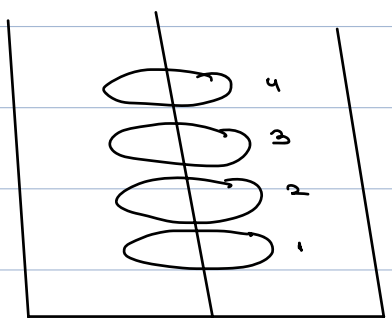
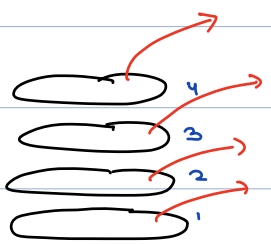
Introduction to Stack

Stack of books.

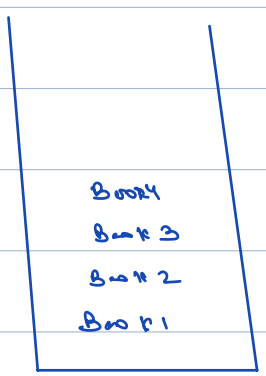
← Idli Cookers →

LIFO → Last in first out.





Stack :- Container that holds data.

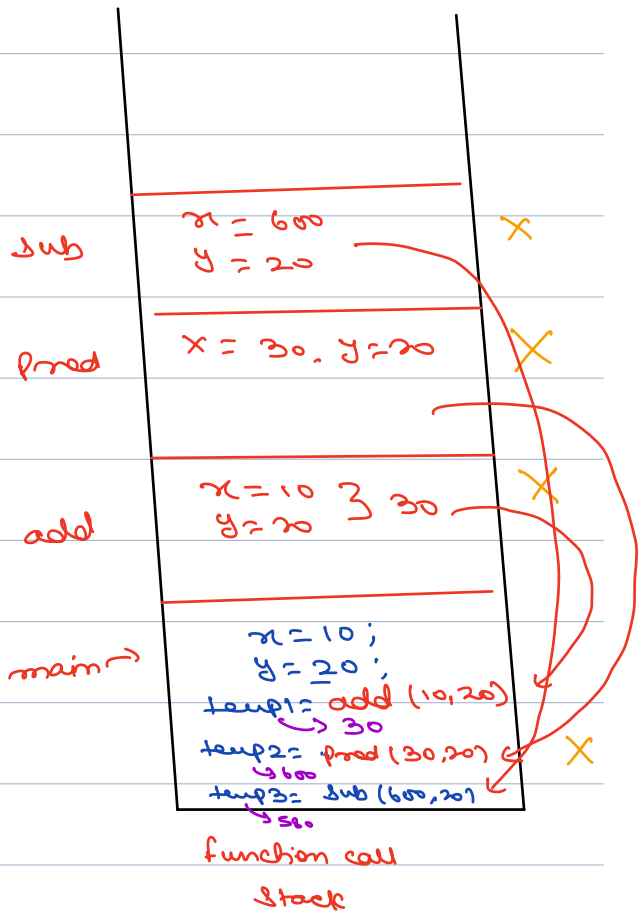


① Insert & delete from top.

② you have access to top element.

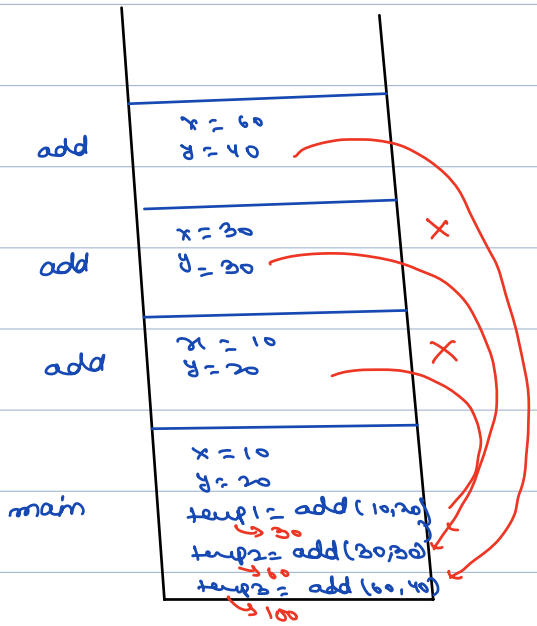
```java
int add(int x, int y) {
    return x + y;
}

int product(int x, int y) {
    return x * y;
}

int subtract(int x, int y) {
    return x - y;
}
```

```java
public static void main() {
    int x = 10;
    int y = 20;
    int temp1 = add(x, y);
    int temp2 = product(x, y);
    int temp3 = subtract(x, y);
    System.out.println(temp3);
}
```



