CD: COMPILER DESIGN
CD: UNIT-2 09/2022

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PREPARED FOR
Engineering Students
All Engineering College

CD: COMPILER DESIGN

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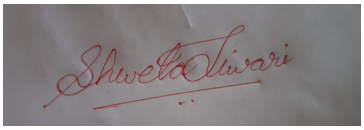

September 2022

TOPIC On : QUESTION ON-

Left Recursion, Left Factoring, FIRST() AND FOLLOW()

1. QUESTION ON- Eliminate Left Recursion

1. Consider the following grammar and eliminate left recursion-

   $A \rightarrow ABd / Aa / a$

   $B \rightarrow Be / b$

2. Consider the following grammar and eliminate left recursion-

   $E \rightarrow E + E / E \times E / a$

3. Consider the following grammar and eliminate left recursion-

   $E \rightarrow E + T / T$

   $T \rightarrow T \times F / F$

   $F \rightarrow id$

4. Consider the following grammar and eliminate left recursion-

   $S \rightarrow (L) / a$

   $L \rightarrow L , S / S$

5. Consider the following grammar and eliminate left recursion-

   $S \rightarrow S0S1S / 01$

6. Consider the following grammar and eliminate left recursion-

   $S \rightarrow A$

   $A \rightarrow Ad / Ae / aB / ac$

   $B \rightarrow bBc / f$

7. Consider the following grammar and eliminate left recursion-

   $A \rightarrow AA\alpha / \beta$

8. Consider the following grammar and eliminate left recursion-

   $A \rightarrow Ba / Aa / c$

   $B \rightarrow Bb / Ab / d$

9. Consider the following grammar and eliminate left recursion-

   $X \rightarrow XSb / Sa / b$

   $S \rightarrow Sb / Xa / a$

10. Consider the following grammar and eliminate left recursion-

$S \rightarrow Aa / b$

A → Ac / Sd / ∈

2. QUESTION ON- Eliminate Left Factoring

1. Do left factoring in the following grammar-

   S → iEtS / iEtSeS / a

   E → b

2. Do left factoring in the following grammar-

   A → aAB / aBc / aAc

3. Do left factoring in the following grammar-

   S → bSSaaS / bSSaSb / bSb / a

4. Do left factoring in the following grammar-

   S → aSSbS / aSaSb / abb / b

5. Do left factoring in the following grammar-

   S → a / ab / abc / abcd

6. Do left factoring in the following grammar-

   S → aAd / aB

   A → a / ab

   B → ccd / ddc

3. QUESTION ON- Find FIRST( ) And FOLLOW( )

1. Calculate the first and follow functions for the given grammar-

S → aBDh

B → cC

C → bC / ∈

D → EF

E → g / ∈

F → f / ∈

2. Calculate the first and follow functions for the given grammar-

   S → A

   A → aB / Ad

   B → b

   C → g

3. Calculate the first and follow functions for the given grammar-

   S → (L) / a

   L → SL'

   L' → ,SL' / ∈

4. Calculate the first and follow functions for the given grammar-

   S → AaAb / BbBa

   A → ∈

   B → ∈

5. Calculate the first and follow functions for the given grammar-

   E → E + T / T

   T → T x F / F

   F → (E) / id

6. Calculate the first and follow functions for the given grammar-

$S \rightarrow ACB / CbB / Ba$

$A \rightarrow da / BC$

$B \rightarrow g / \in$

$C \rightarrow h / \in$