

Here is a grammar for if statements:

S -> if E then S

S -> if E then S else S

S -> other

Q1. Why is this grammar ambiguous?

Q2. Which of the two parse trees in Q1 will you choose to be the correct one?
What rule are you applying to make that decision?

Q3. Disambiguate the grammar in Q1 without adding any terminals to your grammar.
Your new grammar should preserve the semantics of the first one and incorporate the rule in Q2.