Note:-

if we are looking for maximum value in an array then take default value as $-\infty$

(means Integer.MIN_VALUE)

---

if we are looking for minimum value in an array then take default value as $+\infty$

(means Integer.MAX_VALUE)

Product of Elements Except Itself

(V. Imp)

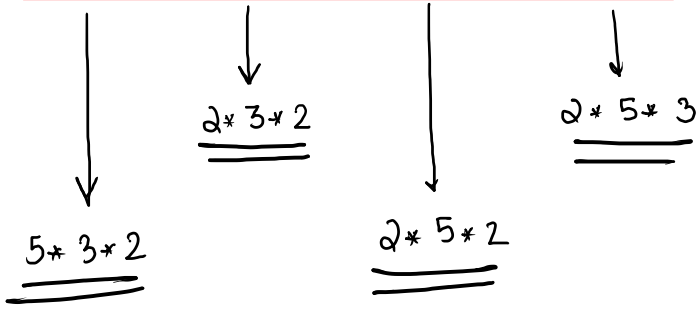
n = 4

arr =

0	1	2	3
2	5	3	2

ans =

0	1	2	3
30	12	20	30



Note :- nested loop means running entire array for each element

$n = 4$

arr =

0	1	2	3
2	5	3	2

dry run

$i = 0$,

prod = 1

$j = 0$, prod = 1

$j = 1$, prod = 5

$j = 2$, prod = 5 * 3

$j = 3$, prod = 5 * 3 * 2

prod = 1

$i = 1$, $j = 0$, prod = 2

$j = 1$, prod = 2

$j = 2$, prod = 2 * 3

$j = 3$, prod = 2 * 3 * 2

dry run

$i = 2$,

prod = 1

$j = 0$, prod = 2

$j = 1$, prod = 2 * 5

$j = 2$, prod = 2 * 5

$j = 3$, prod = 2 * 5 * 2

prod = 1

$i = 3$, $j = 0$, prod = 2

$j = 1$, prod = 2 * 5

$j = 2$, prod = 2 * 5 * 3

$j = 3$, prod = 2 * 5 * 3

psudo code

1) input array

2) traverse from 0 to (n-1) [i]

2.1) declare prod = 1

2.2) traverse from 0 to (n-1) [j]

2.2.1) check if i != j

prod = prod * arr[j]

2.3) print prod.

TLE :- time limit exceed

Code

```
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();
    }

    prodExceptItself(arr, n);
}
public static void prodExceptItself(int[] arr, int n) {

    for (int i = 0; i < n; i++) {
        int prod = 1;
        for (int j = 0; j < n; j++) {
            if ( i != j ) {
                prod *= arr[j];
            }
        }
        System.out.println(prod);
    }

}
```

⟹ Upgradation of array

arr[i] = value

Check Characterstic

$n = 7$

	1	1	0	-1	1	-1	-1
	0	1	2	3	4	5	6
arr =	50	20	0	-2	7	-3	-100

i

psudo code

1) input array
2) traverse from 0 to (n-1)
   2.1) check if current ele. is +ve
        upgrade current ele. with +1
   2.2) check if current ele. is -ve
        upgrade current ele. with -1
   2.3) check if current ele. is 0
        upgrade current ele. with 0

Code

```java
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[] ans = checkCharacteristics(arr);
    for (int i = 0; i < n; i++) {
        System.out.print( ans[i] + " " );
    }
}
public static int[] checkCharacteristics(int[] arr) {
    for (int i = 0; i < arr.length; i++) {
        if ( arr[i] > 0 ) {
            arr[i] = 1;
        } else if ( arr[i] < 0 ) {
            arr[i] = -1;
        } else if ( arr[i] == 0 ) {
            arr[i] = 0;
        }
    }
    return arr;
}
```

Solve Array

$n = 5$

arr =

15	12	7	8	10
0	1	2	3	4

index =

2	4	0	3	1
0	1	2	3	4

target =

7	10	15	8	12
0	1	2	3	4

dry run

i=0, arr[i] = 15 // value
index[i] = 2 // index

i=1, arr[i] = 12 // value
index[i] = 4 // index

i=2, arr[i] = 7 // value
index[i] = 0 // index

i=3, arr[i] = 8 // value
index[i] = 3 // index

i=4, arr[i] = 10 // value
index[i] = 1 // index

Conclusion

```
int index = index[i]
int value = arr[i]
target[index] = value;
```

target[index[i]] = arr[i]

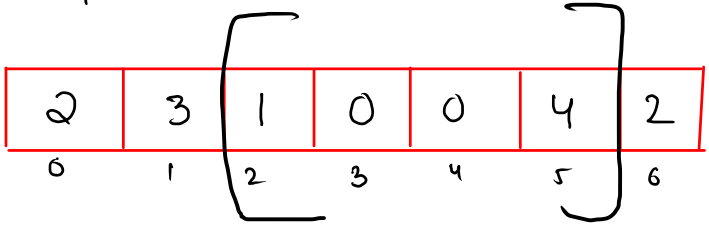
Code

```java
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[] index = new int[n];
    for (int i = 0; i < n; i++) {
        index[i] = scn.nextInt();
    }

    int[] ans = solveArray(n, arr, index);
    for (int i = 0; i < n; i++) {
        System.out.print( ans[i] + " " );
    }
}
public static int[] solveArray(int n, int[] arr, int[] index) {
    int[] target = new int[n];
    for (int i = 0; i < n; i++) {
        int val = arr[i];
        int idx = index[i];

        target[idx] = val;
    }
    return target;
}
```

Update query 1

int n = 7

arr =



left = 2

right = 5

x = 3

psudo code

1) traverse from left to right

1.1) update current value with x

Code

```java
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 left = scn.nextInt();
    int right = scn.nextInt();
    int x = scn.nextInt();

    int[] ans = updateQuery(arr, n, left, right, x);
    for (int i = 0; i < n; i++) {
        System.out.print(ans[i] + " ");
    }
}
public static int[] updateQuery(int[] arr, int n, int left, int right, int x) {

    for (int i = left; i <= right; i++) {
        arr[i] = x;
    }
    return arr;
}
```