Monday, 22 March 2021 8:34 PM

Basic Data Structures

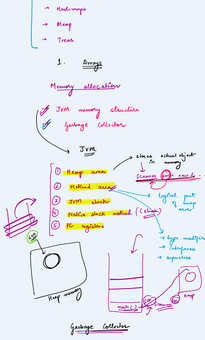
- → Arrays
- → Linked list
- → Stacks
- → Queues & Deques
- → Hashmaps
- → Heap
- → Trees

1. Arrays

Memory allocation

- JVM memory structure
- garbage collector

JVM



Garbage collector

→ function of garbage collector is to find and delete the object that cannot be reached.

Arrays

25 students in class

variables

String student0 = "ayu";
String student1 = "aman";
⋮
String student25 = "aman";

1000 students

①

30 students
↓
2 index
students [2] // third students

students [23]

Advantages

① Code optimization
② random access

Disadvantages

→ ③ Fixed size

char → 2 bytes

20 char
↓
Array size of 20
↓
heap
↓
40 bytes

Dynamic arrays

→ variable size list data structure.

arr → reference to the object

1 D array

[I @ 6 7 8 9 a b c d] → address of the place where array is created

array
Index

Scope of variables

Scope refers to the visibility of variables.

① Local variables
② Instance variables
③ Static variables

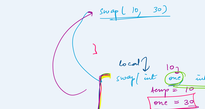
swap(10, 30)

local
swap(int 10, int 30) {
temp = 10
one = 30
two = 10
}

swap (arr, int i, int j) {
temp = 10;
arr[i] = 30;
arr[j] = 10;
}

main { }
arr → [10, 30, 70, 40, 20]
return → [10, 30, 70]
swap (arr, return) {
swap(int [] arr, int [] ret) {
[10, 30, 70, 40, 20]
[10, 30, 70]
two
one

1D arrays



Multi-dimensional arrays

2-D arrays

↓

Array of Arrays

jagged array
int[][]
int
int
int[]
int[]
int[]