

**CSCE 330 Fall 2011**  
**QUIZ 3**  
Assigned Tuesday, 2011-09-08

1. Give a leftmost derivation of {b := 9;} from the following EBNF grammar. (This is the same question given in quiz 2.)

```
<program> -> {<statement>*}
<statement> -> <assignment> | <conditional> | <loop>
<assignment> -> <identifier> := <expr>;
<conditional> -> if <expr>{<statement>+} | if <expr>{<statement>+}else{<statement>+}
<loop> -> while <expr> {<statement>+}
<expr> -> <identifier> | <number> | (<expr>) | <expr><operator><expr>
<operator> -> + | - | * | / | = | <> | < | > | <= | >=
<identifier> -> <letter> <ld>*
<ld> -> <letter>|<digit>
<number> -> <digit>+
<letter> -> a | b | c | ... |z
<digit> -> 0 | 1 | ... | 9
```

**Answer:** <program> => {<statement>}  
=> {assignment} => {<identifier> := <expr>;} =>  
=> {<letter> := <expr>;} => {b := <expr>;} =>  
{b := <number>;} => {b := <digit >;} => {b := 9;}

2. Give a parse tree for the same derivation.

**Answer:** Not provided.