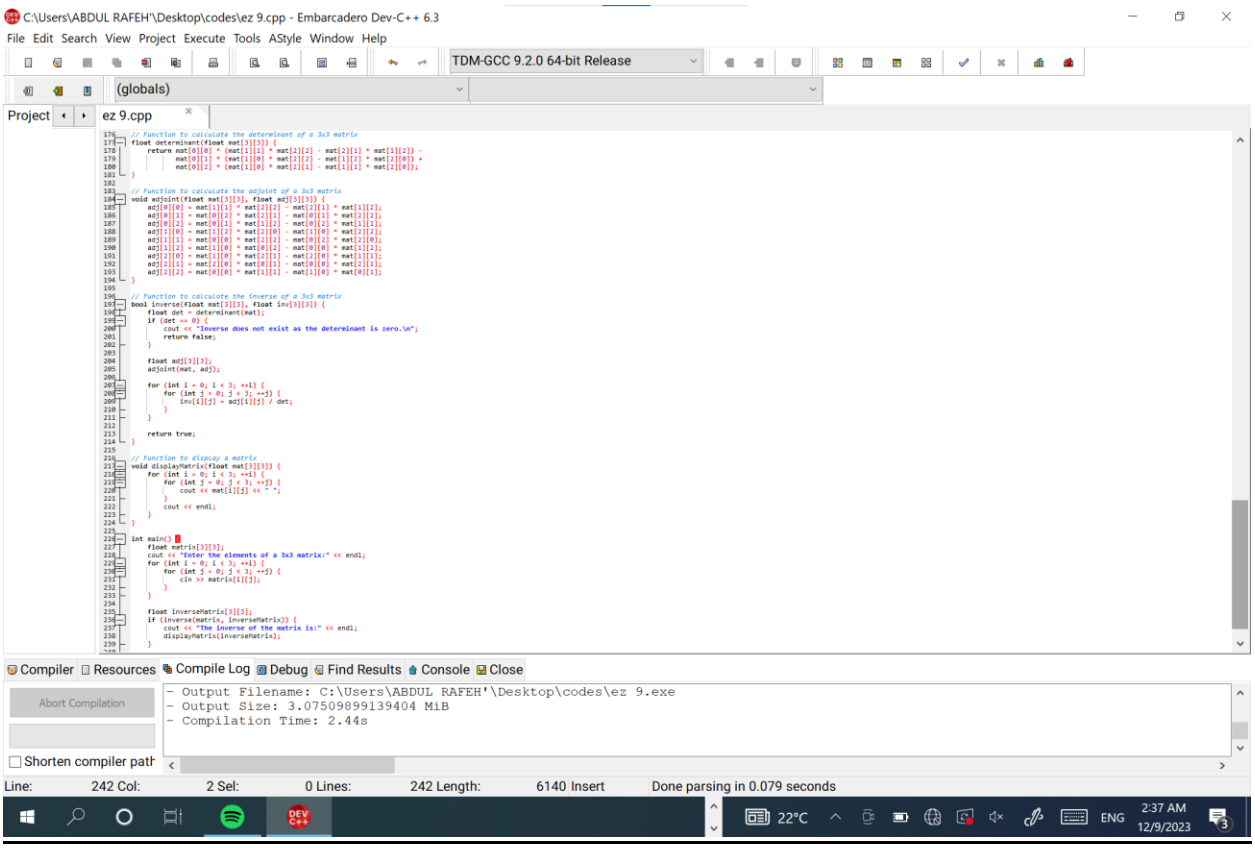
- **PROGRAM 5:**

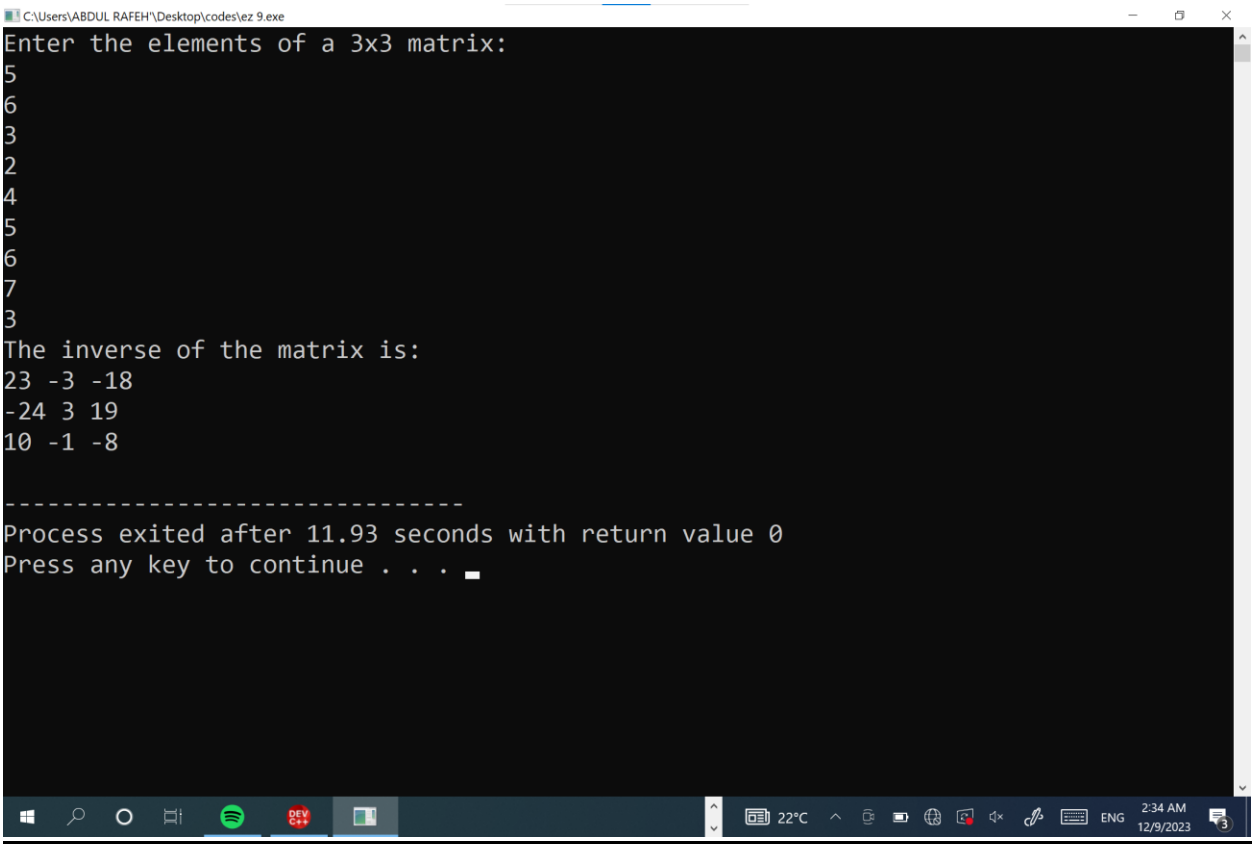

C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.cpp - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
[*] ez 9.cpp
148 }
149
150 return 0;
151 }*/
152 #include <iostream>
153
154 using namespace std;
155
156 void printMultiplicationTable(int number, int i) {
157 if (i > 10) {
158 return;
159 }
160 cout << number << " * " << i << " = " << number * i << endl;
161 printMultiplicationTable(number, i + 1);
162 }
163
164 int main() {
165 // Specify the number whose table you want to print
166 int number = 15;
167
168 // Start the recursion with i = 1
169 printMultiplicationTable(number, 1);
170
171 return 0;
172 }
173 /*#include <iostream>
Compiler Resources Compile Log Debug Find Results Console Close
Abort Compilation
Shorten compiler path
- Output Filename: C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
- Output Size: 3.07305717468262 MiB
- Compilation Time: 1.20s
Line: 173 Col: 3 Sel: 0 Lines: 315 Length: 7758 Insert Done parsing in 0.047 seconds
11°C
ENG
2:18 AM
12/9/2023



HOME TASK:

- **PROGRAM 1:**


C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.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
ez 9.cpp
// Function to calculate the determinant of a 3x3 matrix
float determinant(float mat[3][3]) {
return mat[0][0] * (mat[1][1] * mat[2][2] - mat[2][1] * mat[1][2]) -
mat[0][1] * (mat[1][0] * mat[2][2] - mat[1][2] * mat[2][0]) +
mat[0][2] * (mat[1][0] * mat[2][1] - mat[1][1] * mat[2][0]);
}
// Function to calculate the adjoint of a 3x3 matrix
void adjoint(float mat[3][3], float adj[3][3]) {
adj[0][0] = mat[1][1] * mat[2][2] - mat[2][1] * mat[1][2];
adj[0][1] = mat[0][2] * mat[2][1] - mat[0][1] * mat[2][2];
adj[0][2] = mat[0][1] * mat[1][2] - mat[0][2] * mat[1][1];
