CSCI 338: Quiz 2

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Problem 1

Based on what we covered on March 5 and 8 regarding the Turing machines, list at least 3 differences between a Turing machine and PDA.

1. A PDA uses a stack, which means it is restricted to reading/writing to only the top element of the stack (LIFO). Whereas the Turning machine head may access any position on an infinite tape.

2. There are some models a PDA cannot describe, while a Turing machine can do everything that a real computer can do. For example, PDA are disadvantaged, and cannot work for:
   $a^m b^{m+n} c^n \mid m \geq 0, n \geq 0$

3. A PDA has the condition $r_m \in F$ such that, the accept state occurs at the input end. The Turning machine has special state for rejecting or accepting to take effect immediately.

4. The formal definition of a PDA contains no explicit mechanism to allow the PDA to test for an empty stack. In many models of the Turning machine, a symbols is used at the end of the tape to allow testing for the end.