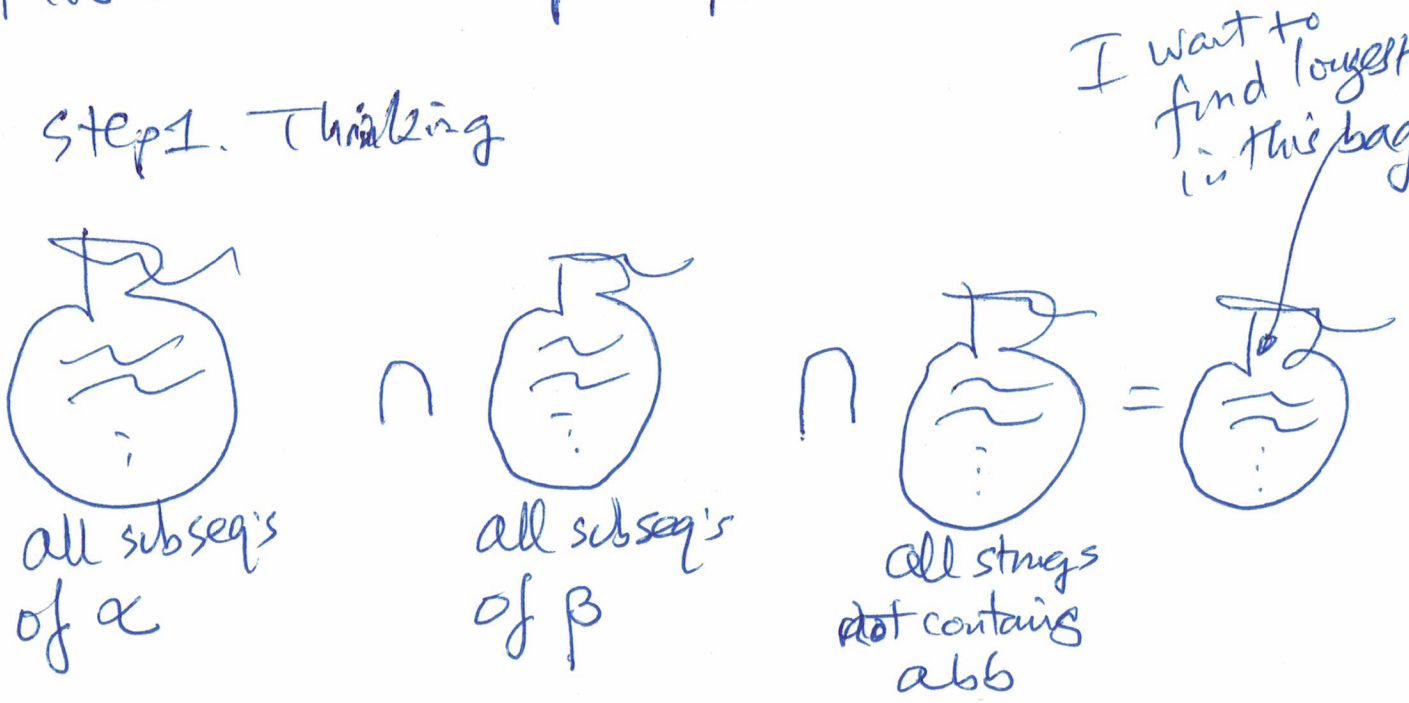
HW 5 solutions for cpts 350

1. Step 1. Thinking



Step 2. Data Structure

Cartesian Product

$M_\alpha \times M_\beta \times M_{abb} = M$

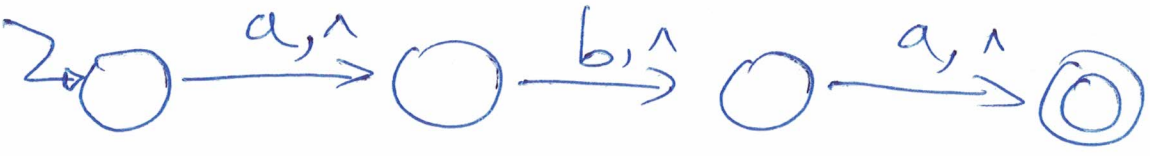
FA accepting the bag above | FA accepts the bag above | FA accepts the bag above

Step 3. I need find a longest word accepted by M.

How? Run longest path alg on the graph of M from init to accepting and collect the word on the path.

// Note: Can you draw M_α from a given string $\alpha = aba$?

//



// Then I elimiate Λ-transitions (a // standard alg in 317) from the above // automaton and then I have M_α.

// Cartesian Product is a standard alg // in 317.

// longest Path alg is shortest path alg with negative "distance".

2. Step 1. Thinking

all subseq's of all words in L_1 ∩ all subseq's of all words in L_2 = I want a longest word in this bag!

step2. Data structures

M_1 × M_2 = M.

FA accepting the above bag — FA accepting the above bag

step3. I need two cases to consider.

① Run SCC on M and check that there is a walk from init to accepting that passes a node in a looping SCC.
if this is true, return +oo.

② if this is not true, run

longest path alg on M from init to accepting and ret. the length.

3. You need Google on locality sensitive hashing and read papers (this is good for your job interview!)