

ARRAYS

Monday, 1. August 2022

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INTRODUCTION TO ARRAYS

- * Array is a linear collection of similar elements.
- * Array is also known as subscript variable.

ARRAY DECLARATION RULES

① `int a[];` ; error

② `int a[5];` ;

- always natural number
- Total number of variable in arrays
- Not an index

③ `int a[5];` ;

0	1	2	3	4

- whatever is the size of an array. It always consumes memory in sequential fashion.
- local arrays when not initialized contains garbage values.

④ You can initialize array during declaration

`int a[5] = {10, 50, 30, 70, 20};`

10	50	30	70	20
0	1	2	3	4

⑤ You cannot initialize an array during declaration more than its size.

`int a[5] = {10, 20, 30, 40, 50, 60, 70};` → error

⑥ You can initialize an array during declaration with lesser values than the size of an array.

`int a[5] = {10, 20};`

0	1	2	3	4
10	20	0	0	0

* Remaining variables in array will be 0 and not garbage value.

⑦ During declaration you can leave `[]` empty only when you initialize array at the same time.

`int a[] = {10, 50, 30, 80, 20};`

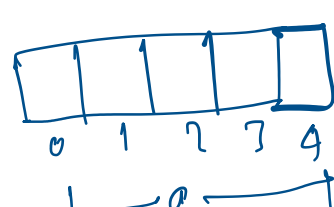
BOUND CHECKING

`int a[5] = {10, 20, 50, 90, 30, 60, 70};` ; → error

`int i, a[5];`

`for(i=0; i<5; i++)`

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



SORTING

* Arranging elements in some logical order is known as sorting.

* By default, for numbers sorting means arranging elements in ascending order.

example: 0 1 2 3 4 5 6 7 8 9 10
 20 30 1 3 2 9 9 7 6 4 8

Sorted array: 1 2 3 4 5 6 7 8 9 10 30

FUNCTION CALL BY PASSING ARRAYS

```
main()
{
    int a[10];
    input(a);
}

void input(int b[])
{
    int i;
    printf("Enter 10 numbers")
    for(i=0; i<10; i++)
    {
        scanf("%d", &b[i]);
    }
}
```

TWO DIMENSIONAL ARRAYS

Till now we do imagine 2-D or 3-D by viewing the shape but here in C language of programming language 2-D means, How many things or types we need to explain a situation.

example:- There is 3 books and each has 20 pages so how will we write in short form?

3, 20
↓ ↘ pages
3 books classes in
 C

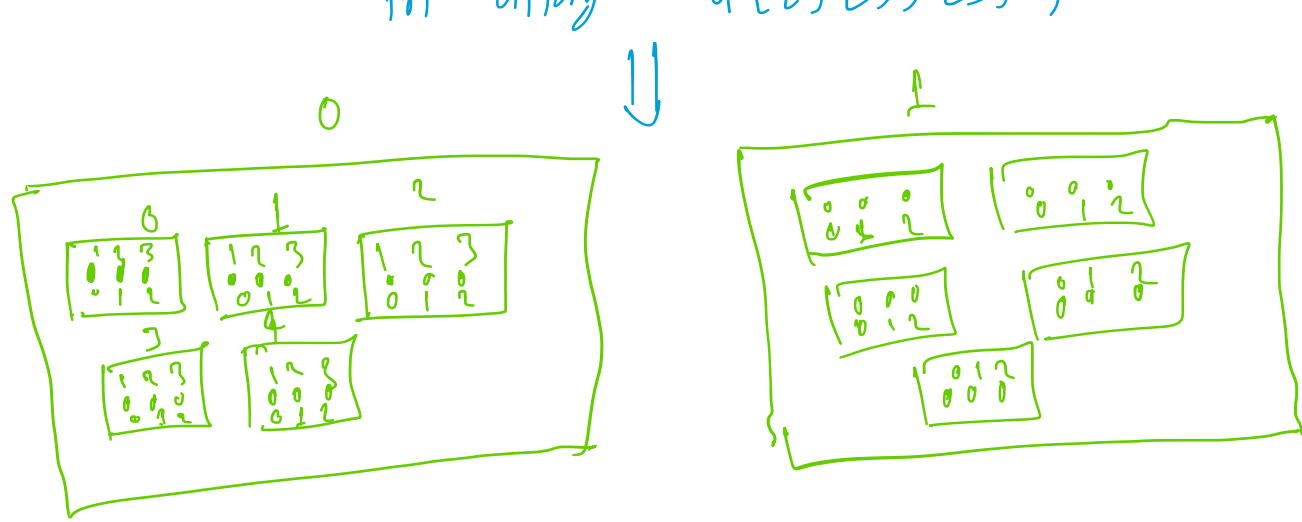
This is so a 2-D array
`a[2][3]`

one more example for 2-D Array

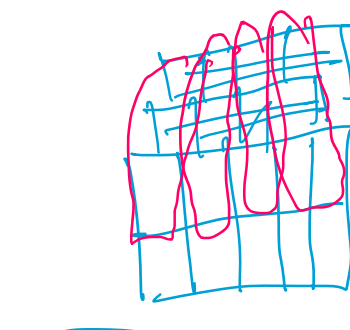
Suppose There is 2 boxes and each boxes 5 packets of sweets and each packet has 3 different sweets so if somebody want to write this in short form, how they will write?

2 5 3
↓ ↓ ↓
boxes packets sweets

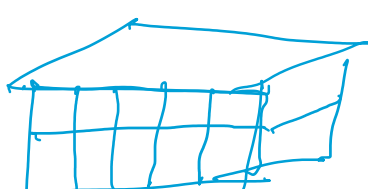
in array `a[2][5][3];`



* These all things are arranged in memory sequential way.



2x3



2d → square

3d → cube