Today's agenda

- Intro to arrays
- Return sum of arr[] elements.
- Array with functions
- Swap 2 indexes.

// Intro to array

input → 10 numbers

int a1 = sc.nextInt();

int a2 = "

.

.

a10 = "

1000 numbers?

Array

collection of variables.

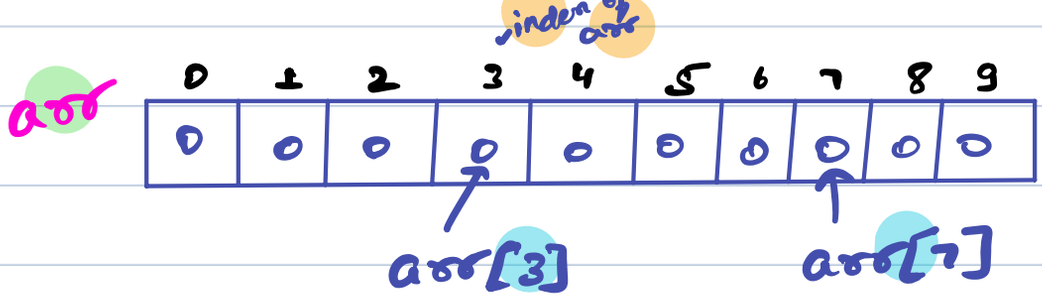
Syntax:

↳ type[] name = new type[size];

eg: int[] arr = new int[1000];

Q) Create an array of size 10 named arr storing integers.

↳ int[] arr = new int[10];



// Input in array

Q) Create an array of length 5 with values 10 20 30 40 50

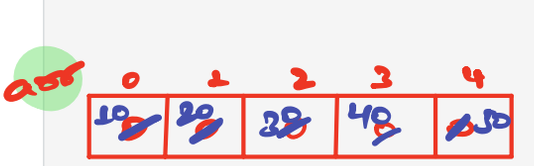
n = 5

```java
// "static void main" must be defined in a public class.
public class Main {
    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 < n;i++){
            arr[i] = scn.nextInt();
        }

    }
}
```



stdin

```
5
10 20 30 40 50
```

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→ initialize array on your own.

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

→ arr.length = no. of elements in array.

→ if arr is of length n,

1st index = 0

last index = n-1

Q) How to Print all the elements of arr.

Run Code | Untitled | Save | Java

```java
// "static void main" must be defined in a public class.
public class Main {
    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 < n;i++){
            arr[i] = scn.nextInt();
        }

        for(int i = 0; i < n;i++){
            System.out.print(arr[i]+" ");
        }


    }
}
```

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Output: Finished | Clear Console

```
Finished in 148 ms
1020304050

Finished in 175 ms
10 20 30 40 50
```

stdin

```
5
10 20 30 40 50
```

Q) Sum of array

Ⓑ Read an array of N length and Print the sum of all elements.

Ex: arr[4]: 10 -1 3 -7 → 5

Pseudo code

```
// "static void main" must be defined in a public class.
public class Main {
    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 < n;i++){
            arr[i] = scn.nextInt();
        }
        int sum = 0;
        for(int i = 0; i < n;i++){
            sum = sum + arr[i];
        }
        System.out.println(sum);
    }
}
```

T.C: 2N + O(N)

