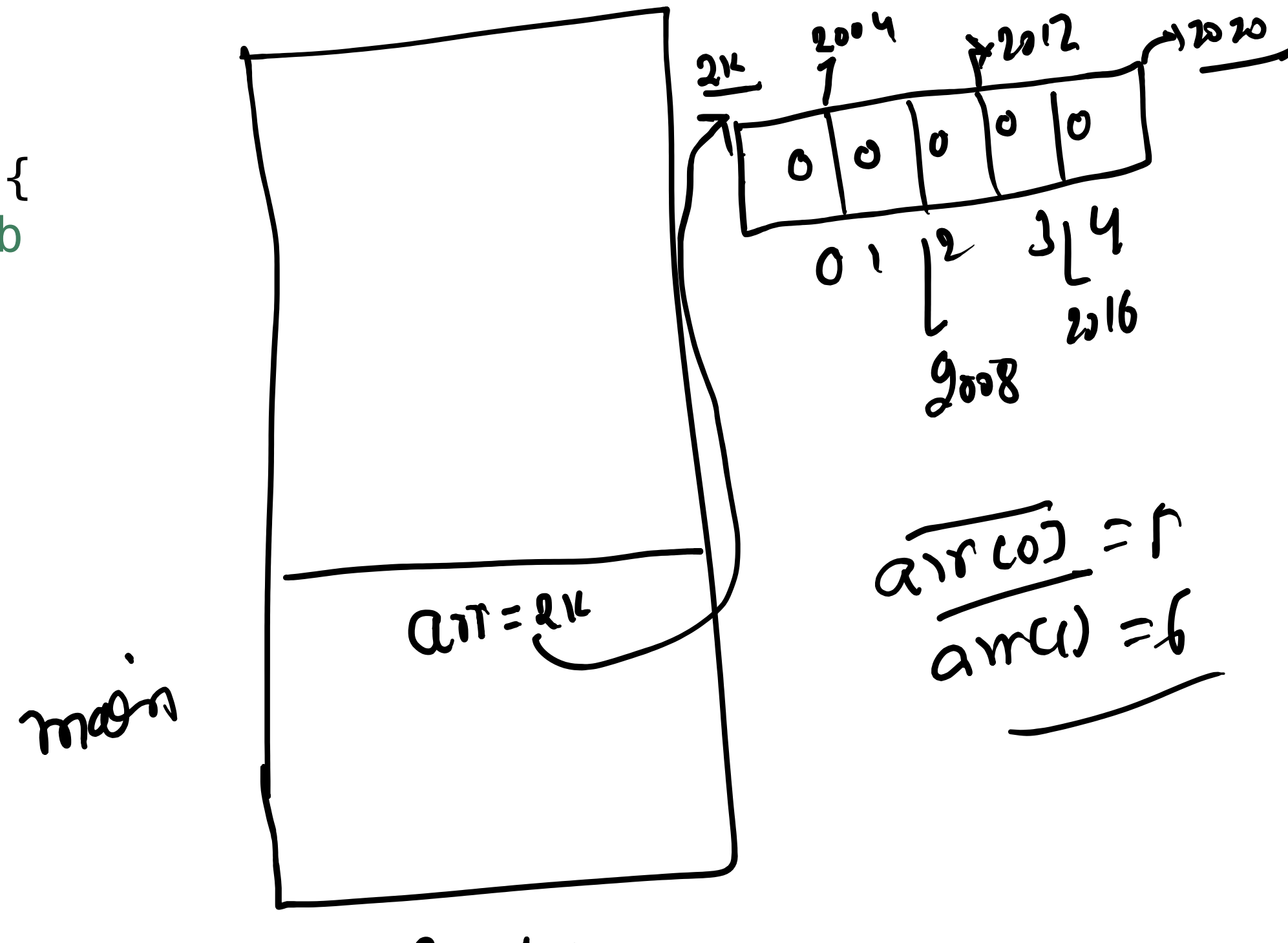


$x_0 = 5$
 $x_1 = 7$
 $x_2 = 8$
 $x_3 = 9$
 $x_4 = 10$

20 Byte

```
public static void main(String[] args) {  
    // TODO Auto-generated method stub  
    int[] arr = new int[5];  
}
```

