Fr. C. Rodrigues Institute of Technology, Vashi
Department of Computer Engineering

Amroz Siddiqui

Course Code: CSDL7013 | Academic Year: Second Half - 2022
Course Name: Natural Language Processing Lab | Branch/Semester: Computer Engineering / VII

Name: _____

Roll No.: _____

Lab.: 07

1. **Title:** CKY Algorithm
2. **Objective/Aim:** To illustrate CKY Algorithm for string recognizer for a subset of English Language
3. **Tools/Techniques/Technology Used:** python
4. **Due Date:** Friday September 30, 2022
5. **Lab Instructors:**
   - Amroz Siddiqui
   - Ms. Padmashree

- A grammar file is provided for reference.
- Create a similar one for your grammar.

Solve the following exercises:

1. *[05 Marks]* Consider the following grammar
   $S \longrightarrow VB\ \ NP$
   $NP \longrightarrow DT\ \ NN$
   $DT \longrightarrow$ **The** | **A** | **That** | **This**
   $VB \longrightarrow$ **Walk** | **Talk** | **Eat** | **Read**
   $NN \longrightarrow$ **Book** | **Chocolate** | **Apple** | **Paper**
   Build a code snippet in Python that implements CKY algorithm and checks whether the following strings are accepted by the given grammar.
   - Eat That Chocolate
   - Read This Paper
   - Walk The Talk

2. *[05 Marks]* Perform the above exercise for this grammar. Check some sentences.

   $S \longrightarrow VP \;\; PP$

   $VP \longrightarrow DT \;\; VB$

   $PP \longrightarrow Prep \;\; NP$

   $NP \longrightarrow DT \;\; NN$

   $NN \longrightarrow JJ \;\; NN$

   $DT \longrightarrow$ **The** | **A**

   $Prep \longrightarrow$ **of** | **in**

   $VB \longrightarrow$ **Whispering** | **Killing** | **Screaming** | **Sacrifice** | **Haunting**

   $JJ \longrightarrow$ **Mysterious** | **Ominous** | **Dark** | **Bleeding** | **Possessed**

   $NN \longrightarrow$ **Ghoul** | **Castle** | **Witch** | **Vampire** | **Forest**

Checklist for exercises on **CKY Algorithm**

The exercises have been designed with specific learning objectives. The following self-assessment list should give you a fair idea of the extent to which you have learnt the expected material. Please respond to the statements after doing the exercises with ratings between 1 and 10. (1 being the lowest)

1. I know how to implement CKY Algorithm in python: _____
2. I know how to build the table used in CKY algorithm in Python: _____
3. I know how to parse strings and check acceptability in a given grammar in Python: _____