COMP9318
Project

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Question 1

The Viterbi algorithm is a dynamic programming algorithm for finding the most likely sequence of hidden statescalled the Viterbi paththat results in a sequence of observed events, especially in the context of Markov information sources and hidden Markov models.
For question 1,first of all, we read the state file and symbol file. In addition, we make a state dictionary and a transmission dictionary from the state file and make a symbol dictionary and a emission dictionary from the symbol file. Furthermore, we could create the A matrix and B matrix from these dictionary.
Then we design a viterbi algorithm. First and foremost, we create a list to store the value and list of elements.Then we obverse the first element in the first query, if it is in symbol list, we could get the begin value, else, we put in the 'UNK' and get its begin value. In addition, we traverse the left elements in the first query ,and get the value and list.Furthermore, after every traverse, we sort the list according to the value. After several traversal, we could get the final results.

Question 2

For question 2, we just only change the parameter k in the function question 1, and select the top k results, so we could finish the question 2 Extending Viterbi for top-k Parsing.