Java → Memory → class → non-primative → heap

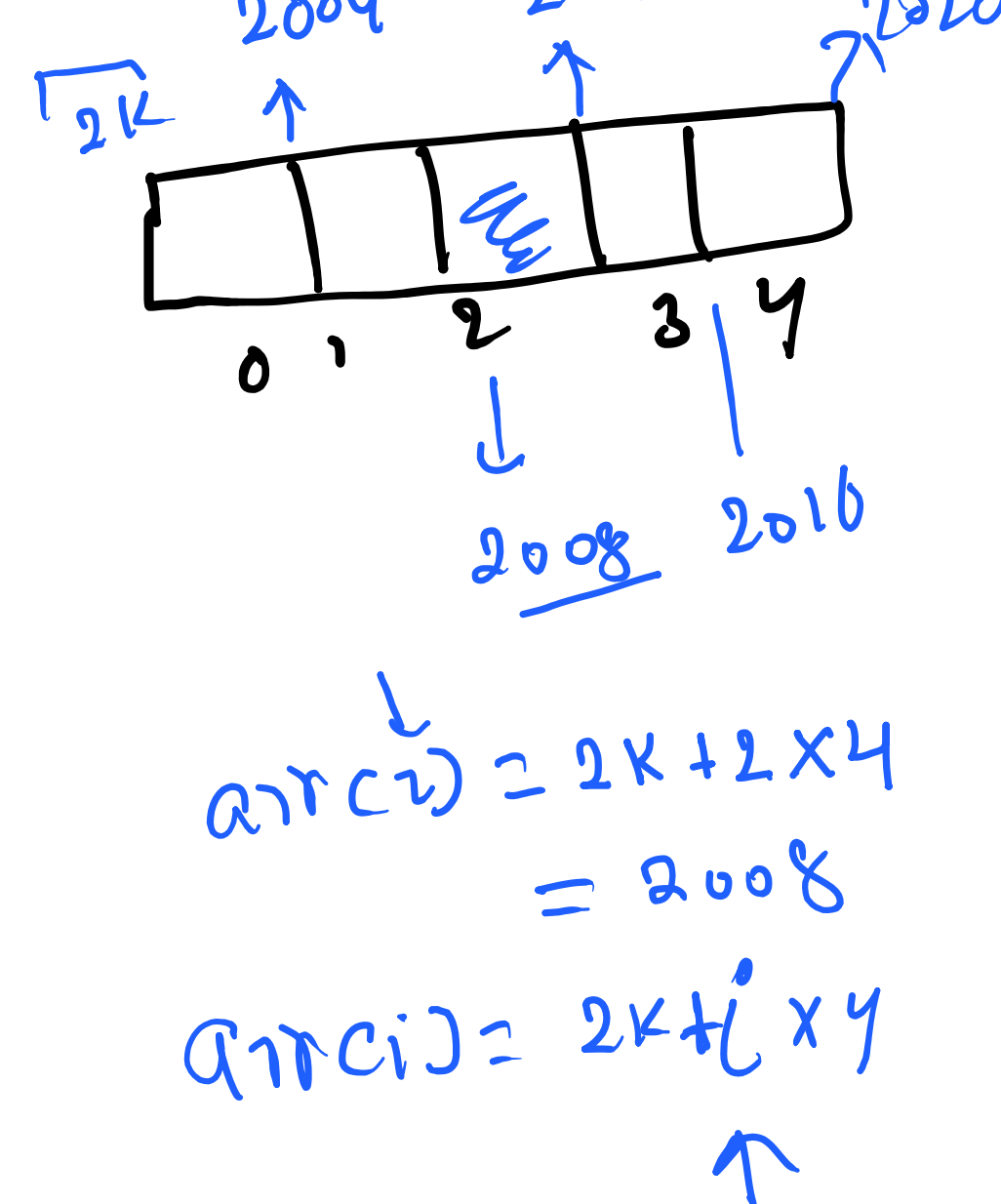
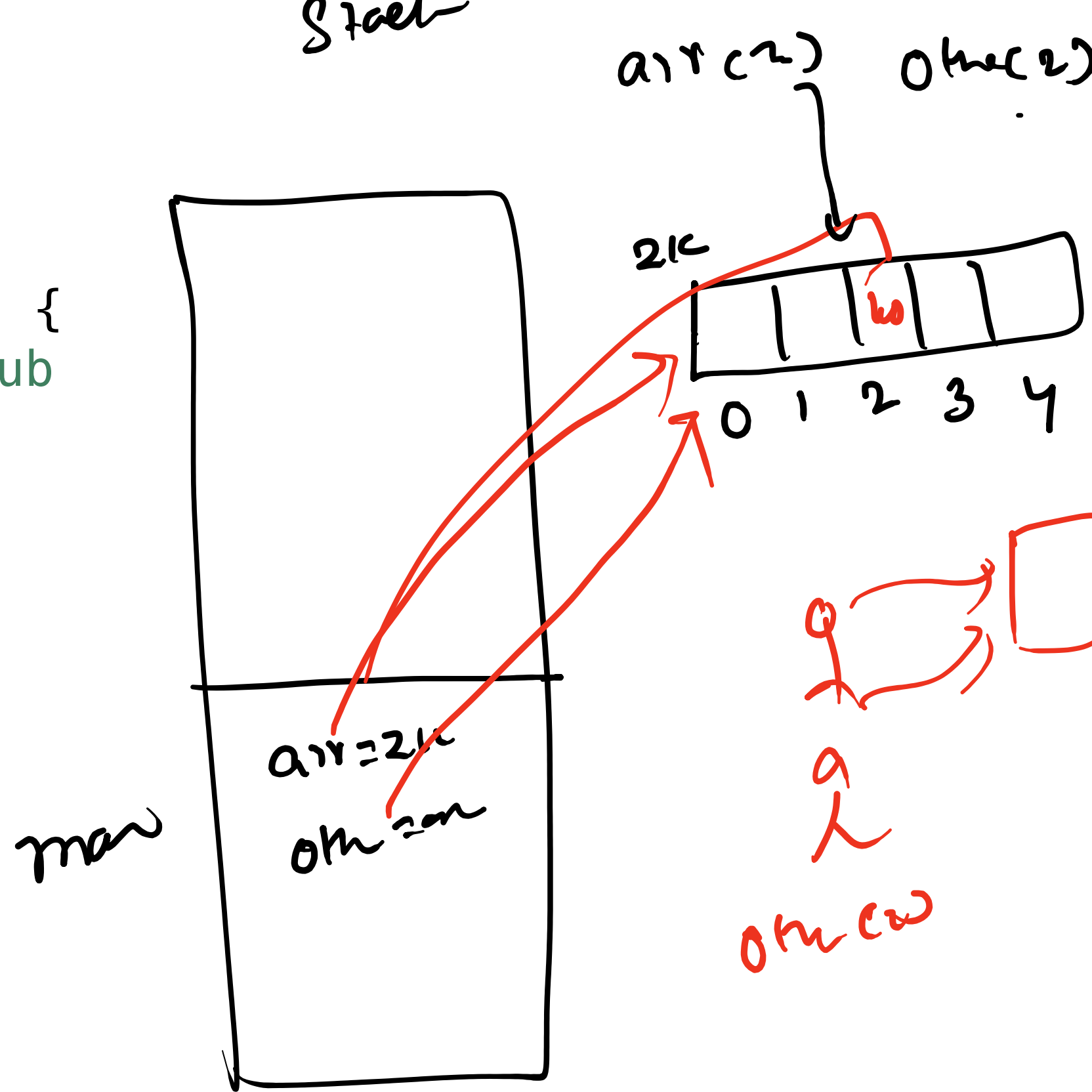


```
public static void main(String[] args) {  
    // TODO Auto-generated method stub  
    int[] arr = new int[5];  
    System.out.println(arr);  
    int[] other = arr;  
}
```