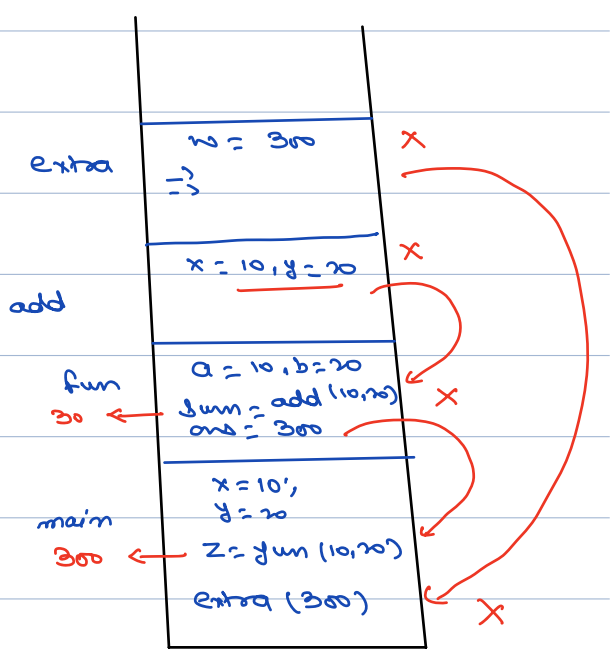
Ques 2)

```
int add(int x, int y) {
    return x + y;
}

public static void main() {
    int x = 10;
    int y = 20;
    int temp1 = add(x, y);
    int temp2 = add(temp1, 30);
    int temp3 = add(temp2, 40);
    System.out.println(temp3);
}
```



Ques 3

```
int add(int x, int y) {
    return x + y;
}

static int fun(int a, int b) {
    int sum = add(a, b);
    int ans = sum * 10;
    return ans;
}
static void extra(int w){
    System.out.println("Hello");
    System.out.println(w);
}
public static void main() {
    int x = 10;
    int y = 20;
    int z = fun(x, y);
    System.out.println(z);
    extra(z);
}
```



300
Hello
300

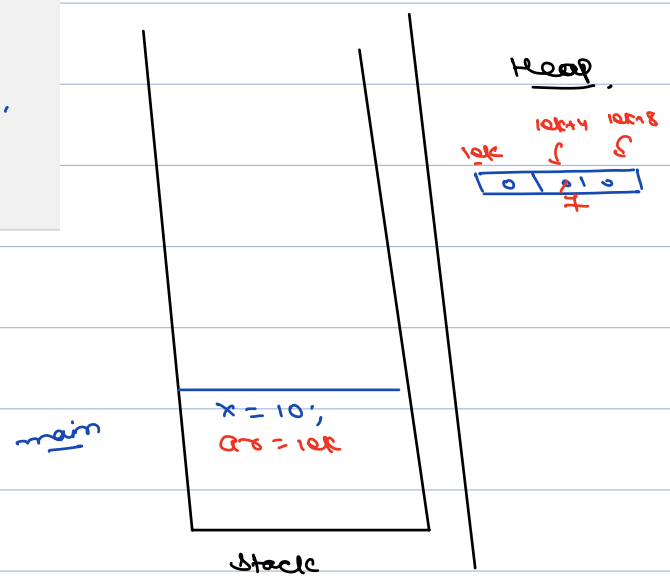
Type of memories

1) Stack Memory.

