

Q.1 Write a Program to find the average of a given 2D array.

For example,

Input:

Enter the array's row size: 3

Enter the array's column size: 3

Enter array's elements:

a[0][0] = 2

a[0][1] = 4

a[0][2] = 1

a[1][0] = 3

a[1][1] = 5

a[1][2] = 4

a[2][0] = 8

a[2][1] = 2

a[2][2] = 6

Output:

Average of an Array: 3.88

Ans:

// Online C compiler to run C program online

```
#include <stdio.h>
```

```
int main() {
    int n,f;
    printf("Enter the array's row size: ");
    scanf("%d",&n);
    printf("Enter the array's column size:");
    scanf("%d",&f);
    printf("Enter array's elements:\n");
    int a[n][f];
    for (int i=0; i<n;i++){
        for(int j=0;j<f;j++){
            printf("a[%d][%d]=",i,j);
            scanf("%d",&a[i][j]);
        }
    }
    int sum=0;
    for (int i=0; i<n;i++){
        for(int j=0;j<f;j++){
            sum=sum+a[i][j];
        }
    }
}
```

```
float avg = (float)sum / (n * f);  
printf("Average of an Array: %.2f\n", avg);  
return 0;  
}
```

Ans:

Enter the array's row size: 3
Enter the array's column size:3
Enter array's elements:
a[0][0]=2
a[0][1]=4
a[0][2]=1
a[1][0]=3
a[1][1]=5
a[1][2]=4
a[2][0]=8
a[2][1]=2
a[2][2]=6
Average of an Array: 3.89

=== Code Execution Successful ===

**Q.2 Write a Program to perform the addition operation of two 2D arrays & store it in another array.
Keep in mind that both array sizes must be the same.**

For example,

Input:

Enter the array's row size: 3
Enter the array's column size: 3

Enter array A's elements:

a[0][0] = 2
a[0][1] = 4
a[0][2] = 1
a[1][0] = 3
a[1][1] = 5
a[1][2] = 4
a[2][0] = 8
a[2][1] = 2
a[2][2] = 6

Enter array B's elements:

```
b[0][0] = 3
b[0][1] = 6
b[0][2] = 2
b[1][0] = 5
b[1][1] = 6
b[1][2] = 8
b[2][0] = 3
b[2][1] = 7
b[2][2] = 4
```

Output:

Array C is:

```
5 10 3
8 11 12
11 9 10
```

Ans:

// Online C compiler to run C program online

```
#include <stdio.h>
```

```
int main() {
    int k,v,i,j;
    printf("enter array row's size:");
    scanf("%d",&k);
```

```
    printf("enter array col's size:");
    scanf("%d",&v);
```

```
    printf("Enter array A's element:\n");
    int a[k][v];
    for(int i=0;i<k;i++){
        for(int j=0;j<v;j++){
            printf("a[%d[%d]=",i,j);
            scanf("%d",&a[i][j]);
        }
    }
    printf("\n");
```

```
    printf("Enter array B's element:\n");
    int b[k][v];
```

```

for(int i=0;i<k;i++){
    for(int j=0;j<v;j++){
        printf("b[%d][%d]=",i,j);
        scanf("%d",&b[i][j]);
    }
}
printf("\n");
printf("array c is:\n");
int c[k][v];
for(int i=0;i<k;i++){
    for(int j=0;j<v;j++){

c[i][j]=a[i][j]+b[i][j];

printf("%d\t",c[i][j]);
    }
    printf("\n");
}
return 0;
}

```

o/p:

```

enter array row's size:3
enter array col's size:3
Enter array A's element:
a[0][0]=2
a[0][1]=4
a[0][2]=1
a[1][0]=3
a[1][1]=5
a[1][2]=4
a[2][0]=8
a[2][1]=2
a[2][2]=6

```

```

Enter array B's element:
b[0][0]=3
b[0][1]=6
b[0][2]=2
b[1][0]=5
b[1][1]=6
b[1][2]=8
b[2][0]=3

```

```
b[2][1]=7  
b[2][2]=4
```

array c is:

```
5      10      3  
8      11      12  
11     9       10
```

=== Code Execution Successful ===

Q.3 Write a Program to find the sum of diagonal elements from a given 2D array.

