Teoría Computacional
Gramáticas libres de contexto

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Se creará una cadena con 10 sentencias if-then-else, mediante una gramática libre de contexto.

Esta tendrá la estructura:

$< statement >::= if < condition > then < statement > [; else < statement >]$

Ademas se usaran las siguientes reglas:
$S \rightarrow iCtSA$
$A \rightarrow ; eS|\epsilon$
Donde:
$i = if$
$t = then$
$e = else$
$C = condition$
$S = statement$
Construcción de la gramática.

1. $S \rightarrow iCtSA$
   $A \rightarrow ; eS$
   $iCtS; eS$

2. $S \rightarrow iCtSA$
   $A \rightarrow ; eS$
   $iCtS; eS \rightarrow iCtS; eiCtS; eS$

3. $S \rightarrow iCtSA$
   $A \rightarrow \epsilon$
   $iCtS; eiCtS; eS \rightarrow iCtS; eiCtiCtS; eS$

4. $S \rightarrow iCtSA$
   $A \rightarrow ; eS$

$iCtS; eiCtiCtS; eS \rightarrow iCtiCtS; eS; eiCtiCtS; eS$

5. $S \rightarrow iCtSA$
   $A \rightarrow; eS$
   $iCtiCtS; eS; eiCtiCtS; eS \rightarrow iCtiCtS; eS; eiCtiCtS; eiCtS; eS$

6. $S \rightarrow iCtSA$
   $A \rightarrow \epsilon$
   $iCtiCtS; eS; eiCtiCtS; eiCtS; eS \rightarrow iCtiCtiCtS; eS; eiCtiCtS; eiCtS; eS$

7. $S \rightarrow iCtSA$
   $A \rightarrow \epsilon$
   $iCtiCtiCtS; eS; eiCtiCtS; eiCtS; eS \rightarrow iCtiCtiCtS; eiCtS; eiCtiCtS; eiCtS; eS$

8. $S \rightarrow iCtSA$
   $A \rightarrow \epsilon$
   $iCtiCtiCtS; eiCtS; eiCtiCtS; eiCtS; eS \rightarrow iCtiCtiCtS; eiCtS; eiCtiCtS; eiCtiCtS; eS$

9. $S \rightarrow iCtSA$
   $A \rightarrow \epsilon$
   $iCtiCtiCtS; eiCtS; eiCtiCtS; eiCtiCtS; eS \rightarrow$
   $iCtiCtiCtS; eiCtiCtS; eiCtiCtS; eiCtiCtS; eS$

10. $S \rightarrow iCtSA$
    $A \rightarrow; eS$
    $iCtiCtiCtS; eiCtiCtS; eiCtiCtS; eiCtiCtS; eS \rightarrow$
    $iCtiCtiCtiCtS; eS; eiCtiCtS; eiCtiCtS; eiCtiCtS; eS$

Resultado

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if <condition>
then:
        if<condition>
        then:
                if<condition>
                then:
                        if<condition>
                        then:
                                <statement>
                        ;else:
                                <statement>
        ;else:
                if<condition>
                then:
                        if<condition>
                        then:
                                <statement>
;else:
        if <condition>
        then:
                if <condition>
                then:
                        <statement>
        ;else:
                if<condition>
                then:
                        if<condition>
                        then:
                                <statement>
                ;else
                        <statement>
```