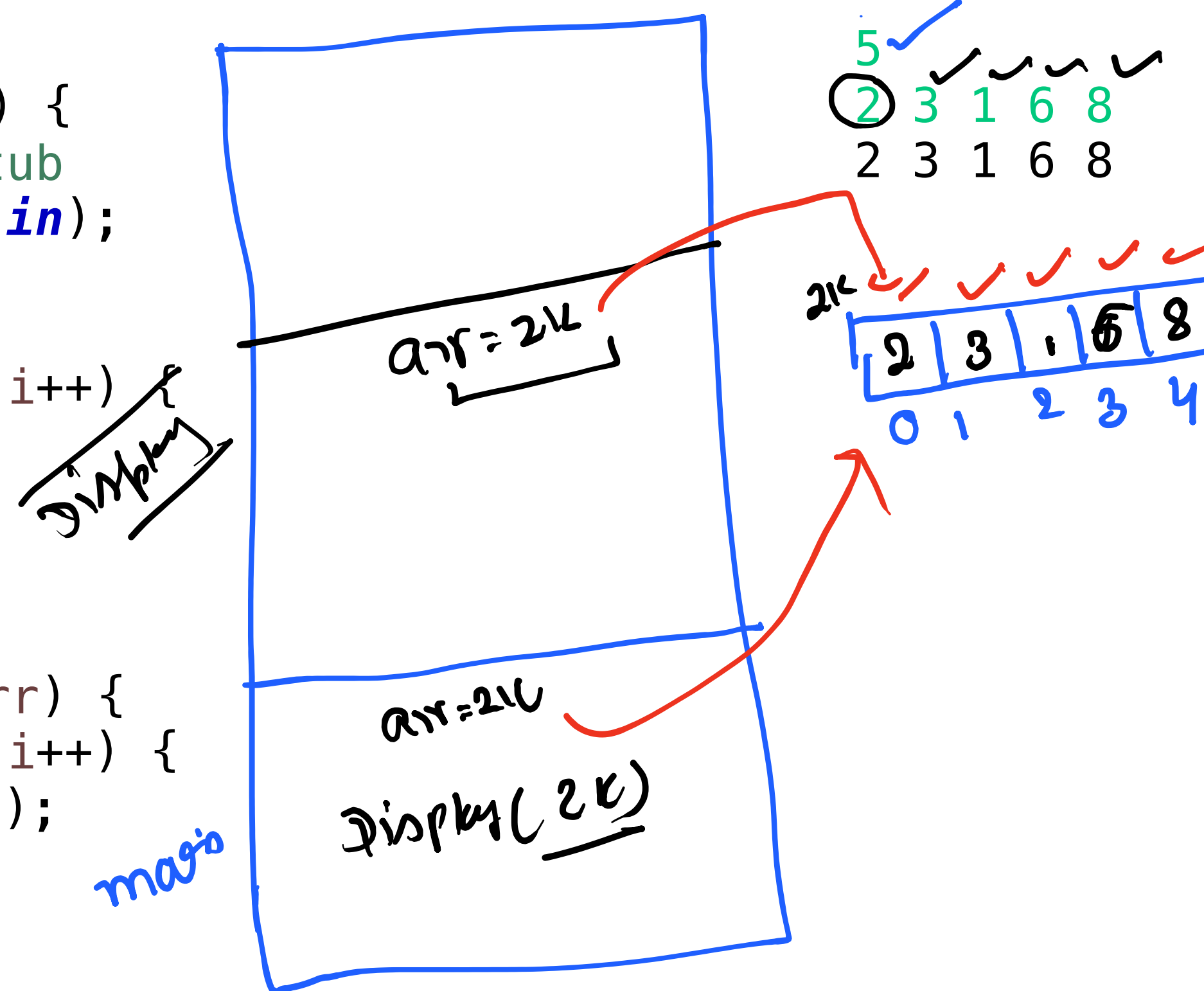
$arr[i] = scan.nextInt()$

$arr[i] = scan.nextInt()$

$arr[i] = scan.nextInt()$



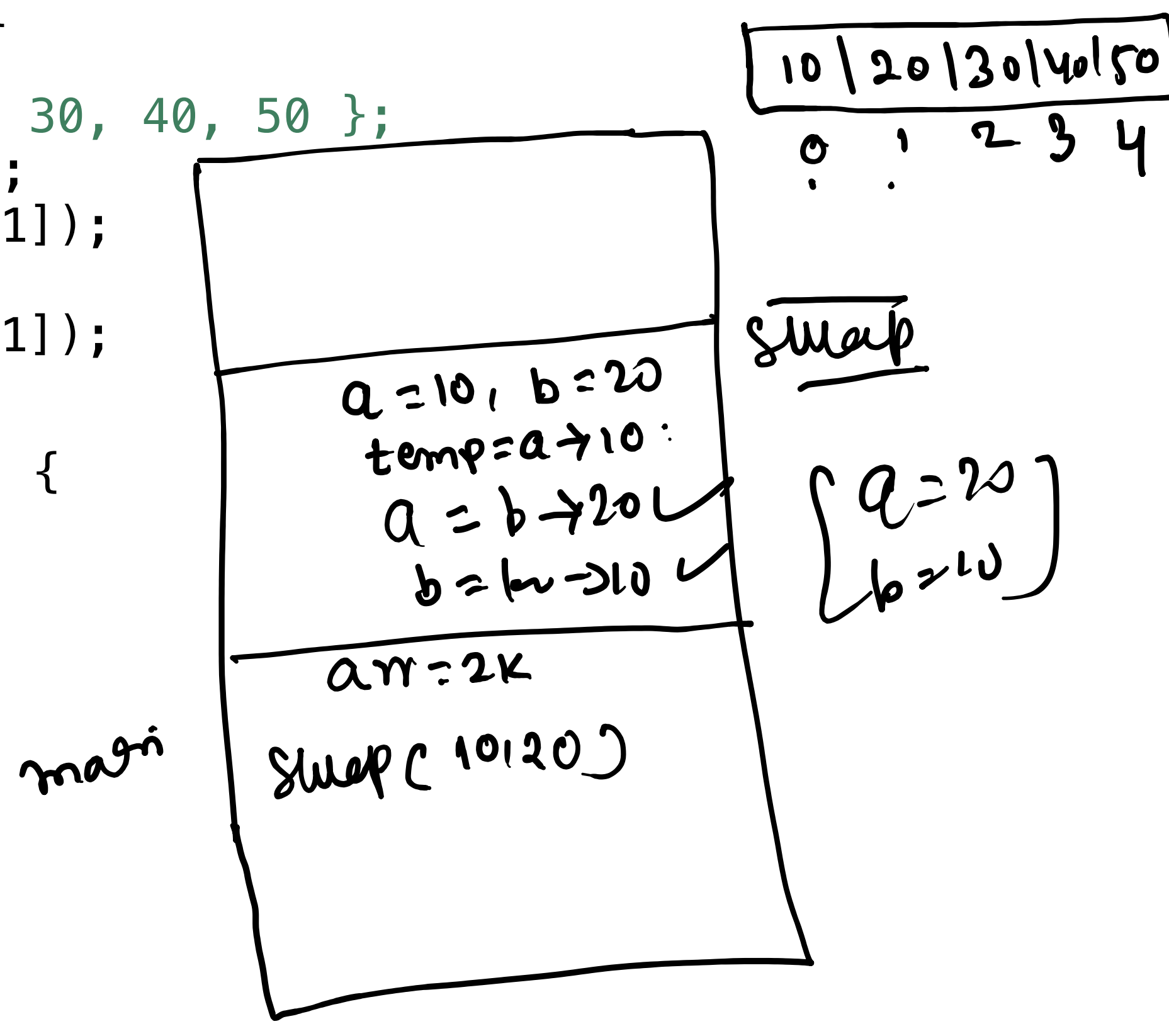
```
public static void main(String[] args) {  
    // TODO Auto-generated method stub  
    Scanner sc = new Scanner(System.in);  
    int n = sc.nextInt();  
    int[] arr = new int[n];  
    for (int i = 0; i < arr.length; i++)  
        arr[i] = sc.nextInt();  
    Display(arr);  
}  
  
public static void Display(int[] arr) {  
    for (int i = 0; i < arr.length; i++) {  
        System.out.print(arr[i] + " ");  
    }  
    System.out.println();  
}
```



