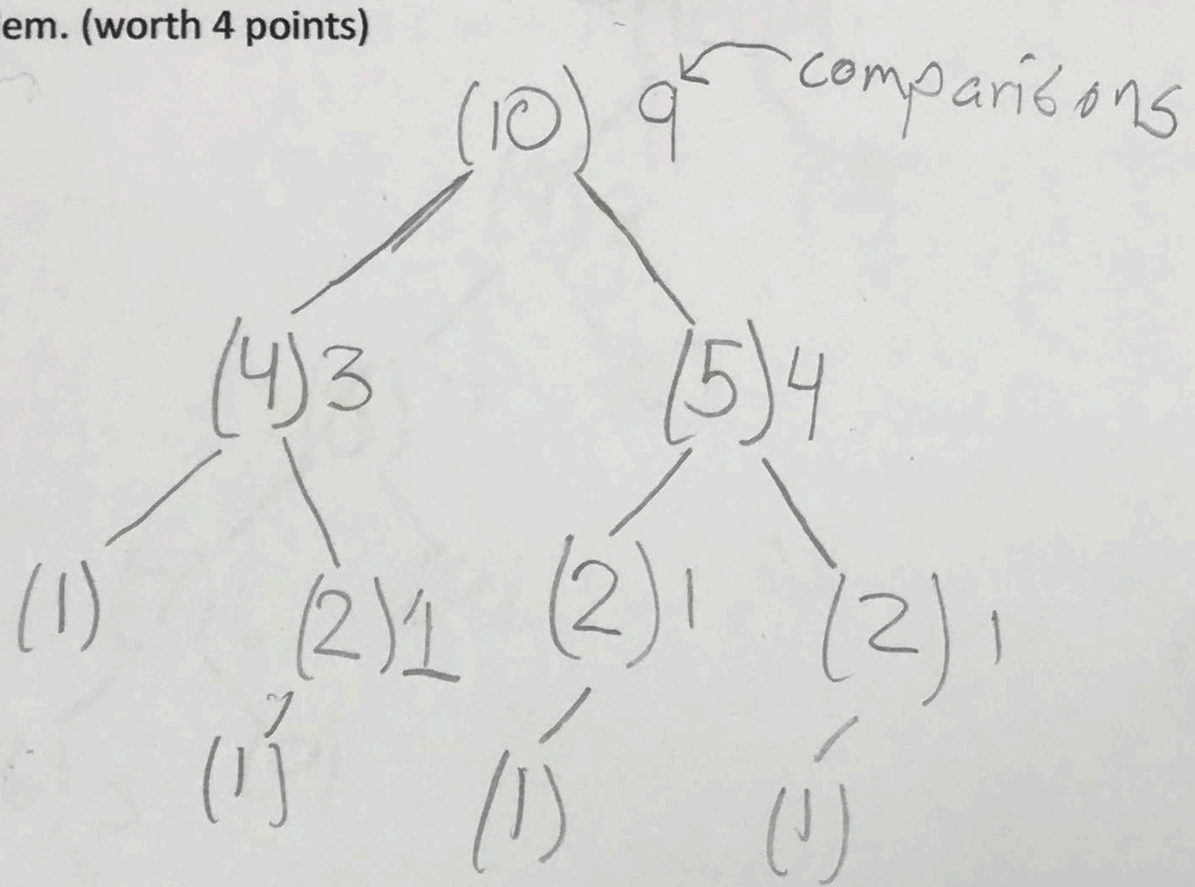
Name Gattin Walker

CSC 325, Assignment #3, Quicksort Recursion Trees

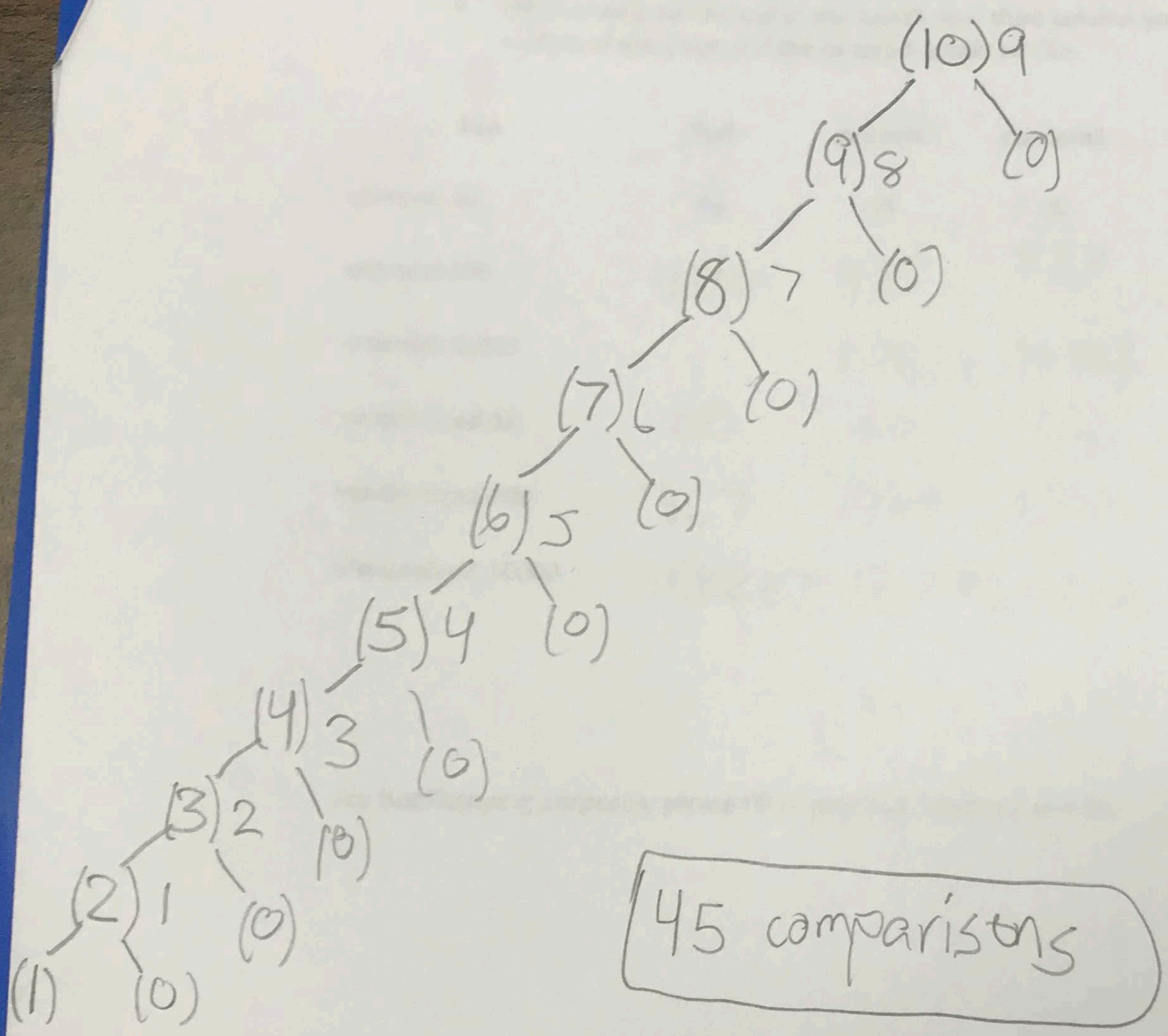
1. How many comparisons would you expect to be performed by Quicksort if we are lucky and always pick the median element as the pivot. You only need to consider the case when **n = 10**. You should draw a recursion tree and note how many comparisons are performed at each subproblem. **(worth 4 points)**



19 comparisons

Name _____

2. How many comparisons would you expect to be performed by Quicksort if we are unlucky and we always pick the <u>minimum or maximum element as the pivot</u>. Consider the case when **n = 10**. You should draw a recursion tree and note how many comparisons are performed at each subproblem. (worth 4 points)



45 comparisons

Name _____

3. Fill in the following table.
   - The first column denotes a test file (found in the assignment description on the course website), and
   - the remaining columns denote which variant of Quicksort you should use.
   - For example, for the cell in the fourth row, third column you would use the median3 variant of quicksort and the ordered-10000.txt file.

File	first	median3	random1	random2	random3
ordered-10	45	19	26	28	27
ordered-100	4950	480	573	746	674
ordered-10000	stack overflow	113631	164162	158345	145621
randomized-10	20	20	22	21	31
randomized-100	667	538	626	649	659
randomized-10000	158257	130072	150104	151661	159683

For bookkeeping purposes, please fill in your AutoGradr score here: 100% 6 out of 6 tests passed