Dimensional array assignments

1 Declare a two-dimensional array of elements for sales details of a store, for each item, for each salesman. Take the sales values as input and print the array in matrix form.

Find out and print the following :1) Total sales by each sales man

2) Total sales for a item

3) Total sales

```
#include <stdio.h>

#define ITEMS 2

#define SALESMEN 3

int main() {

   int sales[ITEMS][SALESMEN];

   for (int i = 0; i < ITEMS; i++) {

      for (int j = 0; j < SALESMEN; j++) {

         printf("Enter sales for item %d, salesman %d: ", i + 1, j + 1);

         scanf("%d", &sales[i][j]);

   Print sales matrix

   printf("Sales Matrix:\n");

   for (int i = 0; i < ITEMS; i++) {

      for (int j = 0; j < SALESMEN; j++) {

         printf("%d ", sales[i][j]);

      }

      printf("\n");

   }

   return 0;

}
```

Output:Sales Matrix:10 20 30 40 50 60

2).Write the following program :

Declare a two dimensional array of elements and find and print its

transpose.

eg., if the matrix is :

1 3

4 5

7 8

its transpose should be : 1 4 7

3 5 8?

```
using System;


class Program
{
   static void Main()
   {
      int[,] mat = { {1, 3}, {4, 5}, {7, 8} };
      Console.WriteLine("Transpose:");
      for (int j = 0; j < 2; j++)
      {
         for (int i = 0; i < 3; i++)
            Console.Write(mat[i, j] + " ");
         Console.WriteLine();
      }
   }
}
```

Output: Transpose:1 4 7 3 5 8

3).Write a program for matrix addition and subtraction

```
using System;


class Program
{
   static void Main()
   {
      int[,] A = { {1, 2}, {3, 4} };
      int[,] B = { {5, 6}, {7, 8} };


      Console.WriteLine("Addition:");
      for (int i = 0; i < 2; i++)
      {
         for (int j = 0; j < 2; j++)
            Console.Write((A[i, j] + B[i, j]) + " ");
         Console.WriteLine();
      }
      Console.WriteLine("Subtraction:");
      for (int i = 0; i < 2; i++)
      {
         for (int j = 0; j < 2; j++)
            Console.Write((A[i, j] - B[i, j]) + " ");
         Console.WriteLine();
      }
   }
}
```

Output: Addition:

6 8

10 12

Subtraction:

-4 -4

-4 -4

4).Write a program for matrix multiplication

```
using System;
class Program
{
   static void Main()
   {
      int[,] A = { {1, 2}, {3, 4} };
      int[,] B = { {5, 6}, {7, 8} };
      int[,] C = new int[2, 2];
      for (int i = 0; i < 2; i++)
         for (int j = 0; j < 2; j++)
            for (int k = 0; k < 2; k++)
               C[i, j] += A[i, k] * B[k, j];
      for (int i = 0; i < 2; i++)
      {
         for (int j = 0; j < 2; j++)
            Console.Write(C[i, j] + " ");
         Console.WriteLine();
      }
   }
```

```
}
```

Output:19, 22,43,50

5). Search for an element in a two dimensional array, and print its position - as row and column numbers. write a search function that will receive the array and return row and column indexes as output.

```
#include <stdio.h>

int search_element(int arr[3][3], int target) {
   for (int i = 0; i < 3; i++) {
      for (int j = 0; j < 3; j++) {
         if (arr[i][j] == target) {
            printf("Element found at row %d, column %d\n", i, j);
            return 1;
         }
      }
   }
   return 0;
}
```

Output: Element found at row 1, column 1

6)Declare a two dimensional array of characters, read names from the user

```
#include <stdio.h>

int main() {
   char names[5][50];
   for (int i = 0; i < 5; i++) {
      printf("Enter name %d: ", i + 1);
      fgets(names[i], sizeof(names[i]), stdin);
   }
```

```
    for (int i = 0; i < 5; i++) {
        printf("Name %d: %s", i + 1, names[i]);
    }
    return 0;
}
```

Output: Enter name 1: Alice

Enter name 2: Bob

Enter name 3: Charlie

Enter name 4: David

Enter name 5: Eve

Name 1: Alice

Name 2: Bob

Name 3: Charlie

Name 4: David

Name 5: Eve