2) Heap Memory.
   ↳ Objects are stored in heap memory Area.
   ↳ 'new' keyword is stored there.

```
public static void main() {
    int x = 10;
    int[] ar = new int[3];
    System.out.println(ar); // #ad1
    System.out.println(ar[2]); // 0
    ar[1] = 7;
}
```

ar[2]
↳ (1ok +8)



int x = 5;

boolean x = True;

float f = 32.0f;

long l = 55L;

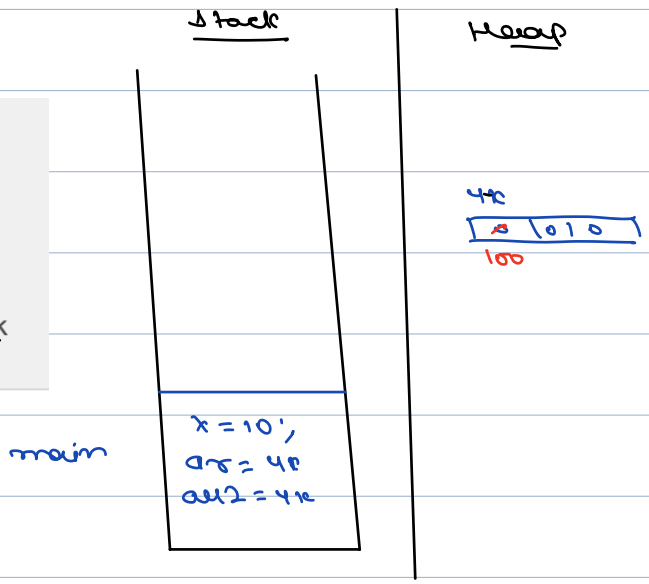
1) Primitives are stored in stack
2) Objects / Containers are created in heap.
3) reference / address of container is stored in stack.

Ques)

```
public static void main() {
    int x = 10;
    int[] ar = new int[3];
    int[] ar2 = ar;
    System.out.println(ar); // 4k
    System.out.println(ar2); // 4k
}
```

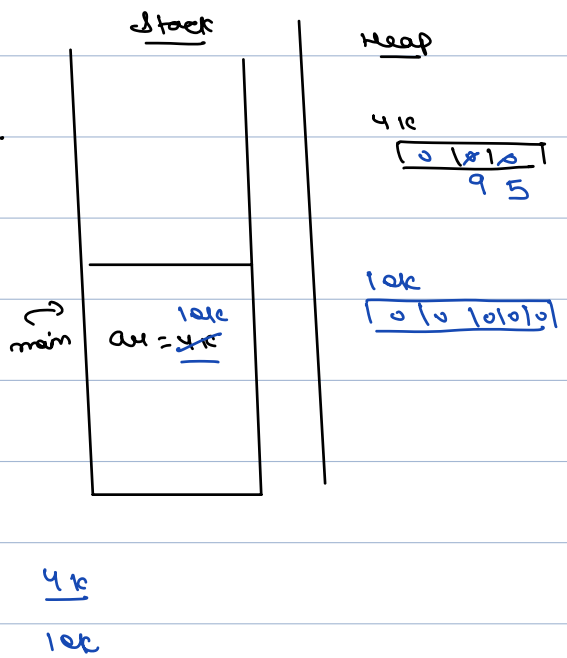
ar2[0] = 100;

print(ar[0]);



