CSC 455 - Assignment 2

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Using the following grammer, identify which of the sentences is valid.

$$< S > \rightarrow < A > a < B > b$$
$$< A > \rightarrow < A > b \mid b$$
$$< B > \rightarrow < B > a \mid a$$

1. baab

2. bbbab

3. bbaaaaa

4. bbaab

Solution:

The two valid sentences are "baab" and "bbaab".

The first grammar rule indicates that any valid sentence must end with 'b'. The second grammar rule recursively indicates any valid sentence must begin with a series of 'b', with length ≥ 1. The third grammer rule recursively indicates any valid sentence must contain a series of 'a' between the 'b', with length ≥ 1 immediately preceded by an 'a'.

The sentence "bbbab" breaks the third rule, as there are not enough 'a'.

The sentence "bbaaaaa" breaks the first rule, as there is no 'b' at the end.