7. Time and Space Complexities:

Question 4:

- Time Complexity: O(n) where n is the size of the hash table. This happens when all probe slots are filled and looping through almost the entire table to find an empty slot is needed.
- Space Complexity: O(n) where n is the size of the hash table since space is allocated even if the table is not full.

Question 5:

- Time Complexity: O(n*k) where n is number of strings in the array and k is the maximum length of a string. There Is on pass through n strings to find max string length. Then, there is a main radix loop that runs k times that goes through all n strings to bucket them, sorts and reconstructs array from buckets.
- Space Complexity: O(n+k) where n is numb number of strings in the array and k is the maximum length of a string. It stores n strings in temporary lists. K is up to 52 unique characters for alphabet.

Question 6:

- Time Complexity: O(n + m) where n is the length of the input string and m is the length of the pattern. Splitting the string takes O(n) time while the loop runs m times per character in pattern.
- Space Complexity: O(n) where n is the number of words in the split string. The hash map would store up to n entries in worse case.