For example,

Input:

Enter the array's row & column size: 3

Enter array's elements:

```
a[0][0] = 2  
a[0][1] = 4  
a[0][2] = 1  
a[1][0] = 3  
a[1][1] = 5  
a[1][2] = 4  
a[2][0] = 8  
a[2][1] = 2  
a[2][2] = 6
```

Output:

The sum of diagonal elements of an Array: 13

Ans:

```
// Online C compiler to run C program online  
#include <stdio.h>  
int main(){  
    int n;  
    printf (" Enter the array's row & column size:");  
    scanf ("%d",&n);  
    printf("Enter array's elements:\n");  
    int a[n][n];  
    int sum=0;  
    for(int i=0;i<n;i++){  
        for( int j=0;j<n;j++){  
            printf("a[%d][%d]=",i,j);
```

```

        scanf("%d",&a[i][j]);
    }
}
for(int i=0;i<n;i++){
    for( int j=0;j<n;j++){
        if(i==j){
            sum=sum+a[i][j];
        }
    }
}

printf("The sum of diagonal elements of an Array.");
printf("%d",sum);
}

```

o/p:

Enter the array's row & column size:3

Enter array's elements:

a[0][0]=2

a[0][1]=4

a[0][2]=1

a[1][0]=3

a[1][1]=5

a[1][2]=4

a[2][0]=8

a[2][1]=2

a[2][2]=6

The sum of diagonal elements of an Array:13

=== Code Execution Successful ===

Q.4 Write a Program to print and find the sum of all boundary elements from a given 5x5 2D array.

For example,

Input:

Enter array's elements:

a[0][0] = 2

a[0][1] = 4

a[0][2] = 1

a[0][3] = 6

a[0][4] = 3

a[1][0] = 9

a[1][1] = 5

```
a[1][2] = 4
a[1][3] = 6
a[1][4] = 7
a[2][0] = 8
a[2][1] = 2
a[2][2] = 6
a[2][3] = 3
a[2][4] = 5
a[3][0] = 3
a[3][1] = 4
a[3][2] = 8
a[3][3] = 5
a[3][4] = 1
a[4][0] = 2
a[4][1] = 3
a[4][2] = 9
a[4][3] = 5
a[4][4] = 7
```

Output:

```
2 4 1 6 3
9      7
8      5
3      1
2 3 9 5 7
```

The sum of boundary elements of an Array: 75

Ans:

// Online C compiler to run C program online

```
#include <stdio.h>
```

```
int main() {
```

```
int n=5;
```

```
int a[n][n], i, j, sum = 0;
```

```
printf("Enter array elements:\n");
```

```
for (i = 0; i < n; i++) {
```

```
for (j = 0; j < n; j++) {
```

```
    printf("a[%d][%d]=",i,j);
```

```
    scanf("%d", &a[i][j]);    }
```

```
}
```

```
printf("\nBoundary elements:\n");
```

```
for (i = 0; i < n; i++) {
```

```
    for (j = 0; j < n; j++) {
```

```

    if (i == 0 || i == n - 1 || j == 0 || j == n - 1) {
        printf("%d ", a[i][j]);
        sum= sum+ a[i][j];

    }
    else {
        printf(" ");
    }
}
printf("\n");
}
printf("\nThe sum of boundary elements of an Array: %d\n", sum);
return 0;

}

```

o/p:

Enter array elements:

```

a[0][0]=2
a[0][1]=4
a[0][2]=1
a[0][3]=6
a[0][4]=3
a[1][0]=9
a[1][1]=5
a[1][2]=4
a[1][3]=6
a[1][4]=7
a[2][0]=8
a[2][1]=2
a[2][2]=6
a[2][3]=3
a[2][4]=5
a[3][0]=3
a[3][1]=4
a[3][2]=8
a[3][3]=5
a[3][4]=1
a[4][0]=2
a[4][1]=3
a[4][2]=9
a[4][3]=5
a[4][4]=7

```


Boundary elements:

2 4 1 6 3

9 7

8 5

3 1

2 3 9 5 7

The sum of boundary elements of an Array: 75