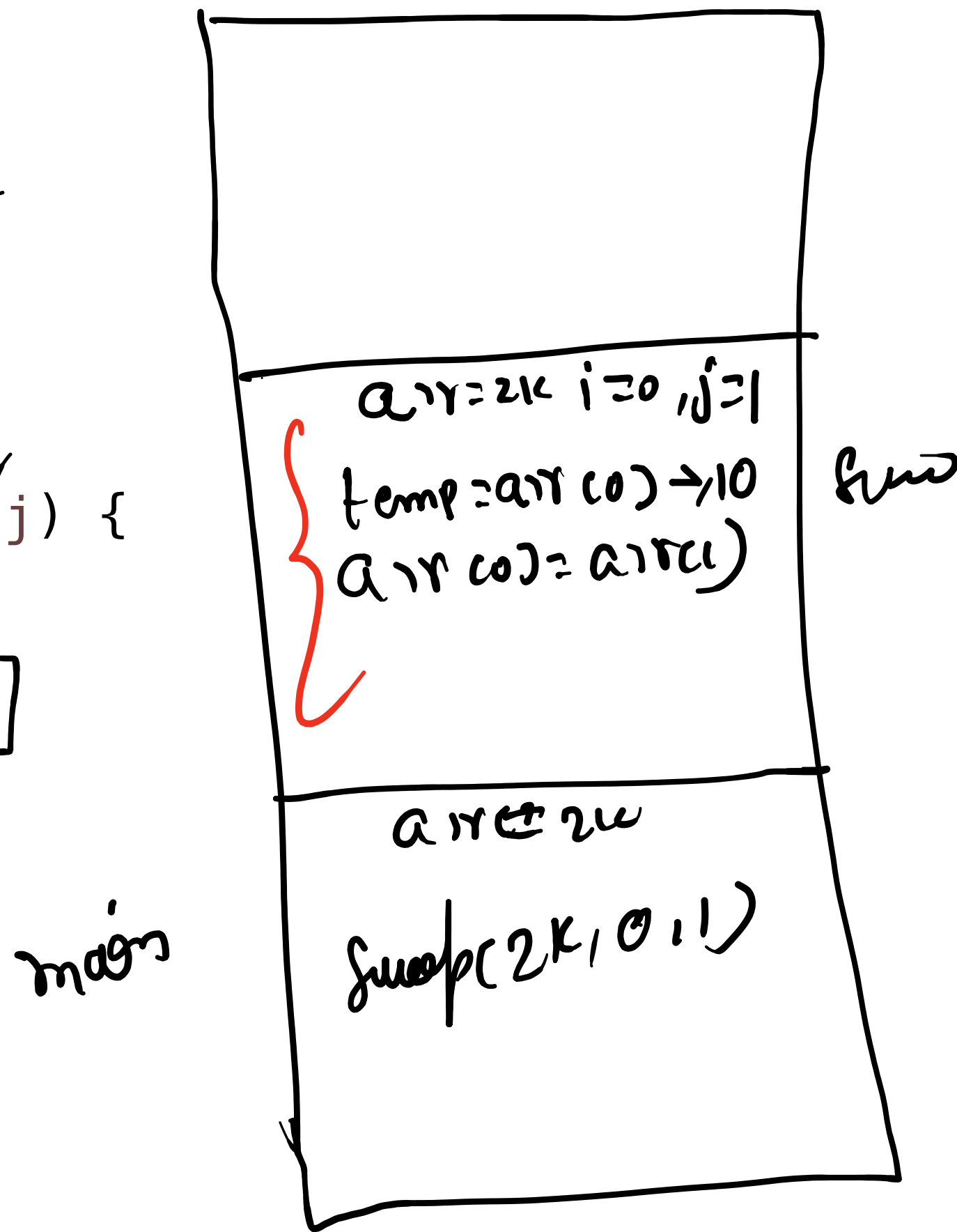
$a = 7, b = 9$

$temp = a$
 $a = b$
 $b = temp$

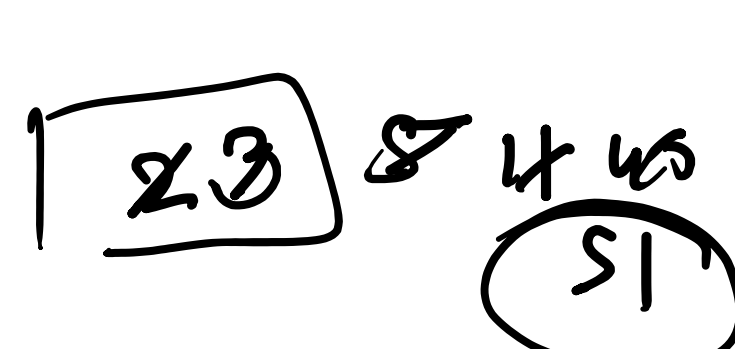
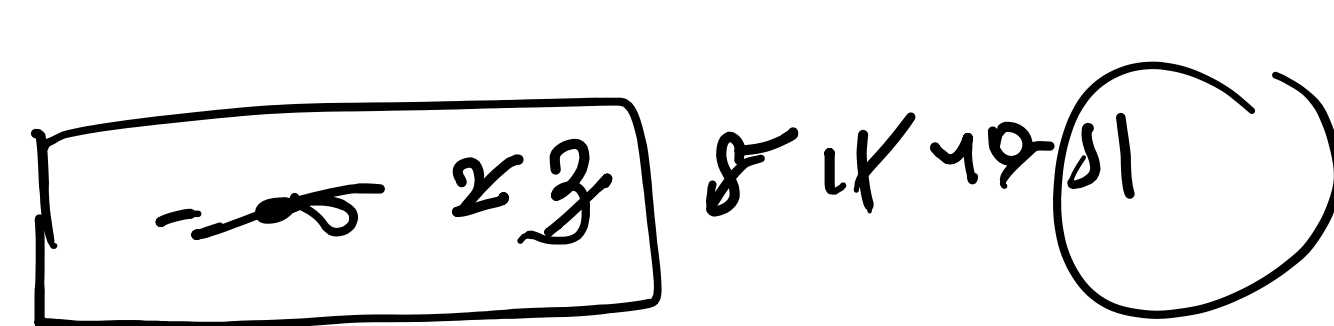
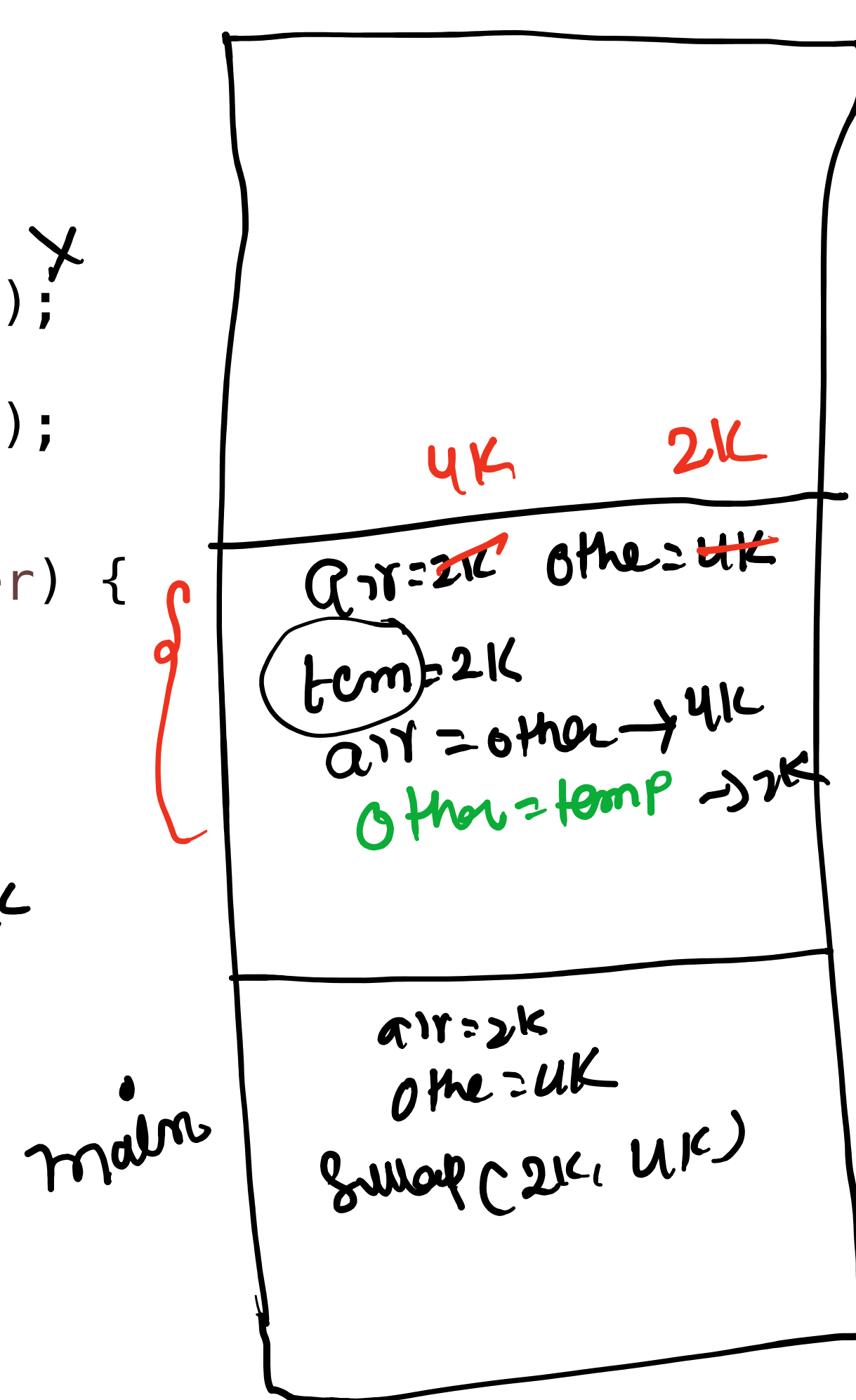
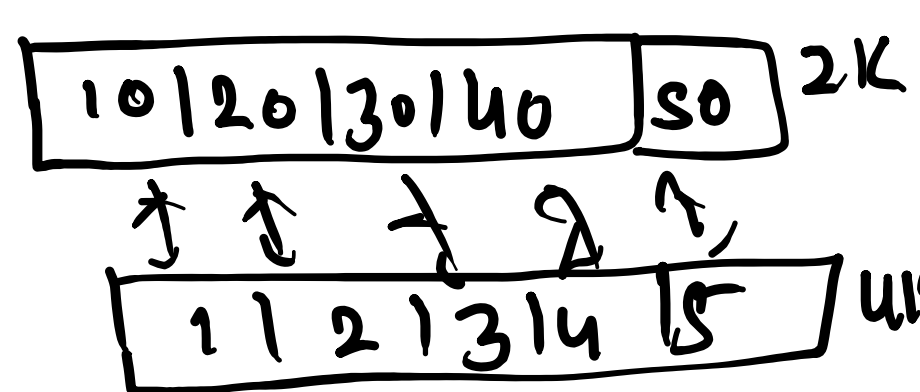
```
public static void main(String[] args) {  
    // TODO Auto-generated method stub  
    // int[] arr = new int [] { 10, 20, 30, 40, 50 };  
    int[] arr = { 10, 20, 30, 40, 50 };  
    System.out.println(arr[0] + " " + arr[1]);  
    Swap(arr[0], arr[1]);  
    System.out.println(arr[0] + " " + arr[1]);  
}  
  
public static void Swap(int a, int b) {  
    // TODO Auto-generated method stub  
    int temp = a;  
    a = b;  
    b = temp;  
}
```



```
public static void main(String[] args) {  
    // TODO Auto-generated method stub  
    int[] arr = { 10, 20, 30, 40, 50 };  
    System.out.println(arr[0] + " " + arr[1]);  
    Swap(arr[0], arr[1]);  
    System.out.println(arr[0] + " " + arr[1]);  
}  
  
public static void Swap(int[] arr, int i, int j) {  
    // TODO Auto-generated method stub  
    int temp = arr[i];  
    arr[i] = arr[j];  
    arr[j] = temp;  
}
```