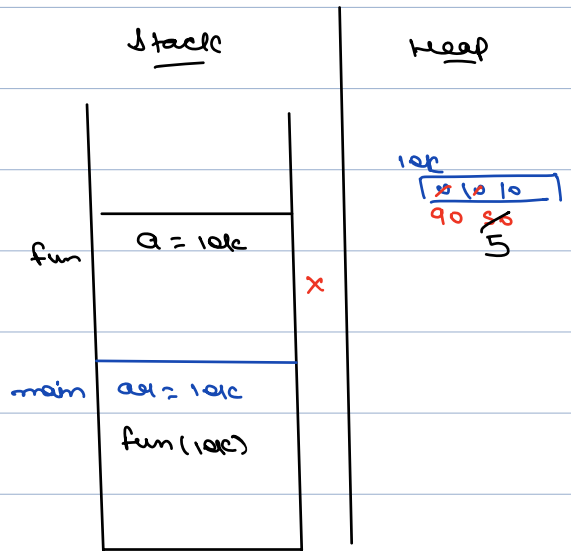
Ques)

```
public static void main() {
    int[] ar = new int[3];
    System.out.println(ar);
    ar[1] = 9;
    ar[2] = 5;

    ar = new int[5];
    System.out.println(ar);
}
```



Ques)

```
static void fun(int[] a){
    System.out.println(a); //
    a[1] = 5;
}
public static void main() {
    int[] ar = new int[3];
    System.out.println(ar); //
    ar[0] = 90;
    ar[1] = 50;
    fun(ar);
    System.out.println(ar[1]);
}
```

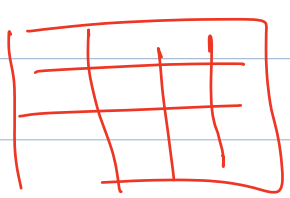


10k
10k
5

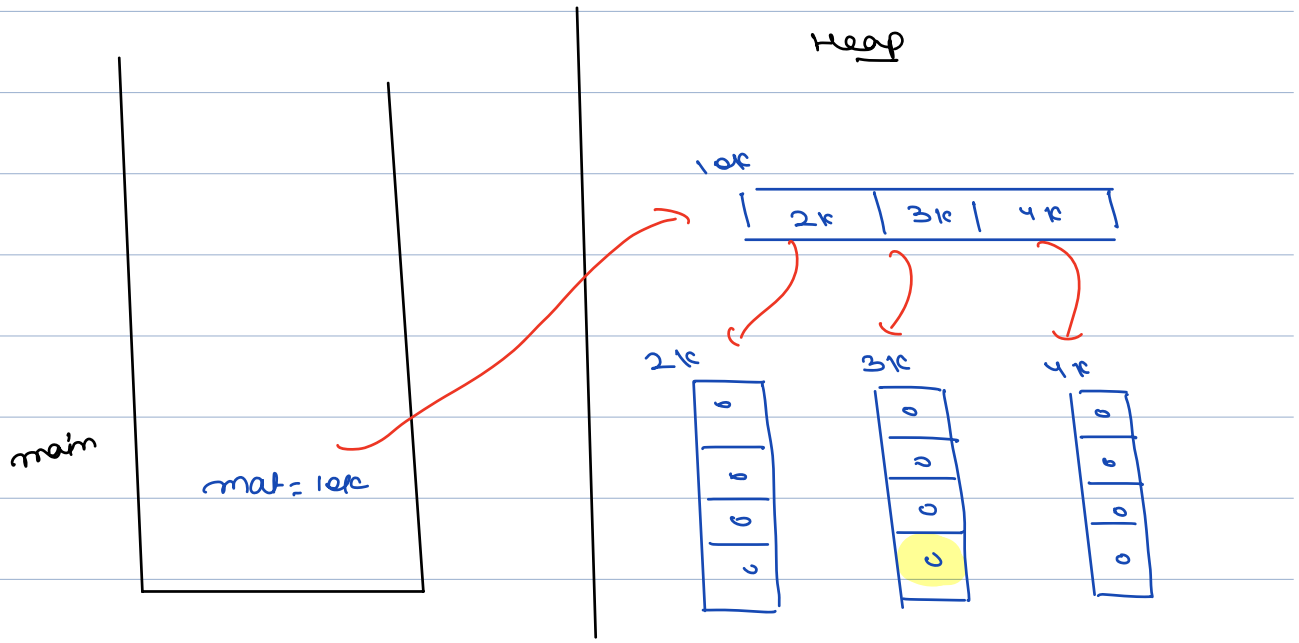
Break 10:33pm - 10:43pm

Ques)

```
public static void main() {
    float y = 7.84f;
    int[][] mat = new int[3][4];
    System.out.println(mat); // → 10k
    System.out.println(mat[1]); → 3k
    System.out.println(mat[1][3])
}
```

