Tyler Hayes

Quiz 8 § 21

Input: A list $[v_1 \dots v_n]$ of positive values, Length n

Output: Subset $S \subseteq \{1, \dots, n\}$, such that i and i+1 cannot exist, maximize the value

To begin with we must consider the base cases for the problem where when:

Base Cases:

$n = 0$ - we take no value as it is just an empty list

$n = 1$ - we take the value at that index, such that we take v_1

$n = 2$ - we take the maximum value between the two different values at their respective indexes, such that $\max(v_1, v_2)$.

From this I will now begin to find the subproblems that T[i] corresponds to.

We can see that from this question the precise subproblems will be considering whether or not we pick the value at v_i where v_i represents the value in the list at index i. From this we cannot choose v_{i-1} since it is adjacent to this index.

Another subproblem would be whether or not we pick the value of v_i, since if we were to not choose this value, we can choose this values neighbors.

The indices of j needs to consider would be the value that is after v_{i+1}, where it would not be a neighbor of v_i.