CS453 Spring 12 Midterm Test 1
Scanning and Parsing

Student ID:
Student Name:

1. In some programming languages a quote inside a string is represented by two quotes, for example "a""b" represents the string: letter a, quote, letter b, "hi" represents the string: letter h, letter i , and "" represents the empty string.

a) Create an NFA defining such strings (assume lower case letters and quotes only).

b) Transform your NFA into a DFA.

2. We expand the expression grammar with an assignment statement:

1: S → id = E 2: E → T E' 3: E' → + T E'
4: E' → ε 5: T → F T' 6: T' → * F T'
7: T' → ε 8: F → id 9: F → (E)

a) Augment the grammar and create nullable, first and follow

b) Produce the LL(1) Predictive Parse Table for the augmented grammar.

3. Given an augmented, grammar for bracket nests:

0: S' → S $ 1: S → (S) S 2: S → id

a) Show a rightmost derivation of (id) id$

b) Produce the LR(0) State Diagram for the above grammar

c) Produce the LR(0) parse table.