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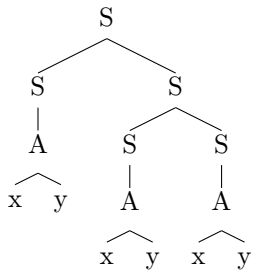
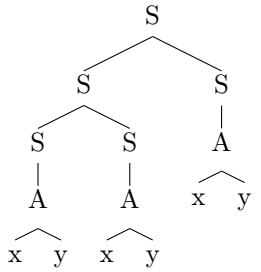
CS331 HW1

January 27 2019

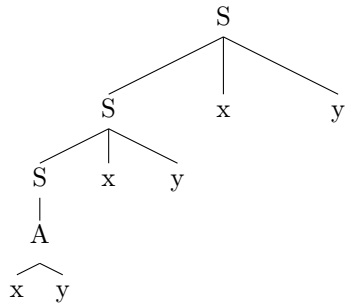
1. The message displays *Fifty fearless firefighters found foliage for friendly florists.*
2. (a) C++ type checking is primarily static.
   (b) The difference between the two is that static type checking is done before runtime, whereas dynamic type checking occurs at runtime.
3. String 5 is generated.
4. An equal number of 0 or more x's on either side of 0 or more pairs of concatenated y's.
5. The strings that are matched by the regular expression are strings 3, 4, 5, and 7.
6. a(a|b)*
7. (a) Leftmost Derivation
   S
   SS
   AS
   xyS
   xyA
   xyxy
   (b) Rightmost Derivation
   S
   SS
   SA
   Sxy
   Axy
   xyxy
   (c) xyxyxy
   i. parse tree 1



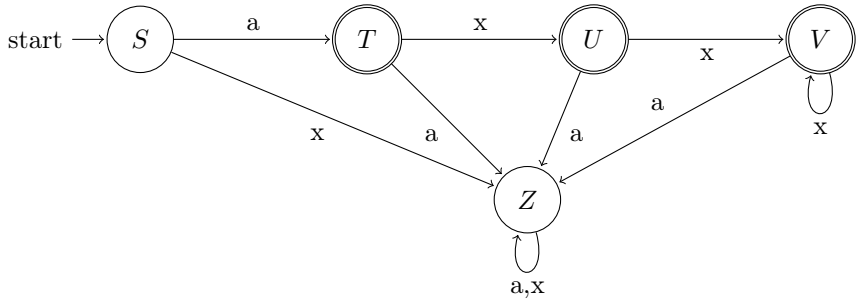
   ii. parse tree 2



   (d) Non-ambigous grammar
   S→Sxy|A
   A→xy

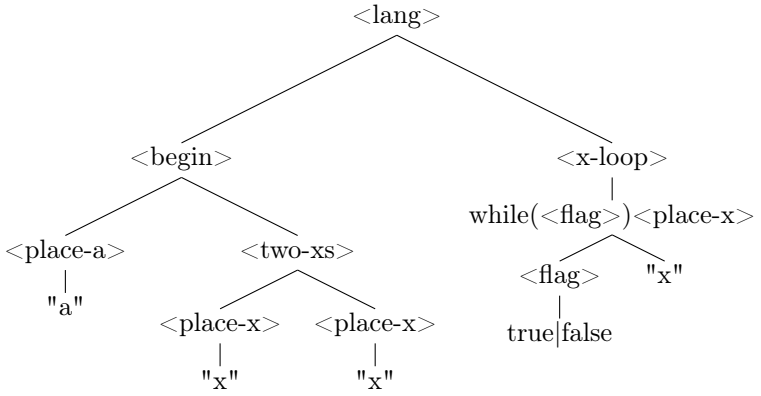


8. (a) axxx*



(b) DFA

9. <lang>::=<begin><x-loop>
<begin>::=<place-a><two-xs>
<x-loop>::=while(<flag>)<place-x>
<two-xs>::=<place-x><place-x>
<place-x>::="x"
<place-a>::="a"
<flag>::=true|false



10. My grammar is ambiguous; traversing through the grammar yields a single tree that generates the concatenation of one 'a' followed by at least two 'x's, or *axxx**.