

## University of Dhaka Institute of Information Technology (IIT) Bachelor of Science in Software Engineering (BSSE)



Course: SE312 Theory of Computing (Section: B)
Instructors: Dr. Naushin Nower, Professor, IIT, DU
Toukir Ahammed, Lecturer, IIT, DU

**Lab 09** 

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 => 1P1 => 101

**Input**: 10101

**Output**: P => 1P1 => 10P01 => 10101

**Input**: 101010

**Output**: Not in this grammar