PLT Tutorial Sheet

Week 4, AY: 2021-22

**1] (From class) Derive the predict sets for the grammar below, showing which elements are first-set elements and which are follow-set elements. Illustrate how f+v(f) is/isn’t a language instance:**

E-> vT

E-> P(E)

P-> l

P-> f

T->+E

T->lambda

**2] Make a Post production system for strings consisting of ‘A’ and ‘Q’ only. All ‘A’s must come before all ‘Q’s**

**Show how you would make the language instance AAAQQQQQ from that production system.**

**Show how you might adapt this Post production system so that only strings with equal numbers of As and Qs are allowed.**

**3] Generate the language instances (8+5)\*3 and (7\*6/3)! From the informal schema below that describes mathematical expressions:**

**Starters:**

Every literal symbol is an expression;

Every variable symbol is an expression;

**Rules:**

Is E1 is an expression, then (E1) is an expression;

If o is a unary prefix operator and E1 is an expression then oE1 is an expression;

If o is a binary infix operator and E1, E2 are expressions then E1 o E2 is an expression;

If o is a unary postfix operator and E1 is an expression then E1o is an expression;

If o is a n-ary prefix operator and E1, E2… En are expressions then o(E1, E2…En) is an expression;

If o is a n-ary postfix operator and E1, E2… En are expressions then (E1, E2…En)o is an expression;

**4] Create a CFG and Regular grammar that describes the following language instances:**

**There was a young lady from Clare**

**There was a wild goose in a cave**

**There was an old mouse from Nantucket**

**There was a large deer in a field**

**There was a daft geezer from Gent**

REST2 -> wild NOUNPHRASE

REST2 -> old NOUNPHRASE

REST2 -> large NOUNPHRASE

REST2 -> daft NOUNPHRASE

NOUNPHRASE ->…

**Show how the grammars allows the generation of “There was a young mouse in a cave”**