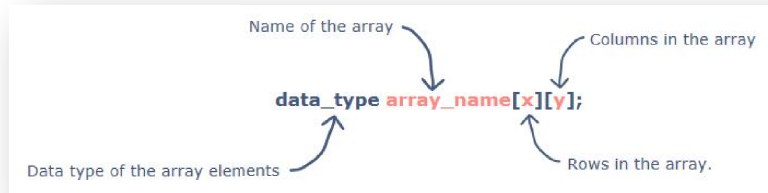


An array is a collection of fixed number values of a single type. An integer array can only hold elements whose data type is also an integer.

A two-dimensional array in C can be thought of as a matrix with rows and columns. The general syntax used to declare a two-dimensional array is:



A two-dimensional array is an array of several one-dimensional arrays.

	Column 0	Column 1	Column 2	Column 3
Row 0	<code>a[0][0]</code>	<code>a[0][1]</code>	<code>a[0][2]</code>	<code>a[0][3]</code>
Row 1	<code>a[1][0]</code>	<code>a[1][1]</code>	<code>a[1][2]</code>	<code>a[1][3]</code>
Row 2	<code>a[2][0]</code>	<code>a[2][1]</code>	<code>a[2][2]</code>	<code>a[2][3]</code>

Diagram illustrating the structure of a 2D array (Matrix) with Row and Column indices. The array is named `a`. The indices are shown as `a[row][column]`.

Example 1: Write a Program to Insert & Display the element in 2D Array.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[3][3],i,j;
    clrscr();
    for (i=0;i<3;i++)
    {
        for (j=0;j<3;j++)
        {
            printf("\n Enter the Element [%d] [%d] : ",i,j) ;
            scanf("%d", & a[i][j]) ;
        }
    }
    for(i=0 ; i<3 ; i++)
    {
        for(j=0 ; j<3 ; j++)
            printf("%d",c[i][j]);
        printf("\n");
    }
    getch();
}
```

```
Enter the Numbers of Row : 3
Enter the Number of Coloumn : 3

Enter the Element of Matrix :
Enter the Element [0] [0] : 1
Enter the Element [0] [1] : 2
Enter the Element [0] [2] : 3
Enter the Element [1] [0] : 4
Enter the Element [1] [1] : 5
Enter the Element [1] [2] : 6
Enter the Element [2] [0] : 7
Enter the Element [2] [1] : 8
Enter the Element [2] [2] : 9

Element in the Matrix are :
1      2      3
4      5      6
7      8      9
```

Example 2: Program to print sum of all the elements of 2-D-Array.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int x[5][4],i,j,s=0;
    clrscr();
    printf("Enter the elements of array \n");
    for(i=0;i<5;i++)
    for(j=0;j<4;j++)
    scanf("%d",&x[i][j]);
    for(i=0;i<5;i++)
    for(j=0;j<4;j++)
    s=s+x[i][j];
    printf("Sum of all the 2-D-ARRAY= %d",s);
    getch();
}
```

Example 3: Write a program to print all the even number of 2-D-Array.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int x[5][4],i,j;
    clrscr();
    printf("Enter the elements of array \n");
    for(i=0;i<5;i++)
    for(j=0;j<4;j++)
    scanf("%d",&x[i][j]);
    for(i=0;i<5;i++)
    for(j=0;j<4;j++)
    if(x[i][j]%2==0)
    printf(" %d\t",x[i][j]);
    getch();
}
```

Example 4: Write a program to print sum all the even number of 2-D-Array and also print sum odd numbers.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int x[5][4],i,j,se=0,so=0;
    clrscr();
    printf("Enter the elements of array\n");
    for(i=0;i<5;i++)
    for(j=0;j<4;j++)
    scanf("%d",&x[i][j]);
    for(i=0;i<5;i++)
    for(j=0;j<4;j++)
    if(x[i][j]%2==0)
    se=se+x[i][j];
    else
    so=so+x[i][j];
    printf("Sum of all the even number of 2-D-ARRAY==%d\n",se);
    printf("Sum of all the odd number of 2-D-ARRAY==%d\n",so);
}
```

```
getch();  
}
```

Example 5: Write a program to find the largest value of 2-D-array.

```
#include<stdio.h>  
#include<conio.h>  
void main()  
{  
int x[5][4],i,j,l;  
clrscr();  
printf("Enter the elements of array \n");  
for(i=0;i<5;i++)  
for(j=0;j<4;j++)  
scanf("%d",&x[i][j]);  
l=x[0][0];  
for(i=0;i<5;i++)  
for(j=0;j<4;j++)  
if(l<x[i][j])  
l=x[i][j];  
printf("Largest value %d",l);  
getch();  
}
```

Try Yourself:

1. Write a program to print multiplication of all the elements of 2-D-Array.
2. Write a program to print all the odd number of 2-D-Array.
3. Write a program to find the smallest value of 2-D-array.
4. Write a program to print the sum of all the odd number of 2-D-array.
5. Write a program to print the sum of largest and smallest value of 2-D-array.