Passing a 2D array to a C function

Passing a 2D array to a C function

Three approaches

1. The parameter is a 2D array
2. The parameter is an array containing pointers
3. The parameter is a pointer to a pointer

The parameter is a 2D array

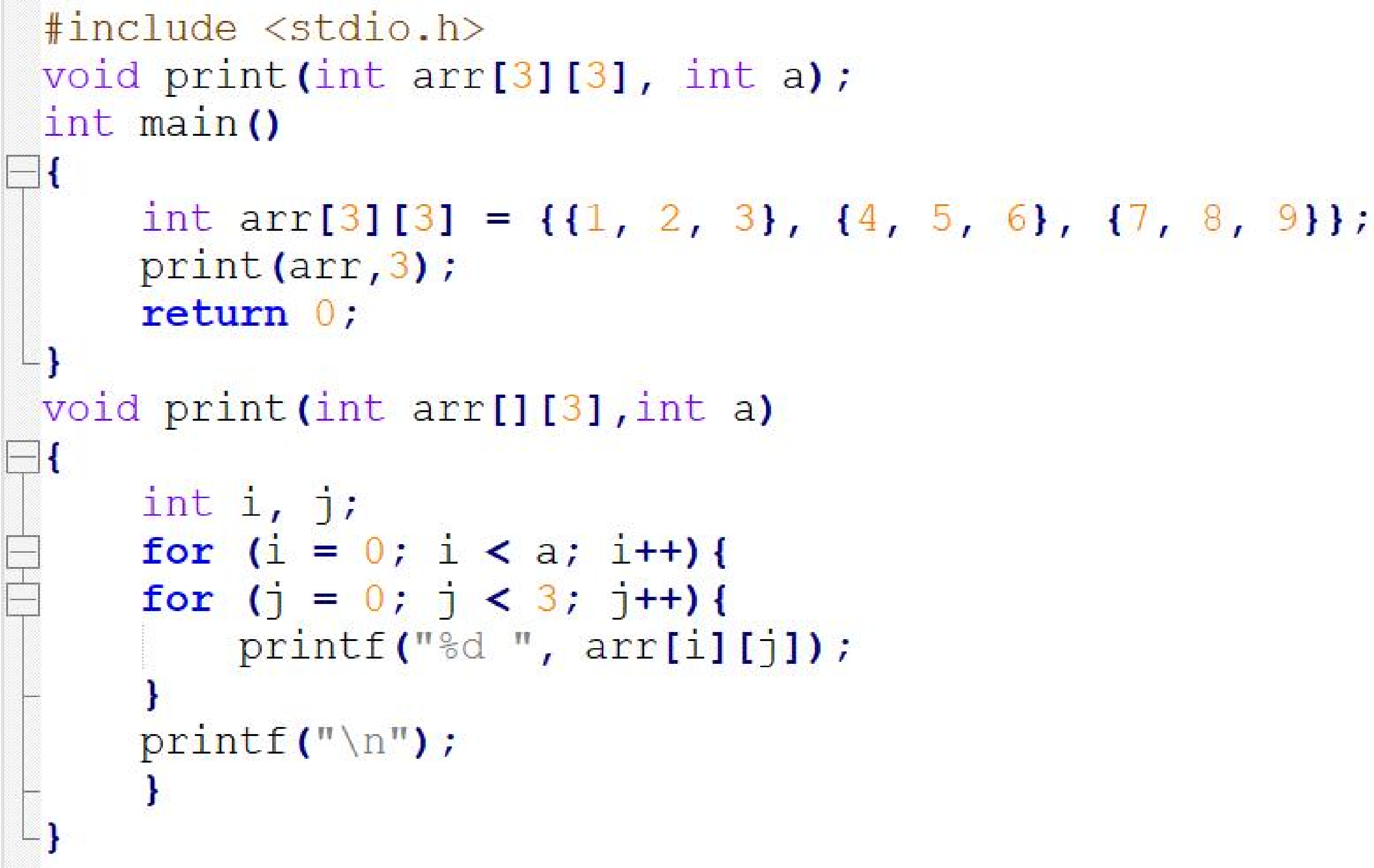
```
void passFunc(int a[3][3]) ; //function prototype
int array[3][3]; // Array declaration
passFunc(array); // function call and passing array
void passFunc(int a[3][3]) // function defination
{ // ... }
```

