

DSA BOOTCAMP

SESSION 2
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ARRAY

- a collection of items of similar data type.
- items are stored at contiguous memory locations
- The array can have one or more dimensions.
- Elements in an array are always counted from zero (0) onward.



DECLARATION OF ARRAYS

1

// array declaration by specifying size

int arr1[10];

2

// array declaration by initializing elements

int arr[] = { 10, 20, 30, 40};

3

//array declaration by specifying the size and initializing elements

int arr[6] = { 1, 2, 3, 4, 5, 6 };

4



int arr[6] = { 1, 2, 3, 4};
(remaining values are initialized as 0s)



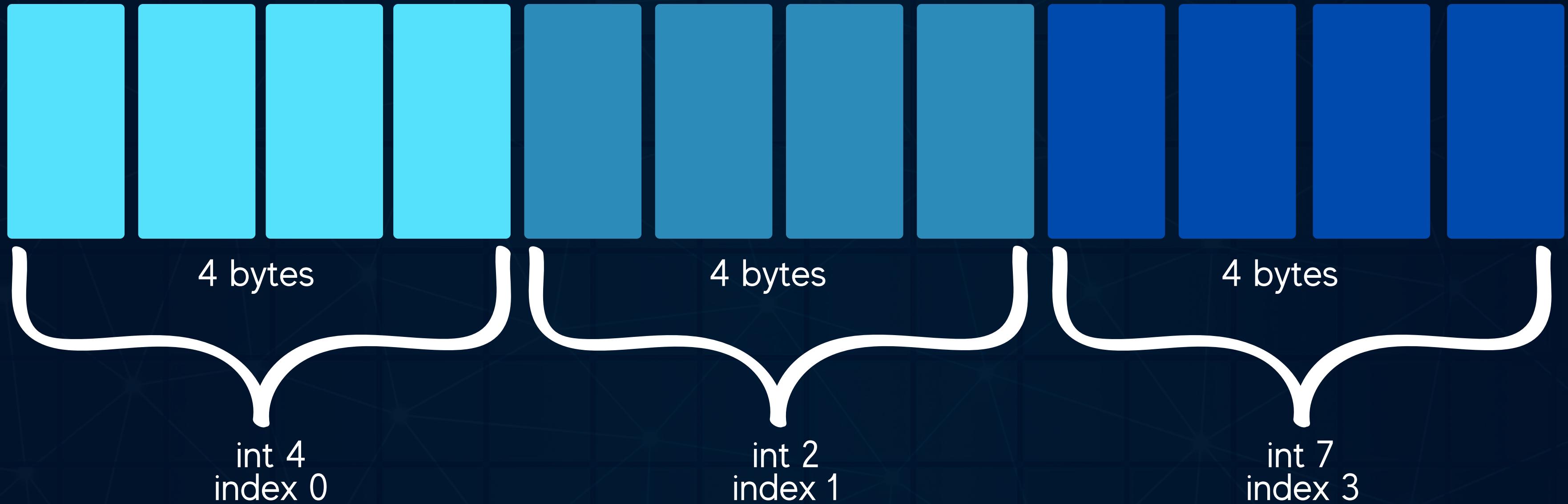
- Represented as: `arr[] = { 1,16,12,3,17,7,21 }`



- (int data type = 4 bytes)
- Here, 7 blocks of int data type are allotted to array
- Therefore, size of this array = $7 \times 4 = 28$ bytes
- Elements are accessed using indexes. For example, `arr[2]` outputs 12.

MEMORY ALLOCATION

- Let, array = {4, 2, 7}



- Total memory allocated to array = $3 * 4 = 12$ bytes



TYPES OF ARRAYS

1D ARRAY



2D ARRAY



**MULTI-DIMENTIONAL
ARRAY**





1-D ARRAY



- int num [10] = {1, 3, 5, 7, 9, 2, 4, 6, 8, 10} ;