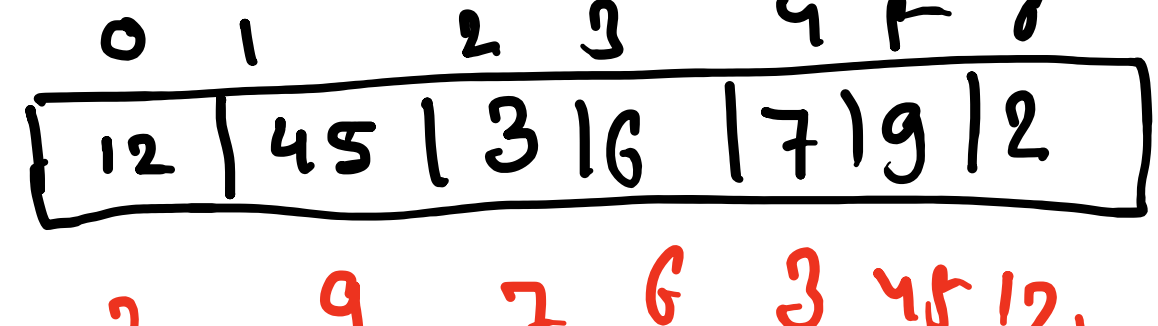
```
public static void main(String[] args) {  
    // TODO Auto-generated method stub  
    int[] arr = { 10, 20, 30, 40, 50 };  
    int[] other = { 1, 2, 3, 4, 5 };  
    System.out.println(arr[0] + " " + other[0]);  
    Swap(arr, other);  
    System.out.println(arr[0] + " " + other[0]);  
}  
  
public static void Swap(int[] arr, int[] other) {  
    // TODO Auto-generated method stub  
    int temp = arr[0];  
    arr[0] = other[0];  
    other[0] = temp;  
}
```



