

Merge Sort

5 1 6 2 10 3 9 7 5 8 -10

5 1 6 2 10 3

(N)

(M)

$O(N+M)$

1 5 6

2 3 10

→ 1, 2, 3, 5, 6, 10



Sort(0, N-1)

Sort(0, $\frac{N}{2}$)

Sort($(\frac{N}{2} + 1, N-1)$)

-1 0 1 2 3 5 5 6 7 8 9 10

1 2 3 5 6 10

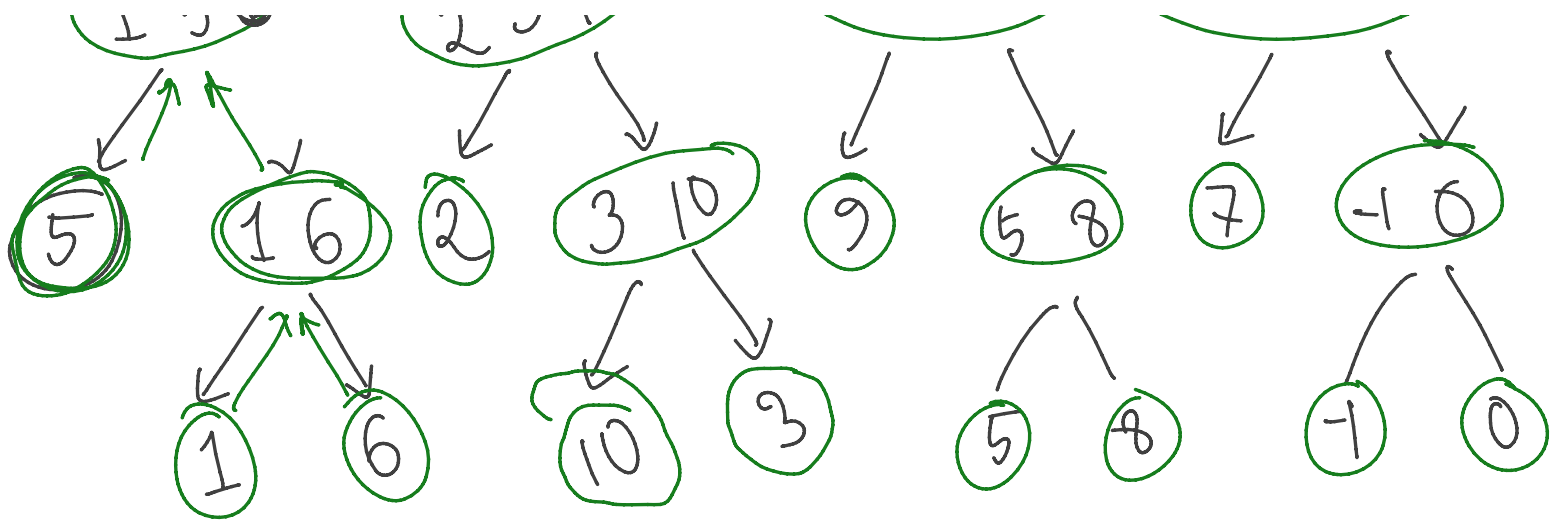
-1 0 5 7 8 9

1 5 6

2 3 10

5 8 9

-1 0 7



```
void mergeSort (vector<int> &vc, int L, int R) {
```

```
    if (L ≥ R) return;
```

```
    int M = (L + R) / 2;
```

```
    ✓ mergeSort (vc, L, M);
```

```
    ✓ mergeSort (vc, M+1, R);
```

```
    ↪ merge (vc, L, M, R);
```

```
void merge (.....) { // [L, M], [M+1, R]
```

```
}
```