EXERCISE -1

Write a c program for matrix multiplication

AIM: To perform multiplication of two matrices and display the result.

ALGORITHM:

1: Start the program

2: Input rows and columns for Matrix A

3: Input rows and columns for Matrix B

4: Check if columns of A = rows of B

5: Input elements for Matrix A and B

6: Initialize result matrix with 0

7: Multiply using nested loops

8: Display result matrix

9: End the program

PROGRAM:

```
#include <stdio.h>
int main() {
   int a[10][10], b[10][10], result[10][10];
   int r1, c1, r2, c2;
   printf("Enter rows and columns for first matrix: ");
   scanf("%d %d", &r1, &c1);
   printf("Enter rows and columns for second matrix: ");
   scanf("%d %d", &r2, &c2);
   if (c1 != r2) {
```

```
    printf("Matrix multiplication not possible. Columns of A must equal rows of B.\n");
    return 1;
  }
  printf("Enter elements of first matrix:\n");
  for (int i = 0; i < r1; i++)
    for (int j = 0; j < c1; j++)
      scanf("%d", &a[i][j]);
  printf("Enter elements of second matrix:\n");
  for (int i = 0; i < r2; i++)
    for (int j = 0; j < c2; j++)
      scanf("%d", &b[i][j]);
  for (int i = 0; i < r1; i++)
    for (int j = 0; j < c2; j++)
      result[i][j] = 0;
  for (int i = 0; i < r1; i++) {
    for (int j = 0; j < c2; j++) {
      for (int k = 0; k < c1; k++) {
        result[i][j] += a[i][k] * b[k][j];
      }
    }
  }
  printf("Resultant matrix:\n");
  for (int i = 0; i < r1; i++) {
```

```
        for (int j = 0; j < c2; j++) {
            printf("%d ", result[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

INPUT AND OUTPUT:

```
Enter rows and columns of Matrix A: 2 3
Enter rows and columns of Matrix B: 3 2
Enter elements of Matrix A:
1 2 3
4 5 6
Enter elements of Matrix B:
7 6
8 9
10 11
Resulting Matrix:
53 57
128 135
```

RESULT: Matrix multiplication performed successfully.