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1 // Program to read a matrix of size M*N from the user and display it on the screen.
2 #include <stdio.h>
3
4 // Define the size of the matrix
5 #define M 2
6 #define N 3
7
8 int main() {
9     // Declare a matrix with M rows and N columns
10    int matrix[M][N];
11
12    // Prompt the user to enter matrix elements
13    printf("\nEnter the matrix elements:\t");
14
15    // Read matrix elements from the user
16    for (int i = 0; i < M; i++) {
17        for (int j = 0; j < N; j++) {
18            scanf("%d", &matrix[i][j]);
19        }
20    }
21
22    // Display the entered matrix
23    printf("\nThe entered matrix is:\n");
24    for (int i = 0; i < M; i++) {
25        for (int j = 0; j < N; j++) {
26            printf("%d\t", matrix[i][j]);
27        }
28        printf("\n");
29    }
30
31    return 0;
32 }
33

```

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manish@fedora: ~/vs-code/bca-programming-repo/C/assignment17 main!
$ ./question1

Enter the matrix elements:      6
5
9
33
23
16

The entered matrix is:
6      5      9
33     23     16

```

```

1 // Program to read two M*N matrices and display their sum/difference
2 #include <stdio.h>
3
4 // Define the size of the matrices
5 #define M 3
6 #define N 3
7
8 int main() {
9     // Declare two matrices of size MxN
10    int matrix1[M][N], matrix2[M][N];
11
12    // Prompt the user to enter elements for the first matrix
13    printf("\nEnter the elements of the first matrix:\n");
14    for (int i = 0; i < M; i++) {
15        for (int j = 0; j < N; j++) {
16            scanf("%d", &matrix1[i][j]);
17        }
18    }
19
20    // Display the first matrix
21    printf("\nThe first matrix is:\n");
22    for (int i = 0; i < M; i++) {
23        for (int j = 0; j < N; j++) {
24            printf("%d\t", matrix1[i][j]);
25        }
26        printf("\n");
27    }
28
29    // Prompt the user to enter elements for the second matrix
30    printf("\nEnter elements of the second matrix:\n");
31    for (int i = 0; i < M; i++) {
32        for (int j = 0; j < N; j++) {
33            scanf("%d", &matrix2[i][j]);
34        }
35    }
36
37    // Display the second matrix
38    printf("\nThe second matrix is:\n");
39    for (int i = 0; i < M; i++) {
40        for (int j = 0; j < N; j++) {
41            printf("%d\t", matrix2[i][j]);
42        }
43        printf("\n");
44    }
45
46    // Display the sum of the matrices
47    printf("\nThe sum of the matrices is: \n");
48    for (int i = 0; i < M; i++) {
49        for (int j = 0; j < N; j++) {
50            printf("%d\t", matrix1[i][j] + matrix2[i][j]);
51        }
52        printf("\n");
53    }
54
55    // Display the difference of the matrices
56    printf("\nThe difference of the matrices is:\n");
57    for (int i = 0; i < M; i++) {
58        for (int j = 0; j < N; j++) {
59            printf("%d\t", matrix1[i][j] - matrix2[i][j]);
60        }
61        printf("\n");
62    }
63
64    return 0;
65 }

```

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manish@fedora: ~/vs-code/bca-programming-repo/C/assignment17 main!  
● $ ./question2
```

Enter the elements of first matrix:

9
8
7
6
5
4
3
2
1

The first matrix is:

9	8	7
6	5	4
3	2	1

Enter elements of second matrix:

11
12
32
34
33
5
78
2
9

The second matrix is:

11	12	32
34	33	5
78	2	9

The sum of the matrix is:

20	20	39
40	38	9
81	4	10

The difference of a matrix is:

-2	-4	-25
-28	-28	-1
-75	0	-8



```
1 // Program to find the transpose of a matrix
2 #include <stdio.h>
3
4 // Define the size of the matrix
5 #define M 3
6 #define N 3
7
8 int main() {
9     // Declare a matrix of size MxN
10    int matrix[M][N];
11
12    // Prompt the user to enter elements for the matrix
13    printf("\nEnter the elements of the matrix:\t");
14    for (int i = 0; i < M; i++) {
15        for (int j = 0; j < N; j++) {
16            scanf("%d", &matrix[i][j]);
17        }
18    }
19
20    // Display the original matrix
21    printf("\nThe matrix to be transposed is:\n");
22    for (int i = 0; i < M; i++) {
23        for (int j = 0; j < N; j++) {
24            printf("%d\t", matrix[i][j]);
25        }
26        printf("\n");
27    }
28
29    // Find and display the transpose of the matrix
30    printf("\nThe transpose of the matrix:\n");
31    for (int i = 0; i < N; i++) {
32        for (int j = 0; j < M; j++) {
33            printf("%d\t", matrix[j][i]);
34        }
35        printf("\n");
36    }
37
38    return 0;
39 }
40
```

```
manish@fedora: ~/vs-code/bca-programming-repo/C/assignment17 main!  
● $ ./question3
```

Enter the elements of matrix: 1

2
3
4
5
6
7
8
9

The matrix to be transposed is:

1	2	3
4	5	6
7	8	9

The transpose of matrix:

1	4	7
2	5	8
3	6	9