

**START OF QUIZ**

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## Question 1

Topic: Topic2

Source: Lecture 2

Are both K-means and agglomerative clustering iterative? Explain, and for each that is, explain when the algorithm ends.

## Question 2

Topic: Topic1

Source: Lecture 1

Suppose we are filling the table for the Levenshtein distance algorithm. We are in cell  $(x, y)$ . The values of cell  $(x-1, y-1)$ ,  $(x-1, y)$ , and  $(x, y-1)$  are 2, 1, and 2, respectively. What is the value we will put in cell  $(x, y)$ , given that the letters are NOT equal?

### Question 3

Topic: Topic4

Source: Lecture 4

Imagine that we are doing ASR instead of POS tagging. Briefly describe what the emissions and transitions would be.

## Question 4

Topic: Topic1

Source: Lecture 1

Explain what modifications would need to be made to our dynamic edit distance algorithm to incorporate weighted edit distance.

## Question 5

Topic: Topic3

Source: Lecture 3

If our vocabulary consists of just symbols A and B, and our corpus consists of the sequence: A B B A A B, and we build a bigram language model by applying add-one smoothing to the MLE from the corpus, what is the probability of  $P(B|A)$ ? Please show your work.

## Question 6

Topic: Topic2

Source: Lecture 2

Why is the Forgy initialization sub-optimal?

## Question 7

Topic: Topic4

Source: Lecture 4

How is it that EM can arrive at a good solution, even if we have a random initialization of parameters?



## Question 8

Topic: Topic3

Source: Lecture 3

Describe the noisy channel model, and how it can be used to represent Machine Translation.

## Question 9

Topic: Coding

Source: Lecture 3

In class, we built a collocation matrix for a bigram language model. Modify the function so that it can handle trigram language model and implements "add-alpha" smoothing, instead of "add-one" smoothing.

**END OF QUIZ**