Example:

```
void passFunc(int a[][3],int a);
int array[10][10];
passFunc(array,a);
void passFunc(int a[][3],int a)
{ // ...
}
```

Note: In multi-dimensional array declaration all the dimensions must be declared except the first

Example-1

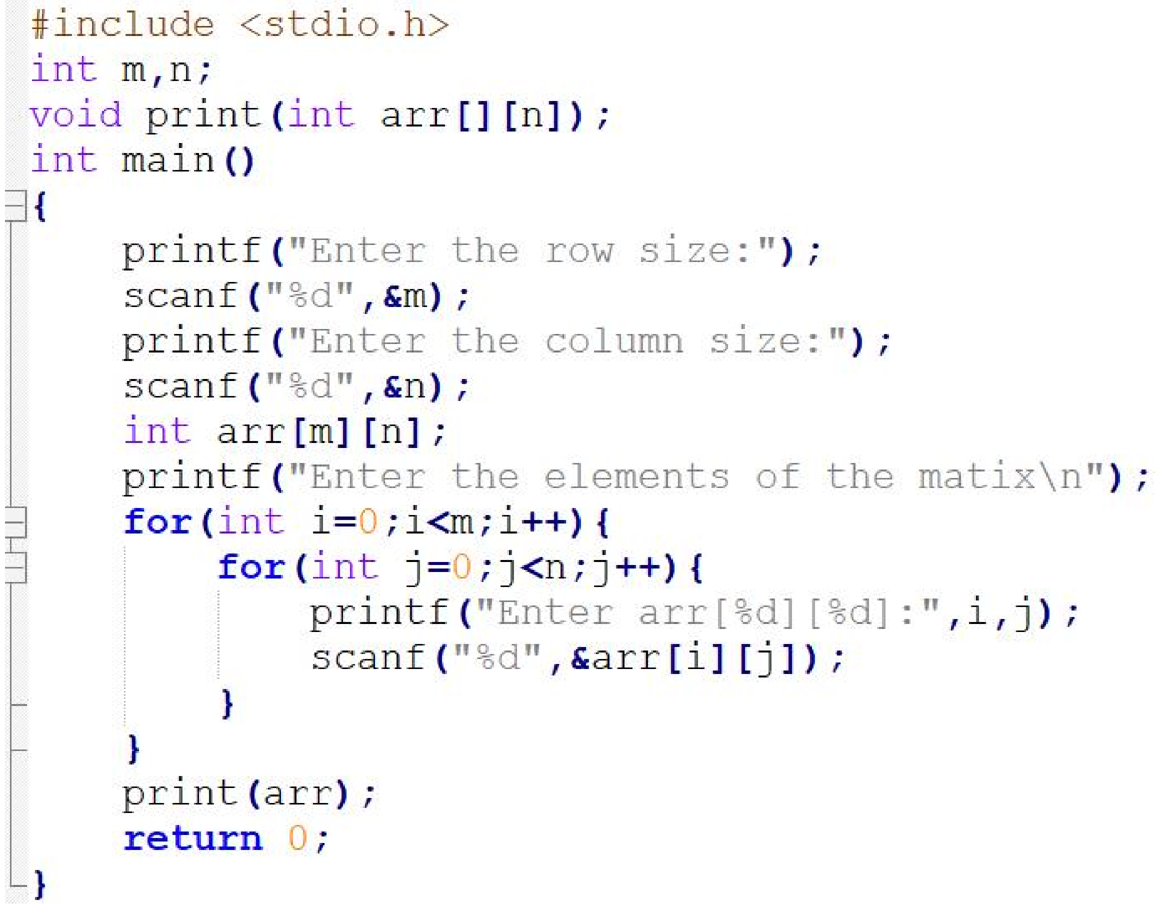


```
#include <stdio.h>
void print(int arr[3][3], int a);
int main()
{
    int arr[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
    print(arr,3);
    return 0;
}
void print(int arr[][3],int a)
{
    int i, j;
    for (i = 0; i < a; i++){
    for (j = 0; j < 3; j++){
        printf("%d ", arr[i][j]);
    }
    printf("\n");
    }
}
```

