CS221 Fall 2017 Homework [Foundations]

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By turning in this assignment, I agree by the Stanford honor code and declare that all of this is my own work.

Problem 3

(a)

- **states:** A tuple of (index of previous word, possible previous word).
- **initial state:** (0, "-BEGIN-").
- **actions:** Every possible words generated from every string starts from current state index.
- **cost:** Cost of previous word and current action word.
- **end test:** Whether previous state index equals to length of the whole string.

(c) Keep the settings as (a) and modifies cost only, then cost is a function of only current action word.

$$Cost(w) = u_b(w) = \min_{w'} b(w', w) \tag{1}$$

Then we can prove

- Consistency(1): $0 \leq u_b(w) \leq b(w', w)$ for all w'.
- Consistency(2): When the state hit the end, there is no future action, which means the cost is 0.