# Merge sort

* Items of data are repeatedly split in half until each “list” contains only a single item
* These “lists” are then merged back together into a descending ordered list (high 🡪 low)
* This is known as the “divide and conquer” method, where…
  + Divide refers to where the data is halved
  + Conquer refers to splitting all data into singular lists

## Pseudocode

**array 🡨 [6, 4, 3, 5, 2, 1]**

**OUTPUT "Merge Sort Array"**

**mergeSort(array)**

**FUNCTION mergeSort(array):**

**IF len(array) > 1 THEN**

**middle=int(len(array) / 2)**

**left 🡨 array[0:middle]; right 🡨 array[middle]**

**mergeSort(left); mergeSort(right)**

**#Divide elements into sub-sections AND re-merge**

**a 🡨 b 🡨 0**

**FOR element in range(len(array))**

**L 🡨 left[a] IF a < len(left) else None**

**ENDIF**

**R 🡨 right[b] IF b < len(right) else None**

**ENDIF**

**IF ((L AND R) AND (L < R)) OR R is None:**

**array[element] 🡨 L; a += 1**

**ELSEIF ((L AND R) AND (L >= R)) OR L is None:**

**array[element] 🡨 R; b += 1**

**ENDIF**

**ENDFOR**

**ENDFUNCTION**

**Key Learning Point:** Merge sort is “divide and conquer” – data is divided, sorted into lists, and sorted from there