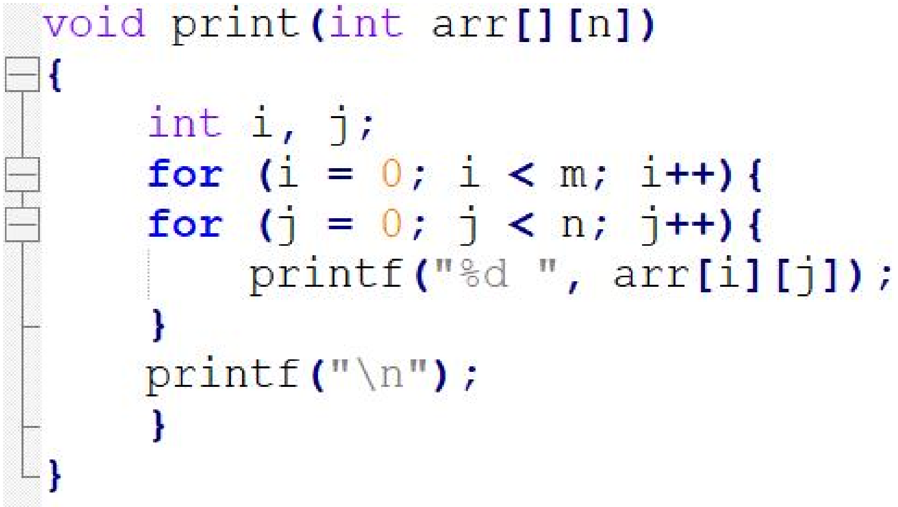
Output

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

Example-2

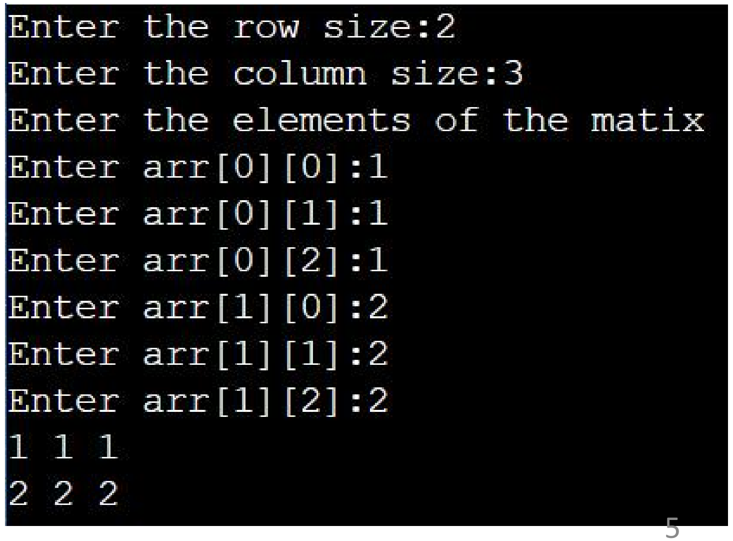


```c
#include <stdio.h>
int m,n;
void print(int arr[][n]);
int main()
{
    printf("Enter the row size:");
    scanf("%d",&m);
    printf("Enter the column size:");
    scanf("%d",&n);
    int arr[m][n];
    printf("Enter the elements of the matix\n");
    for(int i=0;i<m;i++){
        for(int j=0;j<n;j++){
            printf("Enter arr[%d][%d]:",i,j);
            scanf("%d",&arr[i][j]);
        }
    }
    print(arr);
    return 0;
}
```



```c
void print(int arr[][n])
{
    int i, j;
    for (i = 0; i < m; i++){
    for (j = 0; j < n; j++){
        printf("%d ", arr[i][j]);
    }
    printf("\n");
    }
}
```

Output



```
Enter the row size:2
Enter the column size:3
Enter the elements of the matix
Enter arr[0][0]:1
Enter arr[0][1]:1
Enter arr[0][2]:1
Enter arr[1][0]:2
Enter arr[1][1]:2
Enter arr[1][2]:2
1 1 1
2 2 2
```