

COMPILER CONSTRUCTION HOME TASK

M. Zain Paracha 200901076 CS-01(A)

Q₁: Parse tree with backtracking:-

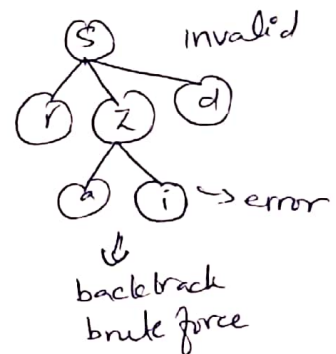
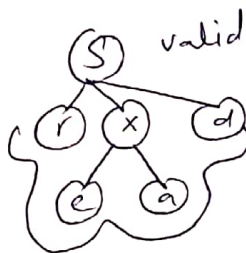
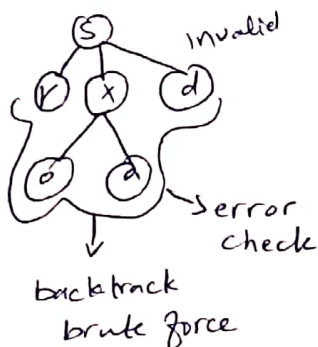
$S \rightarrow rXd | rZd$

$X \rightarrow oa | ea$

$Z \rightarrow ai$

Solution: Input string = read

invalid $\begin{array}{c} rXd \\ \downarrow \downarrow \downarrow \\ road \end{array}$ $\begin{array}{c} rZd \\ \downarrow \downarrow \downarrow \\ raid \end{array}$ invalid $\begin{array}{c} rXd \\ \downarrow \downarrow \downarrow \\ read \end{array} \rightarrow \text{valid}$



Q₂: First and follow:-

$S \rightarrow T$

$T \rightarrow LB | LC$

$L \rightarrow e$

$C \rightarrow B | e$

$B \rightarrow e$

Solution:-

$S \rightarrow T$

$T \rightarrow LB|LC$

$L \rightarrow \epsilon$

$C \rightarrow B|\epsilon$

$B \rightarrow \epsilon$

First for (B) = ϵ

First for (C) = $B, \epsilon \rightarrow \epsilon, \epsilon$
 $L \rightarrow \epsilon$

First for (L) = ϵ

First for (T) = $L, L \rightarrow \epsilon L \rightarrow \epsilon \epsilon$
 $L \rightarrow \epsilon$

First for (S) = $T \rightarrow \epsilon \epsilon$

END