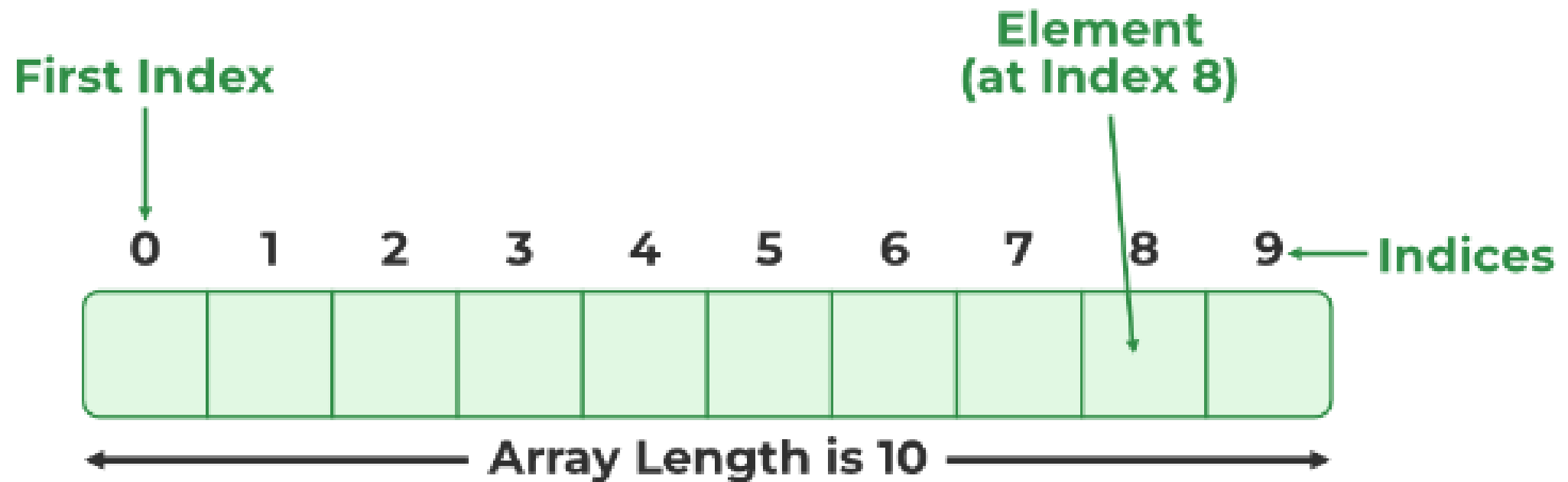


Session 7

Mostafa Akram

Indexing in an Array



Dimensions of the Array

1D Array

| | | |
|---|---|---|
| 1 | 2 | 3 |
|---|---|---|

2D Array

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 1 | 2 | 3 |
| 1 | 2 | 3 |

3D Array

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 1 | 2 | 3 |
| 1 | 2 | 3 |

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 1 | 2 | 3 |
| 1 | 2 | 3 |

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 1 | 2 | 3 |
| 1 | 2 | 3 |

Initialization of Multidimensional Array in C

```
int a[][2] = { { 1, 2 }, { 3, 4 } };
```

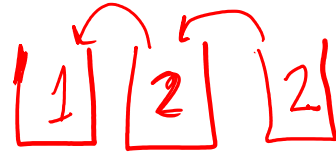
```
int a[2][3] = { { 1, 3, 2 }, { 6, 7, 8 } };
int i, j;
for (i = 0; i < 2; i++) {
    for (j = 0; j < 3; j++) {
        printf("\n a[%d][%d]=%d", i, j, a[i][j]);
    }
}
```

