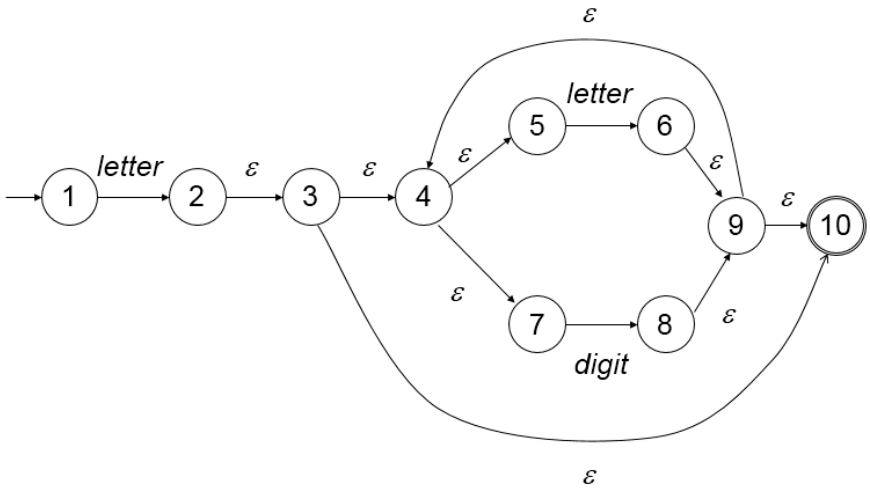
Midterm 2014 (Compiler) Name: _____ Grade:_____

1. (10%) Use one example to show that the following grammar is ambiguous.

stat → **if** cond **then** stat
| **if** cond **then** stat **else** stat
| other-stat

2. (10%) For the following NFA, find the corresponding DFA with the minimum number of states..



3. (10%) Reduce the following transition table.

	Input symbols				
States	δ	+	—	.	d	ε
	S	A	A			A
	A				B, C	E
	B				B	F
	C			D	C	
	D				D	F
	E			G	E	
	(F)					
	G				H	
	H				H	F

4. (10%). Is the following grammar LL(1) ? Explain why ?

S→ABBA

A→a

A→ε

B→b

B→ε

5. (20%) Lab.

請用簡短的敍述回答以下問題.

(1) 在 Lex 中你如何定義代表 tab 以及換行符號的 token，請寫出其 Regular Expression?

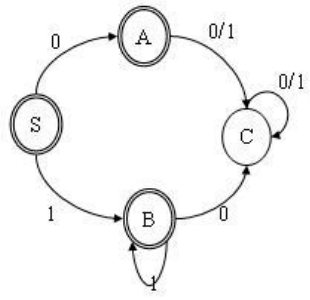
(2) 在 lex 中，被 regular expression 辨認出來的 token 會存放到哪個變數中？

(3) BANANA$ 這組 regular expression 所代表的是何種 token?

(4) 你如何處理規格書中沒有定義的字元(例如 #)？

(5) 你如何判斷一個字串超過 30 個字？

6. (10%) For the following FSM, write down the related production rules (for example, C->0C, C->1C).



7. (30%) For the following grammar:

<E> ::= <T> <E'>

<E'> ::= + <T> <E'> | ε

<T> ::= <F> <T'>

<T'> ::= * <F><T'> | ε

<F> ::= (<E>) | id

(a) Find First and Follow sets (for each nonterminal symbol). (10%)

(b) Create its parsing table. (10%)

(c) Shows the move made by predictive parser on input id+ id * id (based on a stack). (10%)