adj[1][0] = mat[1][2] * mat[2][0] - mat[1][0] * mat[2][2];
adj[1][1] = mat[0][0] * mat[2][2] - mat[0][2] * mat[2][0];
adj[1][2] = mat[1][0] * mat[0][2] - mat[0][0] * mat[1][2];
adj[2][0] = mat[1][0] * mat[2][1] - mat[2][0] * mat[1][1];
adj[2][1] = mat[2][0] * mat[0][1] - mat[0][0] * mat[2][1];
adj[2][2] = mat[0][0] * mat[1][1] - mat[1][0] * mat[0][1];
}
// Function to calculate the inverse of a 3x3 matrix
bool inverse(float mat[3][3], float inv[3][3]) {
float det = determinant(mat);
if (det == 0) {
cout << "Inverse does not exist as the determinant is zero.\n";
return false;
}
float adj[3][3];
adjoint(mat, adj);
for (int i = 0; i < 3; ++i) {
for (int j = 0; j < 3; ++j) {
inv[i][j] = adj[i][j] / det;
}
}
return true;
}
// Function to display a matrix
void displayMatrix(float mat[3][3]) {
for (int i = 0; i < 3; ++i) {
for (int j = 0; j < 3; ++j) {
cout << mat[i][j] << " ";
}
cout << endl;
}
}
int main() {
float matrix[3][3];
cout << "Enter the elements of a 3x3 matrix:" << endl;
for (int i = 0; i < 3; ++i) {
for (int j = 0; j < 3; ++j) {
cin >> matrix[i][j];
}
}
float inverseMatrix[3][3];
if (inverse(matrix, inverseMatrix)) {
cout << "The inverse of the matrix is:" << endl;
displayMatrix(inverseMatrix);
}
Compiler
Resources
Compile Log
Debug
Find Results
Console
Close
Abort Compilation
Shorten compiler path
- Output Filename: C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
- Output Size: 3.07509899139404 MiB
- Compilation Time: 2.44s
Line: 242 Col: 2 Sel: 0 Lines: 242 Length: 6140 Insert
Done parsing in 0.079 seconds
22°C
ENG
2:37 AM
12/9/2023


C:\Users\ABDUL RAFEH'\Desktop\codes\ez 9.exe
Enter the elements of a 3x3 matrix:
5
6
3
2
4
5
6
7
3
The inverse of the matrix is:
23 -3 -18
-24 3 19
10 -1 -8

Process exited after 11.93 seconds with return value 0
Press any key to continue . . .
22°C
ENG
2:34 AM
12/9/2023