

**Course:** SE312 Theory of Computing (Section: B)  
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**Lab 09**

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1. Consider the following context-free grammar (CFG) for palindromes:

$$P \rightarrow \epsilon$$

$$P \rightarrow 0$$

$$P \rightarrow 1$$

$$P \rightarrow 0P0$$

$$P \rightarrow 1P1$$

Write a program to take a string as input and show derivation of the string using the above CFG.

**Example**

**Input:** 101

**Output:**  $P \Rightarrow 1P1 \Rightarrow 101$

**Input:** 10101

**Output:**  $P \Rightarrow 1P1 \Rightarrow 10P01 \Rightarrow 10101$

**Input:** 101010

**Output:** Not in this grammar