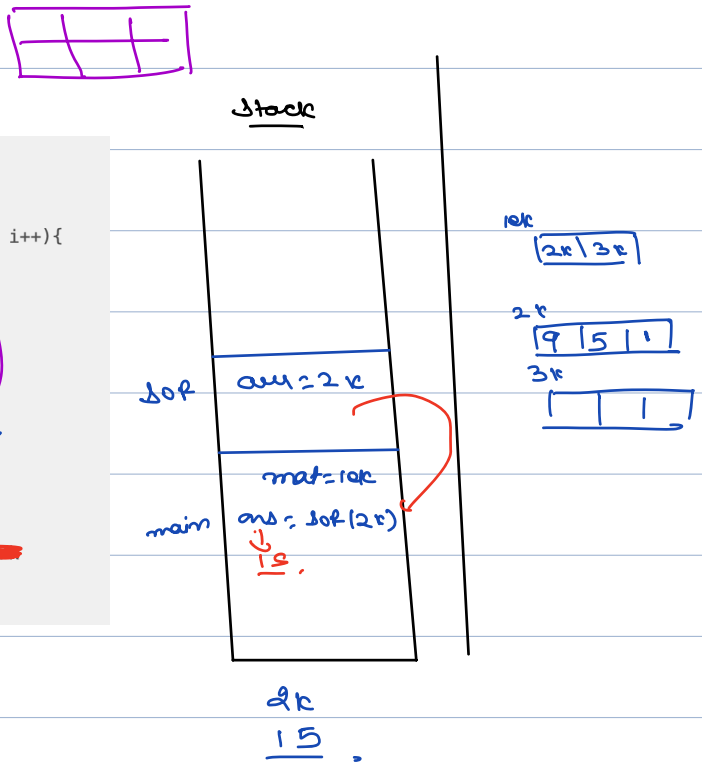


mat


Heap
main
mat = 10k
10k
2k
3k
4k
2k
3k
4k

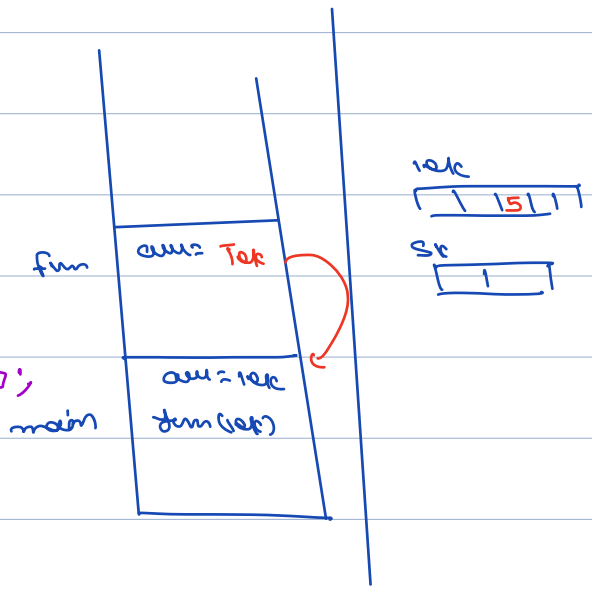
Ques)

```
static int sumOfRow(int[] arr){
    System.out.println(arr);
    int sum = 0;
    for (int i = 0; i < arr.length; i++){
        sum = sum + arr[i];
    }
    return sum;
}

public static void main() {
    int[][] mat = new int[2][3];
    mat[0][0] = 9;
    mat[0][1] = 5;
    mat[0][2] = 1;
    int ans = sumOfRow(mat[0]);
    System.out.println(ans);
}
```



