CS-331: Assignment 1

Due on 1/30/2024

Prof. Glenn Chappell, Spring 2025, 1/30/2024

Kaleb Burris

A

BE SURE TO DRINK YOUR OVALTINE

C

1. Type checking for C++ is mostly static.
2. This means that type checking is done at compile time instead of runtime. Some cases, such as type casting, do exist, but are rare.

D

The strings generated are: 1, 4, 5.

E

The grammar describes all strings that:

- Start with one or more a's,
- Followed by 0 or more pairs of c's (cc),
- End with 1 or more b's.

F

The regex is matched by: 3, 4, 5, 7.

G

$$aa*(a|b|c)*$$

H

1. $\underline{S}$

   $\underline{S}S$

   $ab\underline{S}$

   $abab$

2. $\underline{S}$

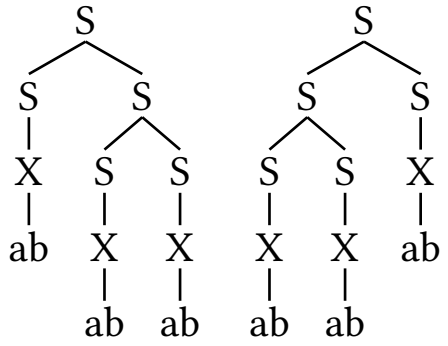
   $S\underline{S}$

   $\underline{S}ab$

   $abab$

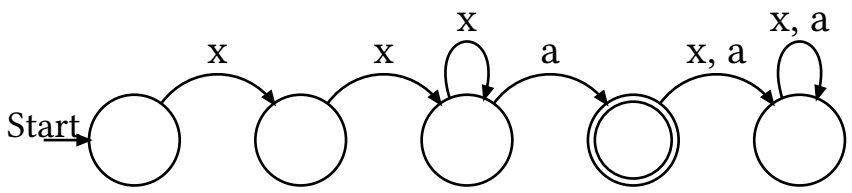
3. String: "$ababab$"

   Parse Tree 1 Parse Tree 2



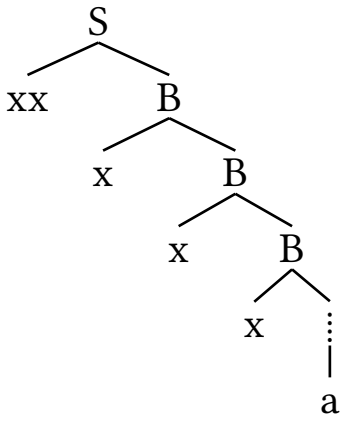
4. $S \rightarrow Sab \mid \varepsilon$

I

1. $xxx * a$
2. 

3. $S \rightarrow xxB$

   $B \rightarrow a|xB$
4. My grammar here is not ambiguous as it only has a single, potentially infinite path:



J

I had to wrap the reg-exp productions.

< reg-exp >::=< single-char >< reg-exp > | "(" < reg-exp > ")" | < single-char >< kleene > |
< reg-exp > "|" < reg-exp > | < epsilon >
< kleene >::= " * "