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*CS3210*

*HW #1*

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For each of the regular grammars below, classify them as either left or right linear and then answer yes/no whether each word can be generated from the grammar (if you answer yes, show the sequence of productions to generate the word).

1. G = ({S, A, B}, {a, b}, P, S). **Right linear grammar, because it is a form of A → wB| w**

P = {S → aA, A → bB | ε, B → aA}

a **Yes**, it is in the grammar, S → aA then A → ε = aε = a

aba **Yes** it is in the grammar S → aA then A → bB, abB, then B → aA => abaA =abaε = aba

bb **No** there is no b in the S

ab **NO**  there is no grammar which produces b

1. G = ({S, A}, {0, 1}, P, S). **Left linear grammar, because it is a form of A → Bw| w**

P = {S → A0, A→01|ε}

00 **No** there is no S → 0

ϵ **No** , there is no S → ϵ

010 , **No** there is no S → 0

0101010, **Yes** S → A0, A→01