

Homework 3

Nikhil Unni (nunni2)

2. (a) A simple example will show that the parse tree is ambiguous.
If we wanted “if condition then if condition then a=1 else a=1”, this could be interpreted as “if condition then (if condition then (a=1)) else (a=1)” or “if condition then (if condition then (a=1) else (a=1))”.
- (b) This can be remedied pretty easily by just adding an “endif” part of the grammar. The new grammar is now:

$$\text{STMT} \rightarrow \langle \text{ASSIGN} \rangle | \langle \text{IF-THEN} \rangle | \langle \text{IF-THEN-ELSE} \rangle$$
$$\text{IF-THEN} \rightarrow \text{if condition then } \langle \text{ENDIF-STMT} \rangle$$
$$\text{ENDIF-STMT} \rightarrow \langle \text{ASSIGN} \rangle | \langle \text{IF-THEN} \rangle$$
$$\text{IF-THEN-ELSE} \rightarrow \text{if condition then } \langle \text{STMT} \rangle \text{ else } \langle \text{STMT} \rangle$$

This will right associate the “else” of any expression.