EXERCISE-1

1. **Write a c program to perform matrix multiplication.**

   Aim: To write a c program to perform multiplication.

   Algorithm:

   1.Start the program.

   2.Input the number of rows and columns for both matrics A and

   3.Check if the number of columns in A equals the number of row in B.

   4.If not ,print “Multiplication not possible” and exit.

   5.Else, input elements of matrics A and B.

   6.Multiply matrices uusing three nested loops :\

   - Initialize each element of result matrix C to 0.
   - For each i,j,and k:

     C[i][j]+=A[i][k]*B[k][j]

   7.Print the resulting matrix C.

   8.End the program.

Program Code:

```
#include <stdio.h>

int main() {

   int A[10][10], B[10][10], C[10][10];
```

```
int r1, c1, r2, c2;
    printf("Enter rows and columns of Matrix A: ");
scanf("%d%d", &r1, &c1);
printf("Enter rows and columns of Matrix B: ");
scanf("%d%d", &r2, &c2);
    if (c1 != r2) {
    printf("Matrix multiplication not possible.\n");
    return 0;
}
printf("Enter elements of Matrix A:\n");
for (int i = 0; i < r1; i++)
    for (int j = 0; j < c1; j++)
        scanf("%d", &A[i][j]);
printf("Enter elements of Matrix B:\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++) {
```

```
            C[i][j] = 0;
            for (int k = 0; k < c1; k++) {
                C[i][j] += A[i][k] * B[k][j];
            }
        }
    }

    printf("Resulting Matrix:\n");
    for (int i = 0; i < r1; i++) {
        for (int j = 0; j < c2; j++) {
            printf("%d ", C[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 :

The program was successfully implemented matrix multiplication.