S.C: O(1) + X+4

inbuilt & output is not your space

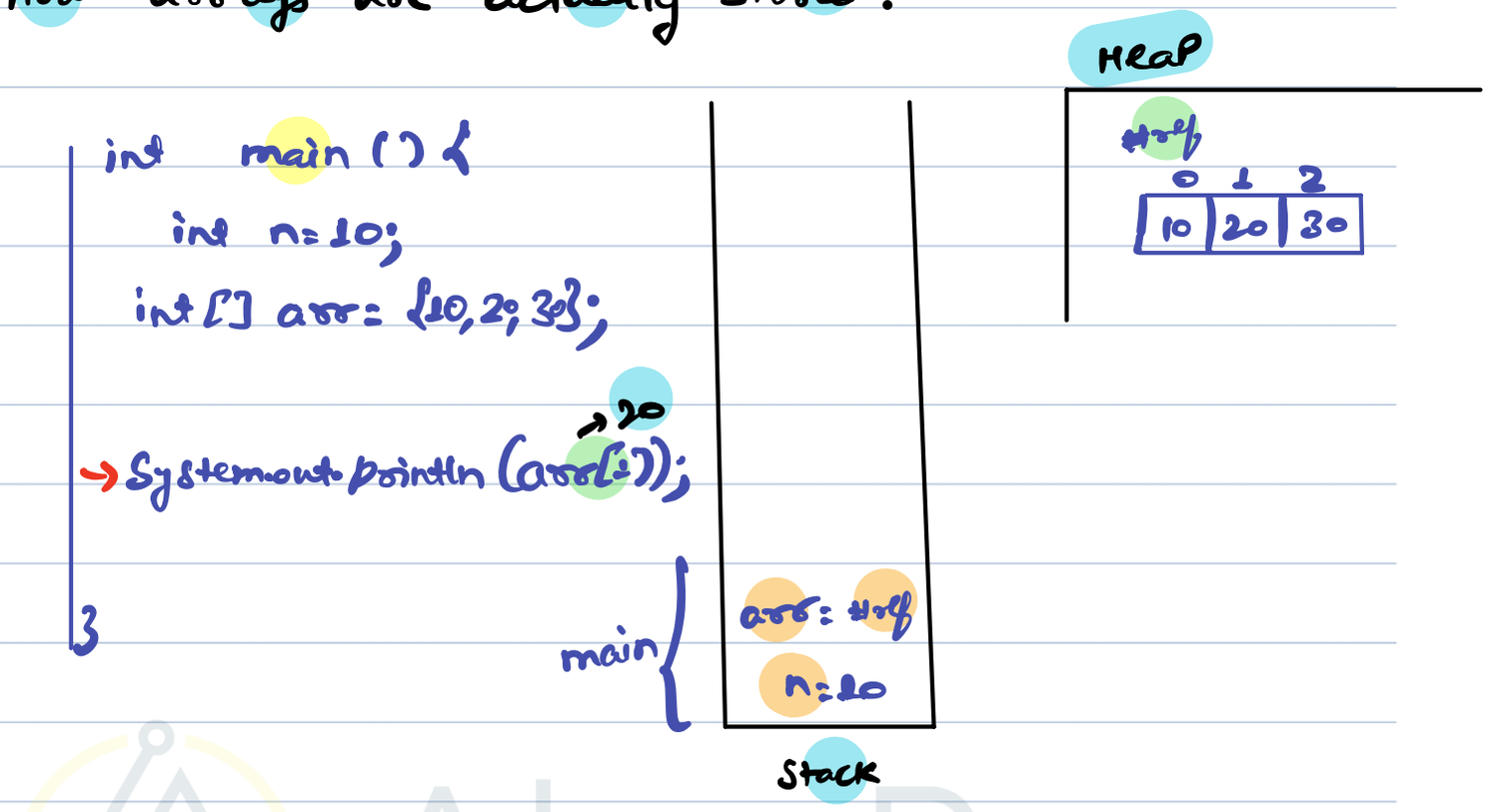
sum = 0

n = 4

arr[4]: 10 -1 3 -7

i	i<n	sum
0	t	10
1	t	9
2	t	12
3	t	5
4	f → exit	

How arrays are actually stored?



Break till 10:34 Pm

Q) Swap the values of 2 variables.

a = 10 b = 20 → a = 20 b = 10

// incorrect way

```
main() {
    int a = 10;
    int b = 20;

    a = b;
    b = a;
}
```

// Correct way

```
main() {
    int a = 10;
    int b = 20;
    int temp = a;
    a = b;
    b = temp;
}
```

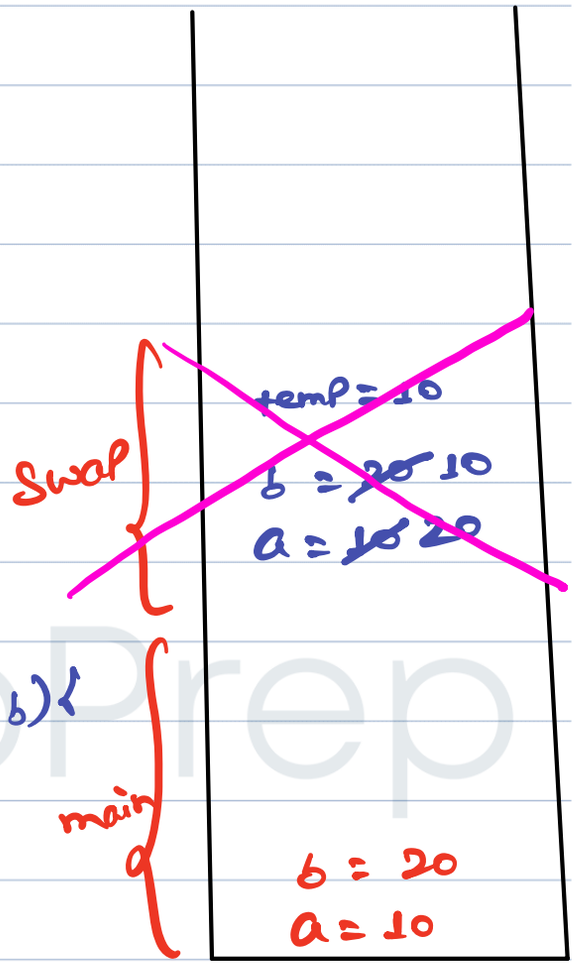
temp → 10

// function game

Quiz

```
main() {
    int a = 10;
    int b = 20;
    swap(a, b);
    System.out.println(a);   → 10
    System.out.println(b);   → 20
}
```

```
Public static void swap(int a, int b){
    int temp = a;
    a = b;
    b = temp;
}
```



Variables of 2 functions are not Connected.

Quiz

```
main() {
    int[] arr = {10, 20}
    swap(arr);
    System.out.println(arr[0]); → 20
→   System.out.println(arr[1]); → 10
}

Public static void swap( int[] arr ){
    int temp = arr[0];
    arr[0] = arr[1];
    arr[1] = temp;
}
```

Ls arrays across functions are connected.

Q) Swap indexes

Given array of length N and two indexes idx1 and idx2, swap the elements of those two indexes.

Ex: arr[5] : { 5 15 25 25 45 }
(0 1 2 3 4)
15 → 35
25 → 15

idx1 : 1 idx2 : 3

```
int temp = arr[idx1];
arr[idx1] = arr[idx2];
arr[idx2] = temp;
```

temp → 15