```c
// Program to read a matrix of size M*N from the user and display it on the screen.
#include <stdio.h>

// Define the size of the matrix
#define M 2
#define N 3

int main() {
    // Declare a matrix with M rows and N columns
    int matrix[M][N];

    // Prompt the user to enter matrix elements
    printf("\nEnter the matrix elements:\t");

    // Read matrix elements from the user
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            scanf("%d", &matrix[i][j]);
        }
    }

    // Display the entered matrix
    printf("\nThe entered matrix is:\n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            printf("%d\t", matrix[i][j]);
        }
        printf("\n");
    }

    return 0;
}

```

```
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
```

```c
// Program to read two M*N matrices and display their sum/difference
#include <stdio.h>

// Define the size of the matrices
#define M 3
#define N 3

int main() {
    // Declare two matrices of size MxN
    int matrix1[M][N], matrix2[M][N];

    // Prompt the user to enter elements for the first matrix
    printf("\nEnter the elements of the first matrix:\n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            scanf("%d", &matrix1[i][j]);
        }
    }

    // Display the first matrix
    printf("\nThe first matrix is:\n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            printf("%d\t", matrix1[i][j]);
        }
        printf("\n");
    }

    // Prompt the user to enter elements for the second matrix
    printf("\nEnter elements of the second matrix:\n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            scanf("%d", &matrix2[i][j]);
        }
    }

    // Display the second matrix
    printf("\nThe second matrix is:\n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            printf("%d\t", matrix2[i][j]);
        }
        printf("\n");
    }

    // Display the sum of the matrices
    printf("\nThe sum of the matrices is: \n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            printf("%d\t", matrix1[i][j] + matrix2[i][j]);
        }
        printf("\n");
    }

    // Display the difference of the matrices
    printf("\nThe difference of the matrices is:\n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            printf("%d\t", matrix1[i][j] - matrix2[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

```
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
```

```c
// Program to find the transpose of a matrix
#include <stdio.h>

// Define the size of the matrix
#define M 3
#define N 3

int main() {
    // Declare a matrix of size MxN
    int matrix[M][N];

    // Prompt the user to enter elements for the matrix
    printf("\nEnter the elements of the matrix:\t");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            scanf("%d", &matrix[i][j]);
        }
    }

    // Display the original matrix
    printf("\nThe matrix to be transposed is:\n");
    for (int i = 0; i < M; i++) {
        for (int j = 0; j < N; j++) {
            printf("%d\t", matrix[i][j]);
        }
        printf("\n");
    }

    // Find and display the transpose of the matrix
    printf("\nThe transpose of the matrix:\n");
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < M; j++) {
            printf("%d\t", matrix[j][i]);
        }
        printf("\n");
    }

    return 0;
}

```

```
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
```