

transposeSquareMatrix.c

```
1  #include <stdio.h>
2
3  int main(){
4      int rows, cols;
5      // Get dimensions from the user
6      printf("Enter the number of rows/cols: ");
7      scanf("%d", &rows);
8      cols = rows;
9
10     // Declare matrix
11     int matrix[rows][cols];
12     int transposedMatrix[cols][rows];
13
14     // Get matrix elements from the user
15     printf("Enter the elements of the matrix:\n");
16     for (int i = 0; i < rows; i++) {
17         for (int j = 0; j < cols; j++) {
18             printf("Element [%d][%d]: ", i, j);
19             scanf("%d", &matrix[i][j]);
20         }
21     }
22     // print original matrix
23     printf("Original matrix:\n");
24     for (int i = 0; i < rows; i++) {
25         for (int j = 0; j < cols; j++) {
26             printf("%d ", matrix[i][j]);
27         }
28         printf("\n");
29     }
30
31     // Transpose of square matrix
32     for (int i = 0; i < rows; i++) {
33         for (int j = i; j < cols; j++) {
34             int temp = matrix[i][j];
35             matrix[i][j] = matrix[j][i];
36             matrix[j][i] = temp;
37         }
38     }
39
40     // Display the transposed matrix
41     printf("Transposed matrix:\n");
42     for (int i = 0; i < rows; i++) {
43         for (int j = 0; j < cols; j++) {
44             printf("%d ", matrix[i][j]);
45         }
46         printf("\n");
47     }
48
49     return 0;
50 }
```