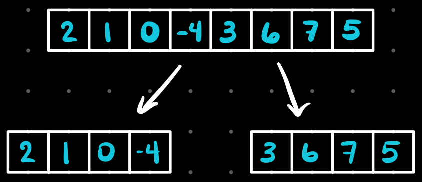
Divide & Conquer Notes

What if we wanted to find the maximum element of an array?

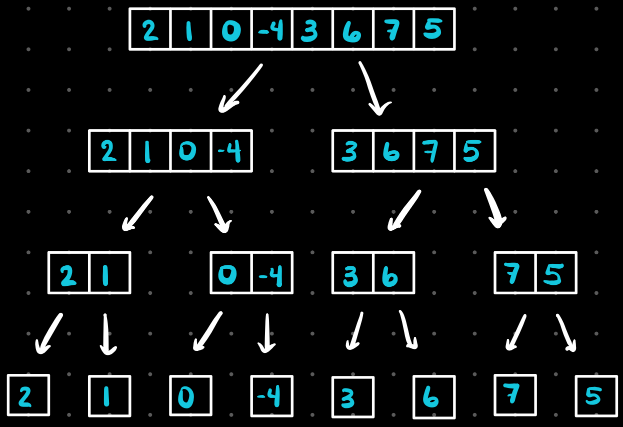


* We could just iterate through array from left to right, but what if we break this problem down to smaller subproblems

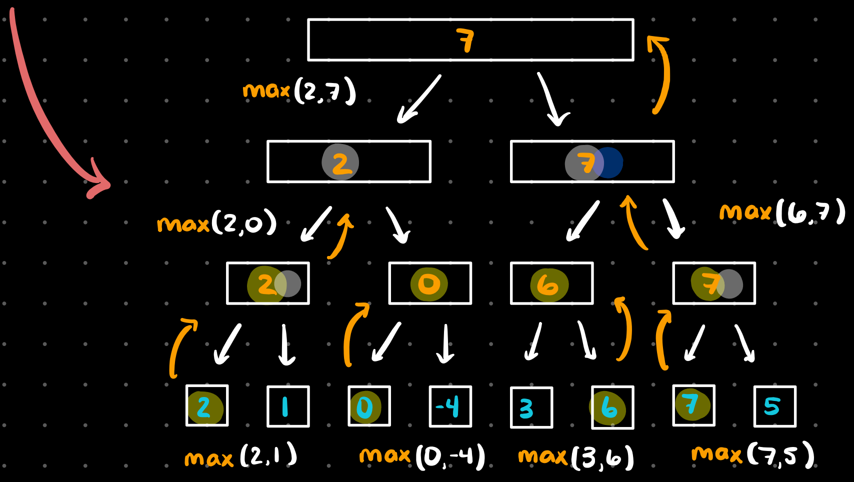
If we split array into a left and right component...

max(max(left), max(right)) = max(whole array)

Recursively split array in half until you have subarrays of size one



Idea is to find the maximum between finding max between 2 elements and working our way up



```
function findMaximumElement(lst):
  if length(lst) == 0:
    return null
  return findMax(0, length(lst)-1, lst)

function findMax(i, j, lst):
  if i == j:
    return lst[i]
  mid = (i+j) / 2
  return max(
      findMax(i, mid, lst),
      findMax(mid+1, j, lst))
```

Code
Implementation