1. 1. Assume every hashs look up takes O(1) time, what would the runtime of your algorithm you wrote be? (In terms of Big O using n)

O(n)

The algorithm’s complexity is linear as it runs once for every assignment. My algorithm checks to see if a key exists in the hash table. There are no loops and the look up happens only once.

2. What if you sorted the list of students and the assignments, what would the runtime of this algorithm be? (In terms of Big O using n)

O(n)

Nothing would change as the algorithm doesn’t change if the files are sorted or not. Checking if a key is in the hash table does not depend on a sorted list. Complexity is still linear.

3. What if you maintained an unsorted list of students names and assignments, what would the runtime of this algorithm be? (In terms of Big O using n)

O(n)

Nothing would change as the algorithm doesn’t change if the files are sorted or not. Checking if a key is in the hash table does not depend on a sorted list. Complexity is still linear.