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CSC44800

Homework 2-2

INSTRUCTIONS: Summarize the time and space complexity, describe (code, pseudocode, text description) how do you get the result. (Optional) You can use homework 2-1 as an example.

ANSWER:
Time complexity: the runtime of the algorithm relative by the input size
Space complexity: amount of memory space used by the algorithm relative to the input size

We can determine the time and space complexity by analyzing the code and how the code processes the input:

- Time complexity:
  - Loops contribute a lot to time complexity since they're recursive calls
  - Count the number of basic operations executed inside loops; this is what the time complexity is typically based on
- Space complexity:
  - Find data structures and variables that would use memory, such as arrays, lists, queues, stacks, and other variables that stores information
  - Also look for dynamic memory allocations
  - When using recursion, we should look at the space used on the call stack for each recursive call
- Both:
  - Determine the worst- and best-case scenarios
  - Both complexities are represented by using the Big O notation