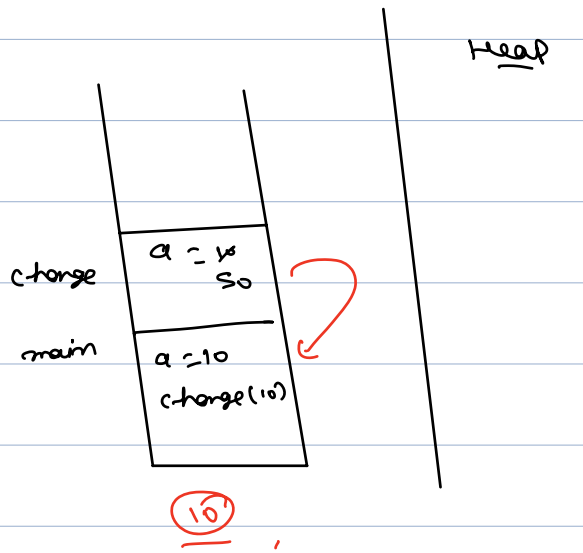

```
fun ( arr ) {
    arr = new int [2] ;
}

main() {
    int [] arr = new int [5];
    print (arr);
    fun ( arr );
    print (arr);
}
```

```
fun (arr) {
    arr[2] = 5;
}

main() {
    int[] arr = new int[5];
    print(arr);
    fun(arr);
    print(arr[2]);
}
```



Ques)

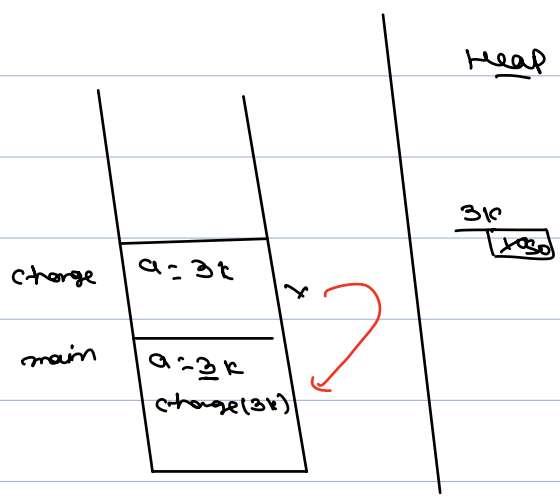
```
static void change(int a) {
    a = 50;
}

public static void main(String args[]) {
    int a = 10;
    change(a);
    System.out.println(a);
}
```



10

Ques)

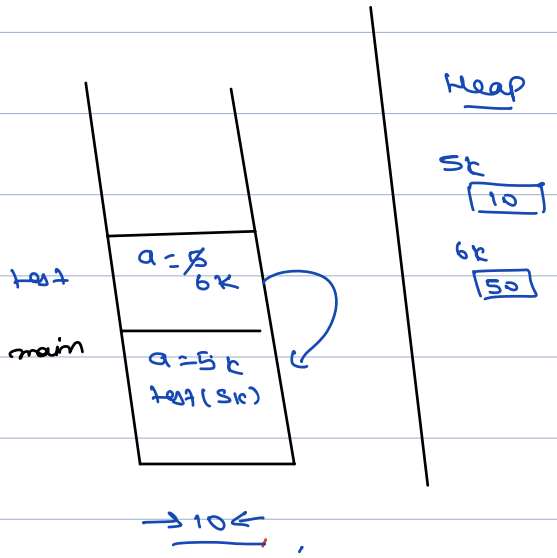
```
static void change(int[]a) {
    a[0] = 50;
}

public static void main(String args[]) {
    int[]a = {10};
    change(a);
    System.out.println(a[0]);
}
```



