Array

Continious block of space that can store the value inside it.

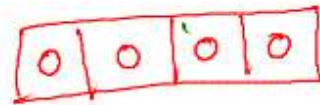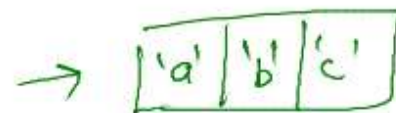Syntax   int [] arr = new int[4];
         └→ size

boolean [] arr = new boolean[5]

char [] arr = new char[3]

∨ (int)[] arr = new int[5] → size of memory needed.   4 Byte

datatype
(Type of array)   name of
                    array   to allocate
                               memory

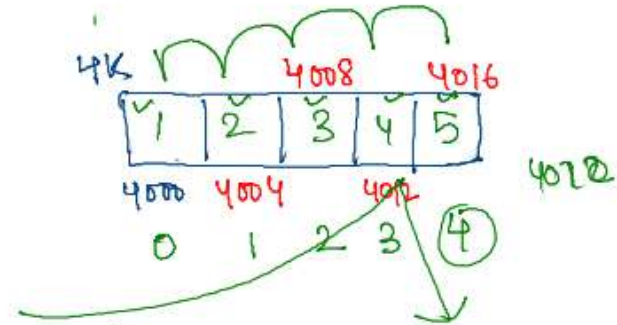   → declaration
∨ int[] arr; ✓

arr = (new) int[5]
           ∨
        intialization

arr: 4k

Stack

heap

4k ⌒⌒⌒⌒
      4008   4016
| 1 | 2 | 3 | 4 | 5 |
4000 4004 4012   4020
 0   1   2   3 (4)

arr[0] =
      → 1
arr[0] = 4000 + 0 * 4 = 4000 = (4k)
arr[3] = 4000 + 3 * size of
                        datatype
         index = 4000 + 3*4
       = 4000 + 12
       = (4012)

arr.length = (5)

for (int i = 0; i < arr.length; i++) {
traverse
            ↳

str.length()
arr.length

int [] arr = new int[5];

heap

traverse
over the
array

for(int i=0; i<=arr.length ; i++) {

    arr[i] = 10;

5
4
8
2
1
i=0

arr 4k

4<5

5<5

stack

4   arr[4] = 10;

arr[5] ≠ 10'   index out of bound error

| 10 | 10 | 10 | 10 | 10 |
  0   1   2   3   4

4k

Data Structure

array

Lin
Pro
Gra

flostal Dars 4

| 1 | 2 | 3 | 4 | 5 | 6 |
  0   1   2   3   4   5

linear

arr[8]
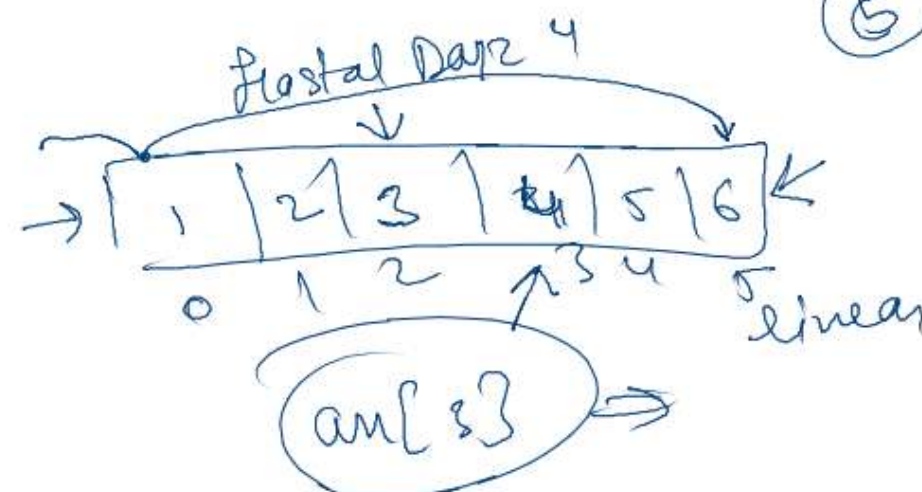
```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);

        int size = scn.nextInt();

        int[] arr = new int[size];
        for(int i=0;i<arr.length;i++){
            arr[i]= scn.nextInt();
        }

        for(int i=0;i<arr.length;i++){
            int val = arr[i];
            System.out.println(val);
        }
        /* Enter your code here. Read input from STDIN. Print
    }
}
```
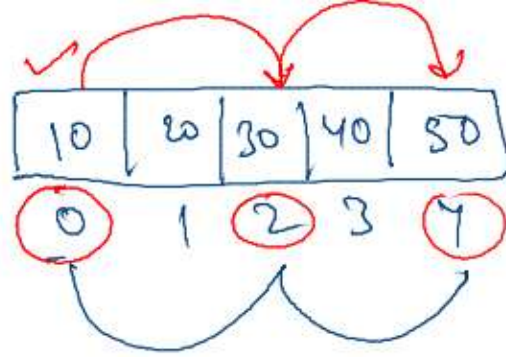
5
10 ✓
20 ✓
30 ✓
40 ✓
50 ✓

10
20
30
40
50

arr 4K
size = 5

4K
| 10 | 20 | 30 | 40 | 50 |
  0   1   2   3   4

| 10 | 20 | 30 | 40 | 50 |
  0   1   2   3   4

10
20
30
40
50

$n = 5 =$

10 | 20 | 30 | 40 | 50
0 | 1 | 2 | 3 | 4

```
10
30
50
```

$$for(int\ i=0; i< arr.length; i\ +=2)\ \{$$

$$Syso\ (arr[i]);$$

$$\varphi$$

```java
public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        int[] arr = new int[n];

        for(int i=0;i<arr.length;i++){
            arr[i]= scn.nextInt();
        }

        for(int i=0;i<arr.length;i++){
            if(i%2==0)
                System.out.println(arr[i]);
        }

        /* Enter your code here. Read input from STDIN. Print output

    }
}
```

0 | 1 | 2 | 3 | 4 | 5 | 6

arr. | 10 | 20 | 30 | 40 | 50 | 60 | 70

```
10
30
50
70
```