

Arrays

1. When should an array data structure be used?

- a. Array data structure should be used when numerous data of the same type has to be stored.

2. What is an advantage of an array data structure?

Creation of an array is simple.

Inserting data into an array by making use of loops is simple. Also,

Extracting data from the array is simple by making use of loops.

3. What is the disadvantage of an array data structure?

- i) Arrays can store only homogeneous data. Heterogeneous data cannot be stored
- ii) The size of an array is fixed throughout the program execution. Size of an array
- b. is neither increased nor decreased during program execution.
- c. iii) Arrays demand contiguous memory locations on the RAM. Arrays cannot utilize
- d. dispersed vacant memory locations.

4. Who creates arrays in Java and where?

- a. JVM creates array on the heap segment.

5. What are the different types of arrays in Java?

- a. 1-D, 2-D, 3-D and Multi-Dimensional Regular and jagged array.

6. Design an array data structure to collect marks of 100 students of a class?

- a. `int a[] = new int[100];`

7. Design an array data structure to collect marks of students in 5 classes each with 100 students?

- a. `int a[][] = new int[5][100];`

8. Design an array data structure to collect marks of students in 3 schools each with 5 classes each with 100 students?

- a. `int a[][][] = new int[3][5][100];`

9. Design an array data structure to collect marks of students in 3 schools with first school having 5 classes second school having 4 classes third school having 3 classes. Number of students in each classes is given below

First School	
Class	Number of students
1	3
2	4
3	2

4	1
5	5

Second School	
Class	Number of students
1	1
2	3
3	4
4	2

Third School	
Class	Number of students
1	2
2	3
3	4

10. Design an array data structure to collect data of 3 Banks with following number of branches and customers.

First Bank	
Branch	Number of Customer
1	2
2	1
3	3
4	5
5	4

Second Bank	
Branch	Number of Customer
1	4

2	1
3	2
4	3

Third Bank	
Branch	Number of Customer
1	3
2	2
3	4

11. What is the advantage of jagged array data structure?

- a. In real life, the data is not regular. Rather in most of the time, data is irregular or jagged. Hence, to provide a solution for the jagged data, java supports jagged array data structure.

12. Create an array of 5 person object?

Person p[] = new Person[5];

13. What are the exceptions associated with arrays?

ArrayIndexOutOfBoundsException, NegativeArraySizeException and ArrayStoreException.

14. Can array be used without initialization?

- a. Yes.

15. Are arrays objects in Java?

- a. Yes.

16. What are the default values associated with an array?

- a. The default value of an array depends upon the data type of an array.

Eg: int-0, float-0.0, char-blank character, boolean -false, String-null.

17. Who de-allocates memory of an array?

- a. A thread called as Garbage collector thread would de-allocate memory of an array.

18. Are arrays primitive data types?

- a. No. Arrays are objects in java.

19. Can an array grow in size or shrink in size after they are created?

- a. No.

20. What is the default value present in char array?

- a. '\u0000' i.e. blank character.

21. What is the default value present in objects array?

- a. Null

22. What is meant by buffer overrun?

- a. Buffer overrun refers to the process of attempting to access an index which is outside the boundary of an array. In java, if this is attempted, `ArrayIndexOutOfBoundsException` will occur.

23. What are most famous internet worms that were designed using buffer overrun?

- a. Morris worm, code red worm, scammer worm.

24. Does buffer overrun occur in java? Why?

- a. No, because java arrays are bound checked.

25. Can 1-dimensional arrays be printed directly?

No, because arrays are treated as objects in java. Contents of the objects cannot be printed directly except string. It can be printed using loops. If we have to print directly then we have to convert it into string using `toString()` .
Example:`System.out.println(Arrays.toString(a));`

26. Can 2-dimensional arrays be printed directly?

- a. No.

27. What facility is available in java to directly print 1-dimensional arrays?

- a. Loops

28. What facility is available in java to directly print 2-dimensional arrays?

- a. Nested loops

29. What facility is available in Java to directly print other user defined objects? Ans: toString()