Excercise-2

1.

(1) Given Grammar perform Left factoring

$A \longrightarrow iRpb \mid iRpet$

$R \longrightarrow r$

identify common prefix i.e iRp

$A \longrightarrow iRpX$

$X \longrightarrow b \mid et$

$R \longrightarrow r$

(2) Perform Left factoring for following grammar

$T \longrightarrow cPr \mid cPbpq$

$P \longrightarrow p$

Common Prefix cP

∴ Create a non ~~Technical~~ terminal Y to handle the choices r and bpq that follows cP.

Thus. left factored grammar.

$$T \longrightarrow cPy$$
$$y \longrightarrow r \mid bpq$$
$$P \longrightarrow p$$

3. Perform Left factoring for below grammar

$$A \longrightarrow aAB \mid aA$$
$$B \longrightarrow bB \mid b$$

Common Prefix :- aA

A new non terminal X is introduced to handle choices B & t (empty) that follows aA.

left factored grammar

$$A \longrightarrow aAX$$
$$X \longrightarrow B \mid t$$
$$B \longrightarrow bB \mid b$$

4. Identify first & follow for each non terminal

$S \rightarrow ABCDE$
$A \rightarrow a \mid \varepsilon$
$B \rightarrow b \mid t$
$C \rightarrow c$
$D \rightarrow d \mid \varepsilon$
$E \rightarrow e \mid \varepsilon$

Nonterminal	First	Follow
S	a b c	$
A	a, t	b, c
B	b, t	c
C	c	d, e,
D	d, t	e, $
E	e, t	$

5 Identify the first & follow for each non terminal for the following gram.

$E \rightarrow E+T \mid T$
$T \rightarrow T*F \mid F$
$F \rightarrow (E) \mid id$

Non terminal	First	Follow
E	(, id	+,)
T	(, id	*, $
F	(, id	$

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