**1.Array Programing**: - An array is Defined as the collection of similar data type of data item stored at contagious memory location. Arrays are derived data Type in Programing Language which can be stored the Primitive type of data such as

->int

->char

-> double

-> Float

It is also having capability to store the collection of derived data type such as Pointers, Structures Etc...

**2. Purpose of Storing the Array: -**

**Organization**: Group similar data together. For example, store all student names in a single array.

String StudentName = {“Anirudh”,Hari”,”Raju”};

**Efficiency**: Perform operations on the entire collection easily. For instance, find the average of a list of numbers.

int[] scores = {90, 85, 78};

int sum = 0;

for (int score : scores) {

sum += score;

}

double average = sum

**Consistency**: Ensure all elements are of the same type to avoid errors.

int[] ages = {20, 21, 22};

**Scalability**: Handle large amounts of data efficiently.

ArrayList<String> cities = new ArrayList<>();

cities.add("India");

cities.add("Hyderabad");

Flexibility: Use collections to add, remove, and manage data dynamically.

Cities.add(“Hyderabad”);

Cities.Remove(“Mumbai”);

**Declaration: - You** can Declare an array by specifying the type of elements followed by the Square Brackets [] and then the array name.

Int [] arrayName;

**Instantiation: -** By using the New Key word and need to memory allocation.

ArrayName = new int[5];

**Initialization: -** You can initialize the array at same time of declaration.

Int [] arrayName = {1,2,3,4};

**One Dimensional Array: -** One Dimensional Array is like list of single elements it declares single pair of square brackets

Syntax;

String [] Names = {"Alice", "Bob", "Charlie"};

**Multi-Dimensional Array: -** A multi-dimensional array is like an array of arrays. The most common multi-dimensional array is the two-dimensional array, often used to represent a table of rows and columns.

Int [][] matrix = {

{1,2,3},

{4,5,6},

{7,8,9},

};

**Advantages of Array :-**

* Code Optimisation
* Random Access

**DisAdvantages :-**

* Size Limit