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Ans to the ques no:- 01

A

$S \rightarrow 1A$

$A \rightarrow 0A \mid 1A \mid \varepsilon$

B

Here, WW^R means the strings that starts and ends with the same reversed string. As two strings will join, it will be an even palindrome.

$S \rightarrow 1S1 \mid 0S0 \mid \varepsilon$

C

$S \rightarrow A001A$

$A \rightarrow 0A \mid 1A \mid \varepsilon$

D

$S \longrightarrow 0\ S\ 0 \mid 1$

E

$S \longrightarrow 0\ S\ 1 \mid A$

$A \longrightarrow 1A \mid \varepsilon$

F

Here, $1^i 0\ 1^j 0\ 1^{i+j} = 1^i 0\ 1^j 0\ 1^i\ 1^j$

$= 1^i\ 0\ 1^j 0\ 1^j\ 1^i$

$S \longrightarrow 1\ S\ 1 \mid A$

$A \longrightarrow 0\ B$

$B \longrightarrow 1\ B\ 1 \mid 0$

(G)

Here, 0^{3n} ω 1^{2n} = $(0^3)^n$ ω $(1^2)^n$

= $(000)^n$ ω $(11)^n$

∴ S → 000 S 11 | A

A → B 0 B 0 B

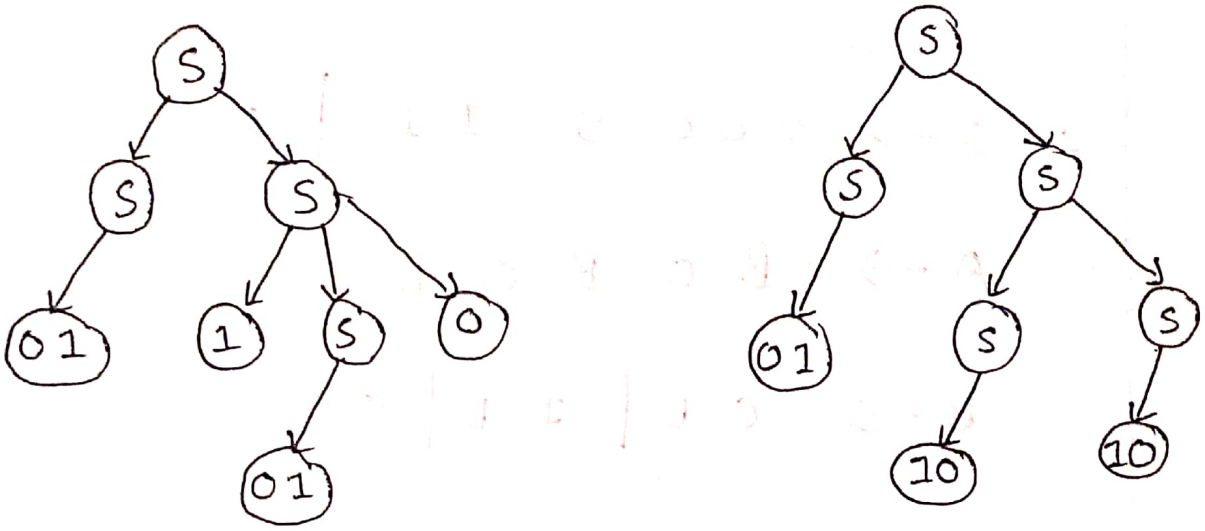
B → 0 B | 1 B | ε

— ∘ — × — ∘ —

Ans to the ques no:-2

A

For the string 011010, parse trees for the grammar:-



Since there are more than one parse tree available, the grammar is ambiguous.

B

Two such strings are 111000
and 000111.

—— o —— x —— o ——