**TITLE 21**

Write a C program to input two matrices of 5\*5 multiply them and output the resultant matrix

**OBJECTIVE:**

By the end of this activity we will be able to multiply matrices of any number of rows and columns and the output will be the product of the matrices

**PROBLEM STATEMENT:**

In this problem we aim to input the number of rows and columns and the elements of the matrices. Input from user:

Enter the number of rows and columns of matrix:

Enter the elements of first matrix:

Enter the elements of the second matrix:

Once the data is collected and stored, the product of the matrices is given as the output.

**ALGORITHM:**

STATRT

Define variables: m, n, p, q, c, d, k, sum, first, second, multiply

INPUT: Read input from the keyboard

COMPUTATION: All the elements are entered in the matrices

DISPLAY: Prints the product of the matrices

STOP

**PROGRAM:**

#include <stdio.h>  
   
int main()  
{  
  int m, n, p, q, c, d, k, sum = 0;  
  int first[100][100], second[100][100], multiply[100][100];  
   
  printf("Enter number of rows and columns of first matrix:**\n**");  
  scanf("%d%d", &m, &n);  
  printf("Enter elements of first matrix:**\n**");  
   
  for (c = 0; c < m; c++)  
    for (d = 0; d < n; d++)  
      scanf("%d", &first[c][d]);  
   
  printf("Enter number of rows and columns of second matrix:**\n**");  
  scanf("%d%d", &p, &q);  
   
  if (n != p)  
    printf("The multiplication isn't possible.**\n**");  
  else  
  {  
    printf("Enter elements of second matrix:**\n**");  
   
    for (c = 0; c < p; c++)  
      for (d = 0; d < q; d++)  
        scanf("%d", &second[c][d]);  
   
    for (c = 0; c < m; c++) {  
      for (d = 0; d < q; d++) {  
        for (k = 0; k < p; k++) {  
          sum = sum + first[c][k]\*second[k][d];  
        }  
   
        multiply[c][d] = sum;  
        sum = 0;  
      }  
    }  
   
    printf("Product of the matrices:**\n**");  
   
    for (c = 0; c < m; c++) {  
      for (d = 0; d < q; d++)  
        printf("%d**\t**", multiply[c][d]);  
   
      printf("**\n**");  
    }  
  }  
   
  return 0;

}

**CONCLUSION:**

The simulation of the above C program helped me to understand how we can input elements into a matrix and find the product of matrices.

**OUTPUT:**

Enter the number of rows and columns of first matrix:

5

5

Enter elements of first matrix:

1 2 3 4 5

6 7 8 9 10

11 12 13 14 15

16 17 18 19 20

21 22 23 24 25

Enter the number of rows and columns of second matrix:

5

5

Enter elements of second matrix:

1 2 3 4 5

6 7 8 9 10

11 12 13 14 15

16 17 18 19 20

21 22 23 24 25

Product of the matrices:

215 230 245 260 275

490 530 570 610 650

765 830 895 960 1025

1040 1130 1220 1310 1400

1315 1430 1545 1660 1775