→ 50 ←

Ques)

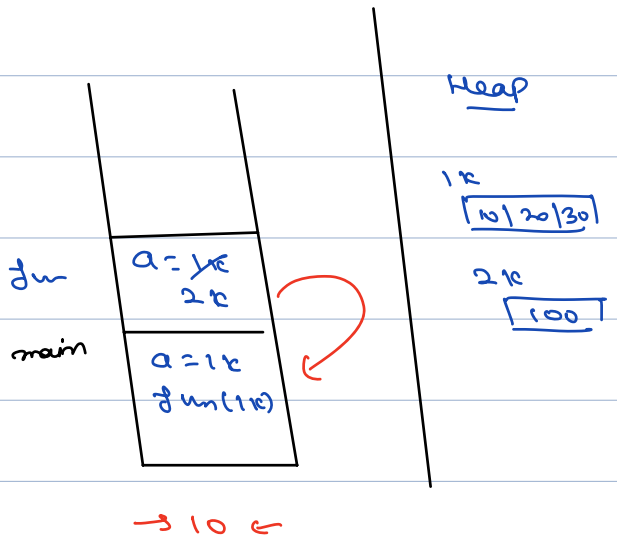
```
static void test(int[]a) {
    a = new int[1];
    a[0] = 50;
}

public static void main(String args[]) {
    int[]a = {10};
    test(a);
    System.out.println(a[0]);
}
```



→ 10 ←

Ques)

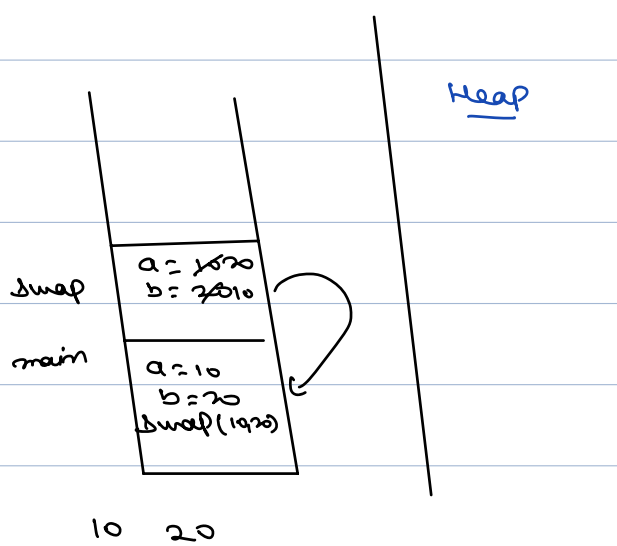
```
static void fun(int[] a) {
    a = new int[1];
    a[0] = 100;
}
public static void main() {
    int[] a = {10, 20, 30};
    fun(a);
    System.out.println(a[0]);
}
```



→ 10 ←

Ques)

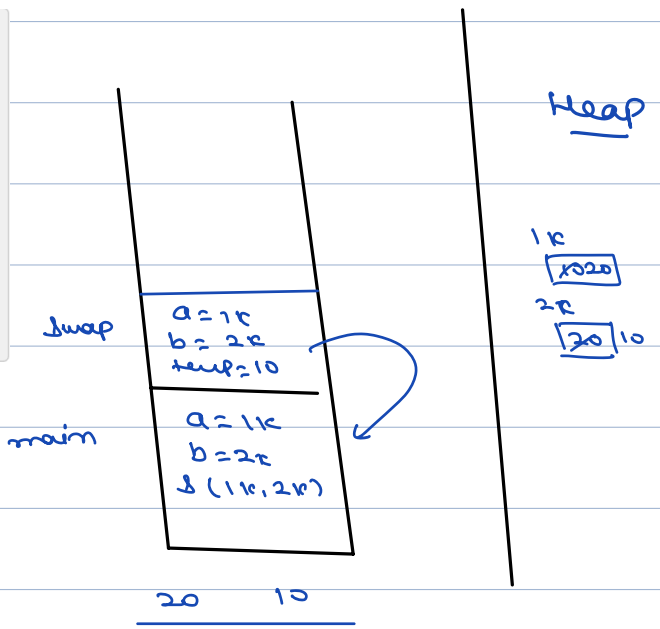
```
static void swap(int a,int b) {
    int temp = a;
    a = b;
    b = temp;
}

public static void main(String args[]) {
    int a = 10;
    int b = 20;
    swap(a,b);
    System.out.println(a + " " + b);
}
```



