

Merge sort

Problem - Given an array of integers, sort the array.

```
const arr = [-6, 20, 8, -2, 4]
```

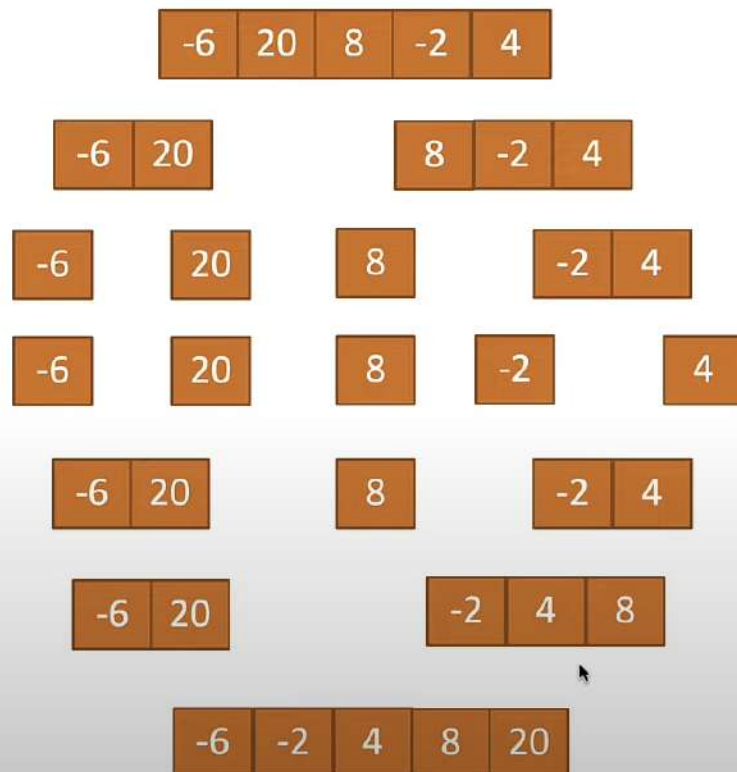
```
mergeSort(arr) => Should return [-6, -2, 4, 8, 20]
```

Merge sort idea

Divide the array into sub arrays, each containing only one element (An array with one element is considered sorted)

Repeatedly merge the sub arrays to produce new sorted sub arrays until there is only one sub array remaining. That will be the sorted array.

Merge sort example



[-6] [20] => [] Left & right are not empty. $-6 < 20$
[] [20] => [-6] Left is empty. Push right array
[] [] => [-6, 20]

[8] [-2, 4] => [] Left & right are not empty. $-2 < 8$
[8] [4] => [-2] Left and right are not empty. $4 < 8$
[8] [] => [-2, 4] Right is empty. Push left array
[] [] => [-2, 4, 8]

Merge sort example



`[-6, 20] [-2, 4, 8] => []` Left & right are not empty. $-6 < -2$
`[20] [-2, 4, 8] => [-6]` Left & right are not empty. $-2 < 20$
`[20] [4, 8] => [-6, -2]` Left & right are not empty. $4 < 20$
`[20] [8] => [-6, -2, 4]` Left & right are not empty. $8 < 20$
`[20] [] => [-6, -2, 4, 8]` Right is empty. Push left array
`[] [] => [-6, -2, 4, 8, 20]`