-

0	1	2	3	4	5	6	7	8	9
1	3	5	7	9	2	4	6	8	10



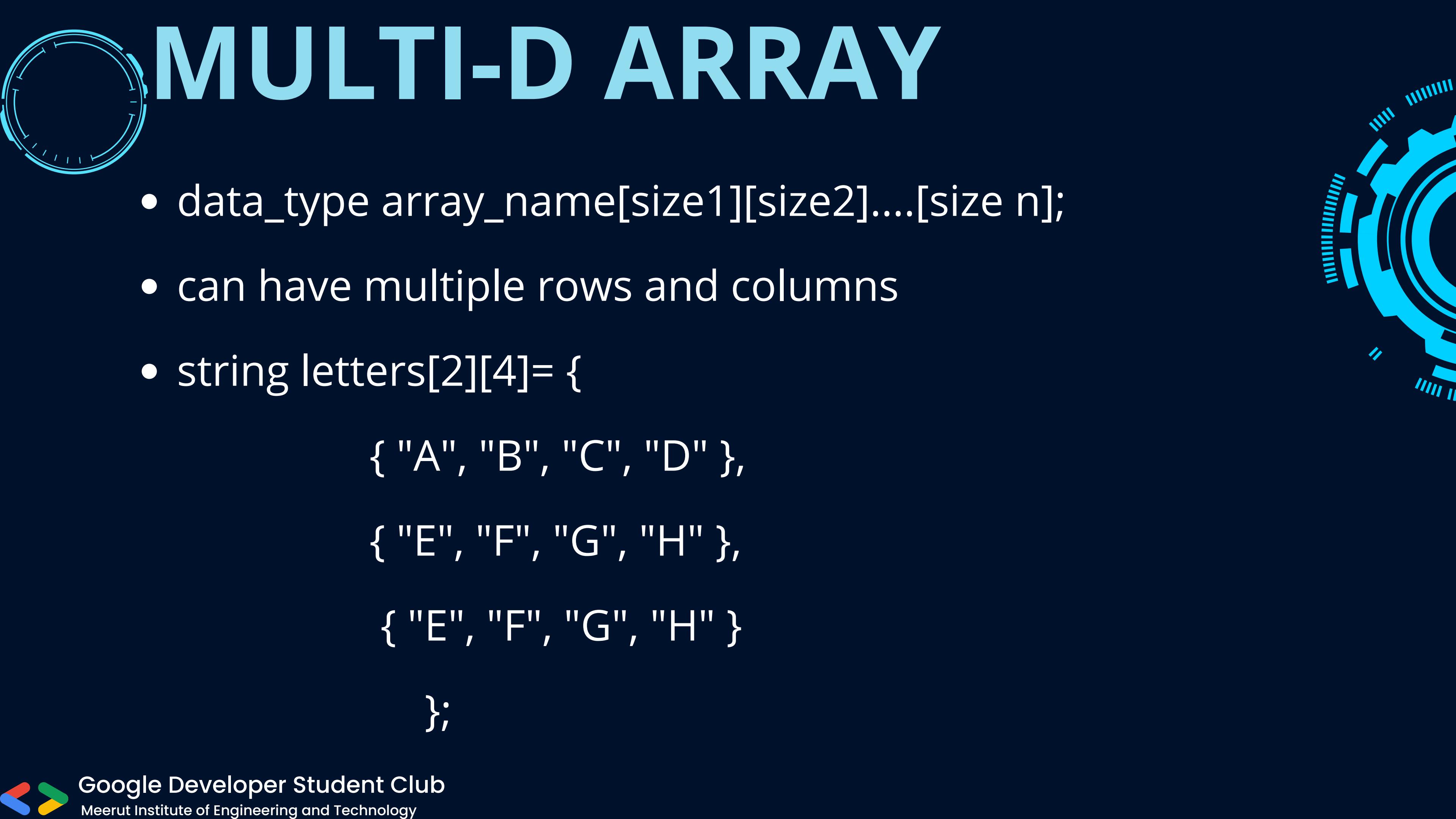
MULTI-D ARRAY (2-D ARRAY)

- int matrix[2][3] = { {1, 4, 2}, {3, 6, 8} }; // INITIALIZATION

	0	1	2
0	1	4	2
1	3	6	8

- printf("%d", matrix[0][2]); //OUTPUTS 2





- data_type array_name[size1][size2]....[size n];
- can have multiple rows and columns
- string letters[2][4]= {

 { "A", "B", "C", "D" },

 { "E", "F", "G", "H" },

 { "E", "F", "G", "H" }

};





Is this an array?

```
arr[] = {1, "str", c, 20}
```

Ans: NO

