**Ex. No: 6** **Date: 01-11-2021**

## 2D ARRAYS

**PROBLEM GIVEN:**

Write a program to multiply 2 matrices and print the result matrix. Then print the even and odd elements of the result array

**ALGORITHM:**

Step 1: Start

Step 2: Declare the variables a[10][10], b[10][10], ab[10][10], eve[100], od[100], integer r, c, i, j, k, e, o.

Step 3: Read r and c.

Step 4: Introduce a for-loop for entering elements in the matrix A.

Step 4: Introduce a for-loop for entering elements in the matrix B.

Step 5: Introduce a for-loop for multiplying matrix A and matrix B.

Step 6: Introduce a for-loop for printing the product AB.

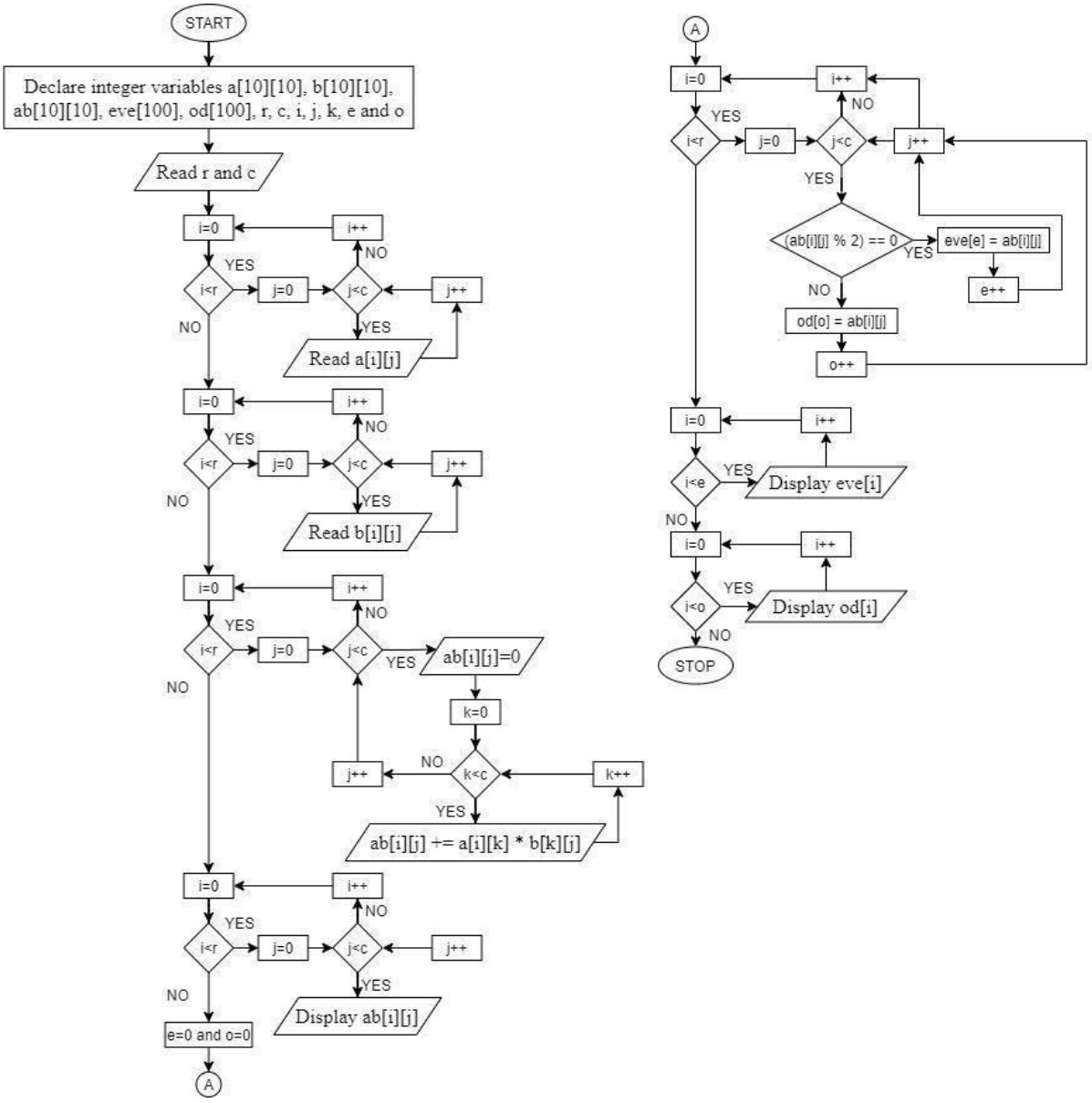
Step 7: Let e=0 and o=0.

Step 8: Introduce a for-loop for checking whether the elements of the product AB are even or odd.

Step 9: Introduce a for-loop for printing the even numbers and odd numbers.

Step 10: Stop

**FLOWCHART:**


START
Declare integer variables a[10][10], b[10][10], ab[10][10], eve[100], od[100], r, c, i, j, k, e and o
Read r and c
i=0
i++
i<r
YES
NO
j=0
j<c
j++
Read a[i][j]
Read b[i][j]
ab[i][j]=0
k=0
k<c
k++
ab[i][j] += a[i][k] * b[k][j]
Display ab[i][j]
e=0 and o=0
A
(ab[i][j] % 2) == 0
eve[e] = ab[i][j]
e++
od[o] = ab[i][j]
o++
i<e
Display eve[i]
i<o
Display od[i]
STOP

## PROGRAM:

```
#include<stdio.h>
int main() {
   int a[10][10], b[10][10], ab[10][10], eve[100], od[100], r, c, i, j, k, e, o;
   printf("Enter the number of row(s) = ");
   scanf("%d", &r);
   printf("Enter the number of column(s) = ");
   scanf("%d", &c);
   //reading elements of matrix A
   printf("Enter the matrix A elements = \n");
   for (i = 0; i < r; i++) {
      for (j = 0; j < c; j++) {
         scanf("%d", &a[i][j]);
      }
   }
   //reading elements of matrix B
   printf("Enter the matrix B elements = \n");
   for (i = 0; i < r; i++) {
      for (j = 0; j < c; j++) {
         scanf("%d", &b[i][j]);
      }
   }
   //multiplying A and B
   printf("Multiplication of A and B = \n");
   for (i = 0; i < r; i++) {
      for (j = 0; j < c; j++) {
         ab[i][j] = 0;
         for (k = 0; k < c; k++) {
            ab[i][j] += a[i][k] * b[k][j];
         }
      }
   }
   //printing matrix AB
   for (i = 0; i < r; i++) {
      for (j = 0; j < c; j++) {
         printf("%d\t", ab[i][j]);
      }
      printf("\n");
   }
   //finding odd and even elements in matrix AB
   e = 0;
   o = 0;
   for (int i = 0; i < r; ++i) {
      for (int j = 0; j < c; ++j) {
         if ((ab[i][j] % 2) == 0) {
            eve[e] = ab[i][j];
            e++;
```

```
            }
            else {
                od[o] = ab[i][j];
                o++;
            }
        }
    }
    //printing odd and even elements
    for (i = 0; i < e; i++)
        printf("even = %d\n", eve[i]);
    for (i = 0; i < o; i++)
        printf("odd = %d\n", od[i]);
    return 0;
}
```

**OUTPUT:**