\*\*\*NOTE: I did not copy the list of numbers used in class because I believed that a list of numbers would be provided with the dropbox instructions. As such I have generated a random list of numbers and performed the required sorting algorithms on them\*\*\*

2 40 37 6 45 14 38

**Quicksort**

Purple: pivot point

Light grey: index

Green: Sorted

40 37 2 6 45 14 38 -Pick pivot point

40 37 2 6 45 14 38 -(37 < 40); true

40 37 2 6 45 14 38 -(2 < 40); true

40 37 2 6 45 14 38 -(6 < 40); true

40 37 2 6 45 14 38 -(45 < 40); false

40 37 2 6 45 14 38 -(14 < 40); true

40 37 2 6 14 45 38 -Swap terms

40 37 2 6 14 45 38 -(38 < 40); true

40 37 2 6 14 38 45 -Swap terms

38 37 2 6 14 40 45 -Swap pivot

38 37 2 6 14 40 45 -(37 < 38); true

38 37 2 6 14 40 45 -(2 < 38); true

38 37 2 6 14 40 45 -(6 < 38); true

38 37 2 6 14 40 45 -(14 < 38); true

14 37 2 6 38 40 45 -Swap pivot

14 37 2 6 38 40 45 -(37 < 14); false

14 37 2 6 38 40 45 -(2 < 14); true

14 2 37 6 38 40 45 -Swap terms

14 2 37 6 38 40 45 -(6 < 14); true

14 2 6 37 38 40 45 -Swap terms

6 2 14 37 38 40 45 -Swap pivot

6 2 14 37 38 40 45 -(2 < 6); true

2 6 14 37 38 40 45 -Swap pivot

2 6 14 37 38 40 45 -Element 0 is sorted since it is in a partition of size 1

2 6 14 37 38 40 45 -Element 3 is sorted since it is in a partition of size 1

2 6 14 37 38 40 45 -Element 6 is sorted since it is in a partition of size 1

**2 6 14 37 38 40 45 -\*List sorted\***

**Mergesort**

2 40 37 6 45 14 38 -Split list in half

2 40 37 6 45 14 38 -Mergesort yellow

2 40 37 6 45 14 38 -Split list in half

2 40 37 6 45 14 38 -Mergesort red; split list in half

2 40 37 6 45 14 38 -Mergesort blue; mergesort red

2 40 37 6 45 14 38 -Mergesort yellow; split list in half

2 40 37 6 45 14 38 -Mergesort blue; mergesort red

2 40 6 37 45 14 38 -Merge former yellow halves

2 6 37 40 45 14 38 -Mergesort green; split list in half

2 6 37 40 45 14 38 -Mergesort blue; split list in half

2 6 37 40 45 14 38 -Mergesort blue; mergesort red

2 6 37 40 14 45 38 -Mergesort yellow

2 6 37 40 14 45 38 -Merge former green halves

2 6 37 40 14 38 45 -Merge former full list

**2 6 14 37 38 40 45 -\*List sorted\***