10 20

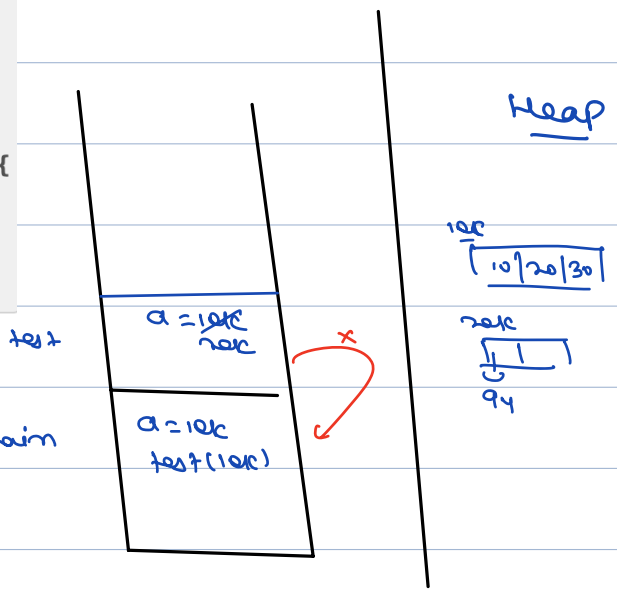
Ques

```
static void swap(int[]a,int[]b) {
    int temp = a[0];
    a[0] = b[0];
    b[0] = temp;
}

public static void main(String args[]) {
    int[]a = {10};
    int[]b = {20};
    swap(a,b);
    System.out.println(a[0] + " " + b[0]);
}
```



Ques)

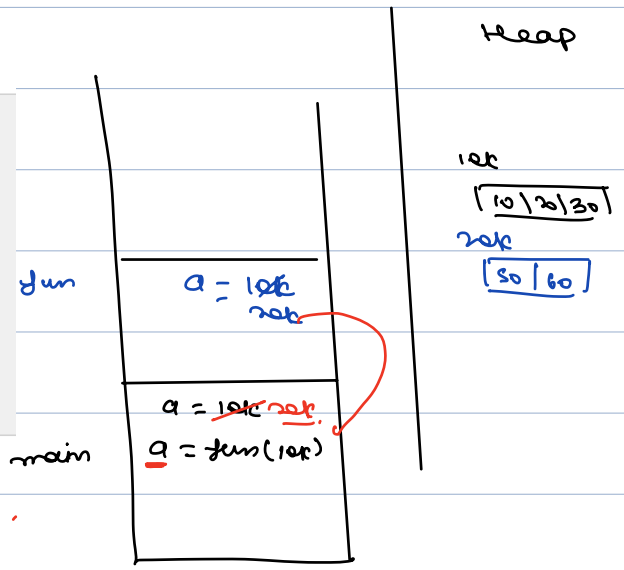
```
static void test(int[]a) {
    a = new int[2];
    a[0] = 94;
}

public static void main(String args[]) {
    int[]a = {10,20,30};
    test(a);
    System.out.println(a[0]);
}
```



Ans 10

Ques

```
static int[] fun(int[]a) {
    a = new int[2];
    a[0] = 50; a[1] = 60;
    return a;
}

public static void main(String args[]) {
    int[]a = {10,20,30};
    a = fun(a);
    System.out.println(a[0]);
}
```



50 Ans