Output

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

Sorting Array

- Bubble Sort



$$5 \times 5 = 25$$

STEP
01

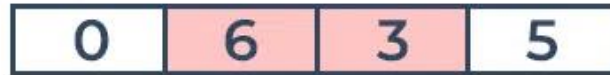
Placing the 1st largest element at Correct position

temp
6

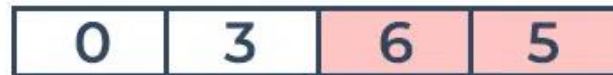
i=0



i=1



i=2



2 1 3 4 5 6

1 2 3 4 5 6

6 5 4 3 2 1

1 2 3 4 5 6



Bubble sort

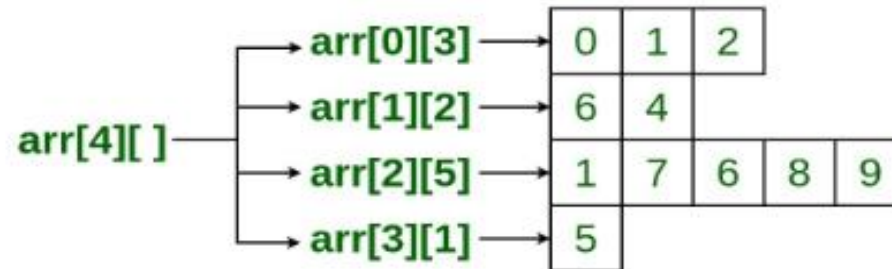


Jagged array

Example:

```
arr[][] = { {0, 1, 2},  
            {6, 4},  
            {1, 7, 6, 8, 9},  
            {5}  
};
```

Jagged Array.

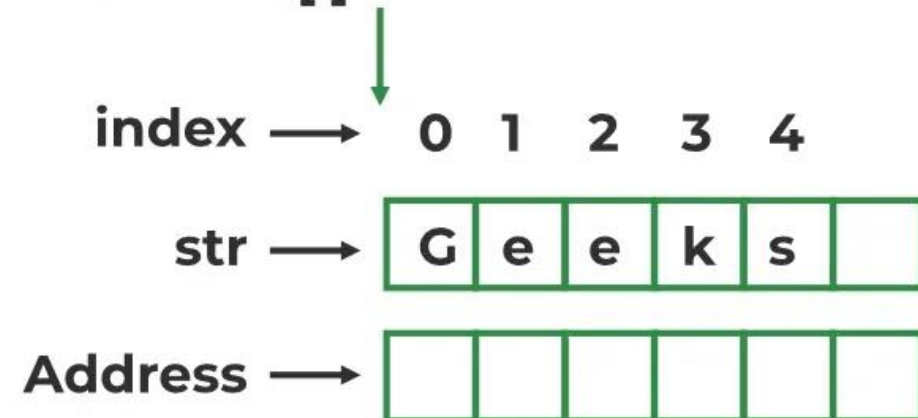


Strings in C

- `char string_name[size];`

String in C

`char str[] = "Geeks"`



C String Initialization

- 1. Assigning Character by Character with Size
- `char str[14] = { 'G', 'e', 'e', 'k', 's', 'f', 'o', 'r', 'G', 'e', 'e', 'k', 's', '\0' };`

C String Initialization

- 2. Assigning a String Literal without Size
- `char str[] = "GeeksforGeeks";`

C String Initialization

- 3. Assigning a String Literal with a Predefined Size
- `char str[50] = "GeeksforGeeks";`

String Input From the User

```
int main()
{
    // declaring string
    char str[50];

    // reading string
    scanf("%s",str);

    // print string
    printf("%s",str);

    return 0;
}
```

Space problem

Input

```
Geeks for Geeks
```

Output

```
Geeks
```

So, How to Read a String Separated by Whitespaces in C?

- 1. Example of String Input using gets()
- 2. Example of String Input using scanf `"%[^\n]s"`
- 3. Example of String Input using loop

Task

- Write a program to count the number of 1's in an unsigned 32-bit integer. 5 \rightarrow 101 \rightarrow (2) 1's
- Write c function to reverse string "Ahmed salem" \rightarrow melas demhA".

Links