⑤ Ambiguous Grammer & An ambiguous grammer is a context free grammer for which there exist a string that can have more than one leftmost or rightmost derivation or parse tree

Example →

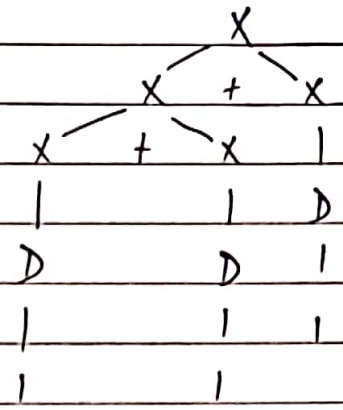
$X \rightarrow X+X \mid X*X \mid D$

$D \rightarrow 0 \mid 1 \mid 2 \mid 3 \mid 4 \mid 5 \mid 6 \mid 7 \mid 8 \mid 9$

Now, Suppose we have to generate a string 1+1+1

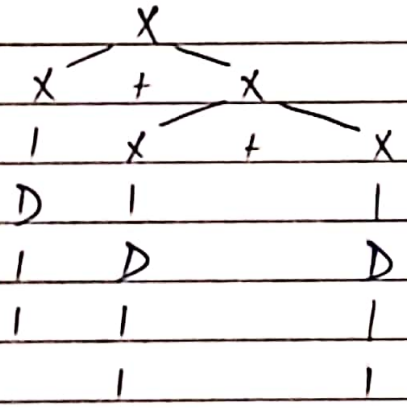
Using Left Most Derivation

$X \rightarrow X + X$
$X \rightarrow X + X + X$
$X \rightarrow D + X + X$
$X \rightarrow 1 + X + X$
$X \rightarrow 1 + D + X$
$X \rightarrow 1 + 1 + X$
$X \rightarrow 1 + 1 + D$
$X \rightarrow 1 + 1 + 1$



Using RightMost Derivation

$X \rightarrow X + X$
$X \rightarrow X + X + X$
$X \rightarrow X + X + D$
$X \rightarrow X + X + 1$
$X \rightarrow X + D + 1$
$X \rightarrow X + 1 + 1$
$X \rightarrow D + 1 + 1$
$X \rightarrow 1 + 1 + 1$



According to Definition we get two different Parse tree for the same string with the same grammer.
Therefore we can conclude that given grammer is ambiguous.