```c
#include <stdio.h>

void readMatrix(int mat[10][10], int r, int c) {
   printf("Enter elements:\n");
   for(int i=0;i<r;i++)
      for(int j=0;j<c;j++)
         scanf("%d", &mat[i][j]);
}

void printMatrix(int mat[10][10], int r, int c) {
   for(int i=0;i<r;i++) {
      for(int j=0;j<c;j++)
         printf("%d ", mat[i][j]);
      printf("\n");
   }
}

void addMatrices(int a[10][10], int b[10][10], int r, int c) {
   int res[10][10];
   for(int i=0;i<r;i++)
      for(int j=0;j<c;j++)
         res[i][j] = a[i][j] + b[i][j];

   printf("\nMatrix Addition:\n");
   printMatrix(res, r, c);
}

void multiplyMatrices(int a[10][10], int b[10][10], int r, int c) {
   int res[10][10] = {0};
   for(int i=0;i<r;i++)
      for(int j=0;j<c;j++)
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            for(int k=0;k<c;k++)
                res[i][j] += a[i][k] * b[k][j];

    printf("\nMatrix Multiplication:\n");
    printMatrix(res, r, c);
}

void transposeMatrix(int a[10][10], int r, int c) {
    int res[10][10];
    for(int i=0;i<r;i++)
        for(int j=0;j<c;j++)
            res[j][i] = a[i][j];

    printf("\nTranspose:\n");
    printMatrix(res, c, r);
}

int main() {
    int r, c, mat1[10][10], mat2[10][10];

    printf("Enter rows and columns: ");
    scanf("%d %d", &r, &c);

    printf("Matrix 1:\n");
    readMatrix(mat1, r, c);

    printf("Matrix 2:\n");
    readMatrix(mat2, r, c);

    addMatrices(mat1, mat2, r, c);
    multiplyMatrices(mat1, mat2, r, c);
```

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    transposeMatrix(mat1, r, c);


    return 0;
}
```

```
Enter rows and columns: 2 2
Matrix 1:
Enter elements:
1 2
3 4
Matrix 2:
Enter elements:
4 5
6 7

Matrix Addition:
5 7
9 11

Matrix Multiplication:
16 19
36 43

Transpose:
1 3
2 4
```