$int[] arr = \{ 2, 3, 5, 1, 4, 11, 40, 52, 7, 15 \};$

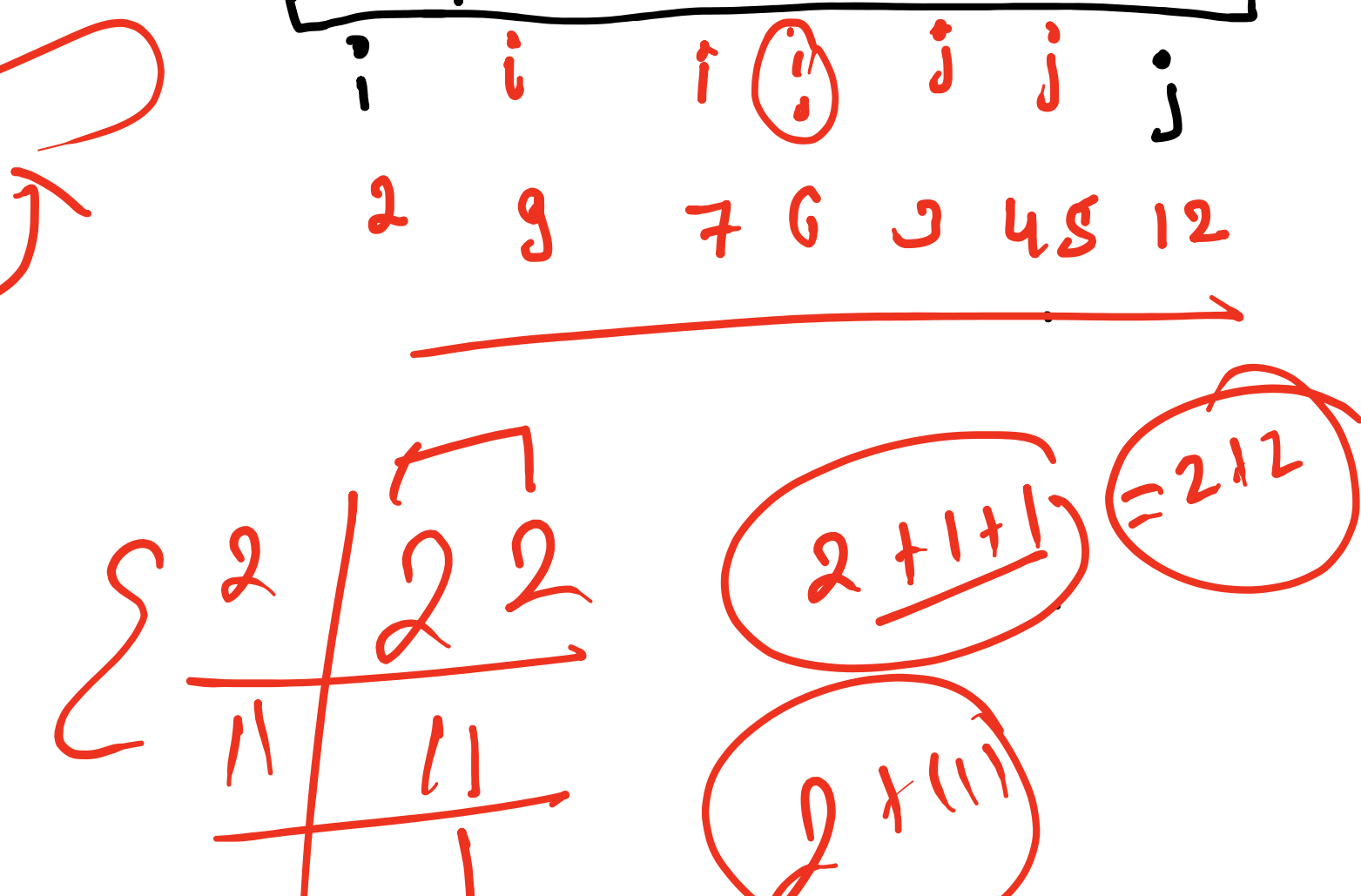
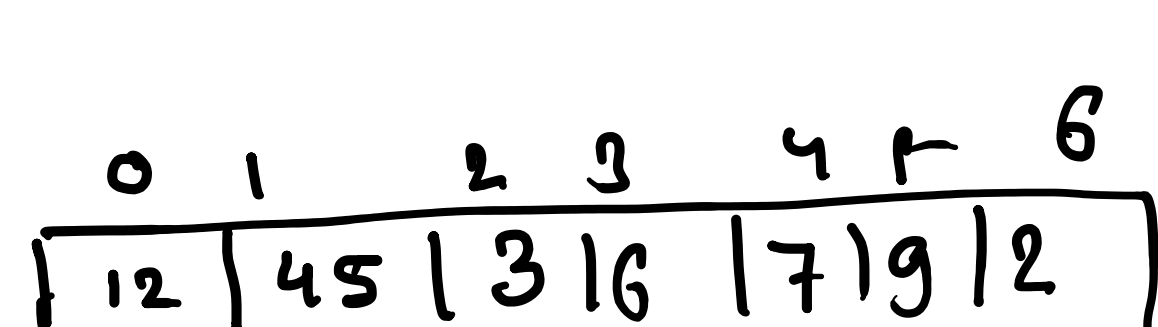
position $i \geq 20$ (-) L
Stack array

$int[] arr = \{ 12, 45, 3, 6, 7, 9, 2 \};$



2 9 7 6 3 4 5 12

2 9 7 6 3 4 5 12



Two-row

$i = 0$

$j = arr.length - 1$

while $i < j$

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