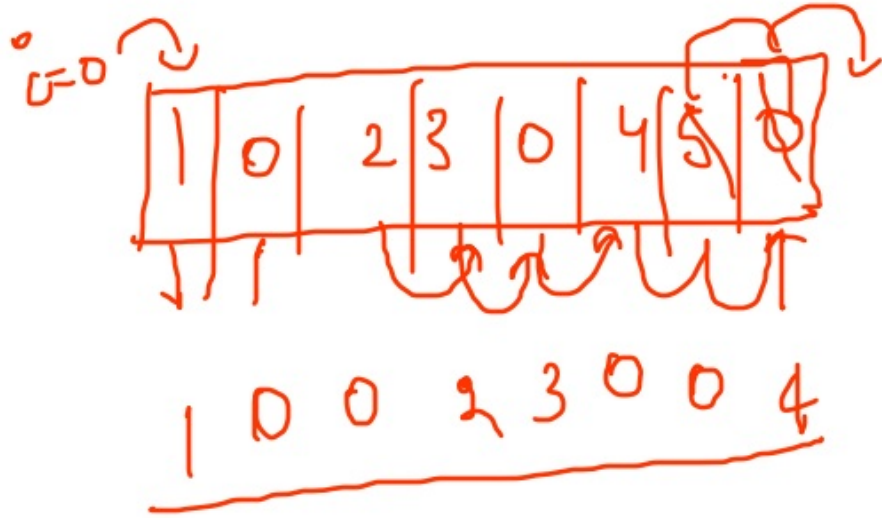


Zero brings Zero



$i = 1, 2 = 10$

$i = 2 \rightarrow$

```
public static int refills(int plants[],int n, int capacityA, int capacityB){
```

```
    int alice = capacityA;
    int bob = capacityB;
    int refill = 0;
```

```
    int i = 0;
    int j = n-1;
```

```
    while(i <= j){
```

```
        if(i == j){
            if(alice >= bob){
                if(alice < plants[i]){
                    refill++;
                }
            }
            else{
                if(bob < plants[i]){
                    refill++;
                }
            }
            break;
        }
    }
```

$TC \rightarrow O(n)$

$SC \rightarrow O(1)$

// alice turn

```
    if(alice < plants[i]){
        alice = capacityA;
        refill++;
    }
    alice -= plants[i];
    i++;
```

// bob turn

```
    if(bob < plants[j]){
        bob = capacityB;
        refill++;
    }
    bob -= plants[j];
    j--;
}
return refill;
```

```
}
```

Plants = $[3, 2, 1, 4]$ $CA \rightarrow 5$
 $CB \rightarrow 4$

(Yellow arrows indicate: 3 points to 2, 2 points to 1, 1 points to 4, 4 points to 3)

$A \rightarrow 5$
 $B \rightarrow 4$
 $R \rightarrow 0$

Alice

$5 < 3$ F
 $5 - 3 = 2$ | $2 < 2$ F
 $2 - 2 = 0$

$\rightarrow 0$

1 0 1

Bob.

$4 < 4$ F
 $4 - 4 = 0$ | $0 < 1$ T
 $B = 4$
 $R = 1$

$4 < 1$
 $4 - 1 = 3$ } 1

Team foundation

- n
- $n/2$ teams have size 2
- each team should have equal skills.
- Chemistry \Rightarrow product of skills.
- sum of chemistry (return)
- return -1.

3 2 5 1 3 4
1 2 3 3 4 5

(1,5) (2,4) (3,3) 5+8+9
6 6 6 $\Rightarrow 22$

$SC \rightarrow O(1)$

$TC \rightarrow O(n \log n) + n$

```
public static int chemistry(int arr[], int n){
    Arrays.sort(arr);

    int total = n/2;
    int skills = arr[0] + arr[n-1];

    int cSum = 0;

    for(int i = 0; i < total; i++){
        int left = i;
        int right = n-1-i;

        // check if skills are equal or not
        if(arr[left] + arr[right] != skills){
            return -1;
        }

        cSum += arr[left] * arr[right];
    }
    return cSum;
}
```