Checkin 7

Show the AST for (1 + x) * 2

Administrivia

P1 due "tonight"

P2 out Friday

Administrivia

Optional lab posted

Administrivia

The Quiz!

recording by midnight

LEEP2 2425 6:30 ~ 8:30

Zoom: drew.davidson.cool/zoom

Compilers.cool/zoom

7 ~ 2 cheese 1 hamburger

3 pepperoni

1 pineapple

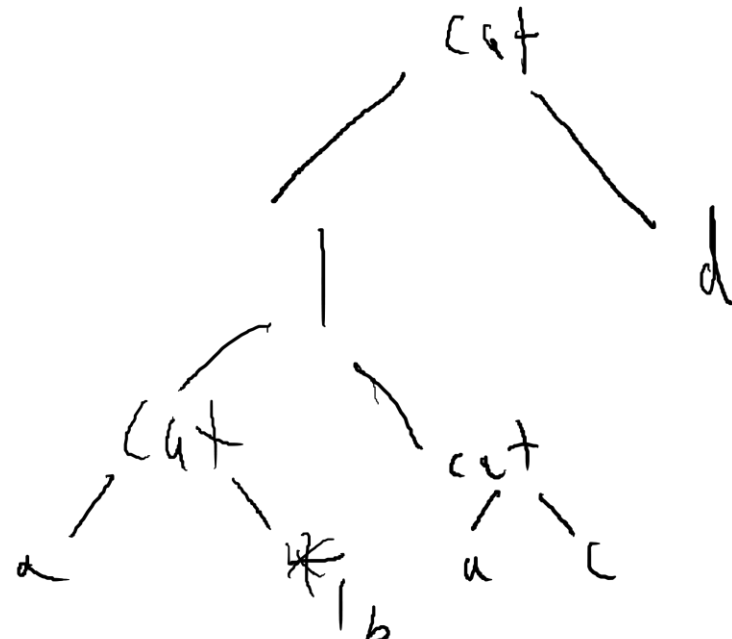# Flipped Wednesday

Written Work #2

Topics:

- Frontend stuff

Question 1

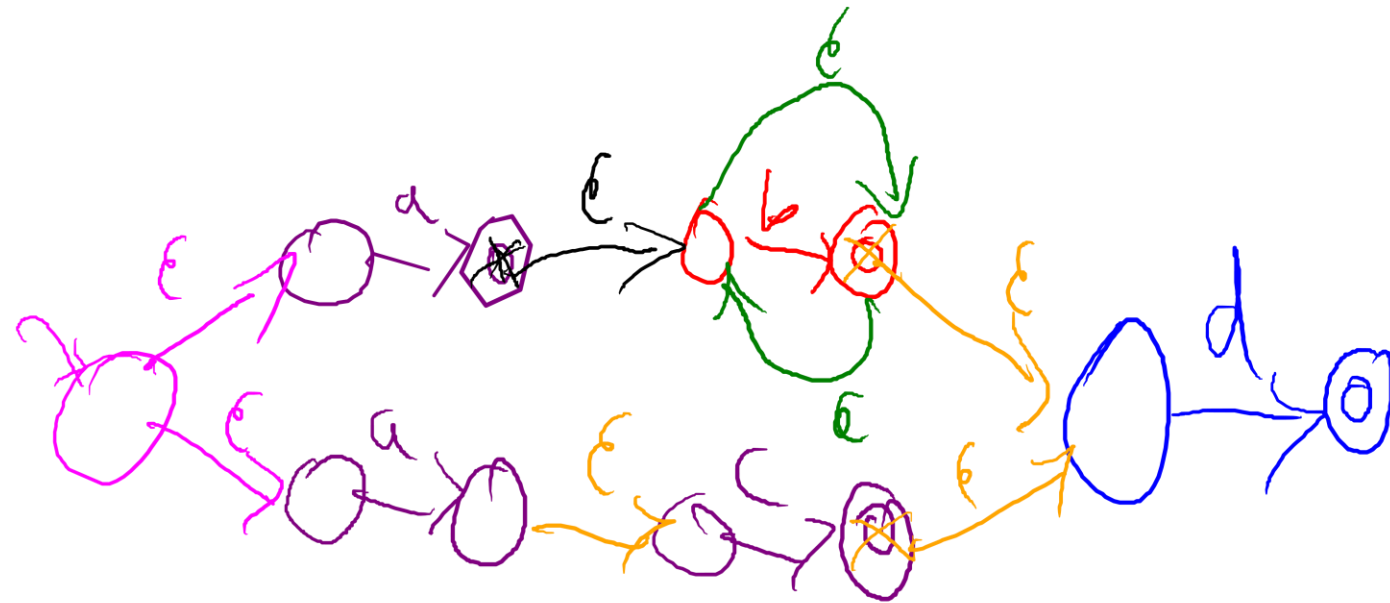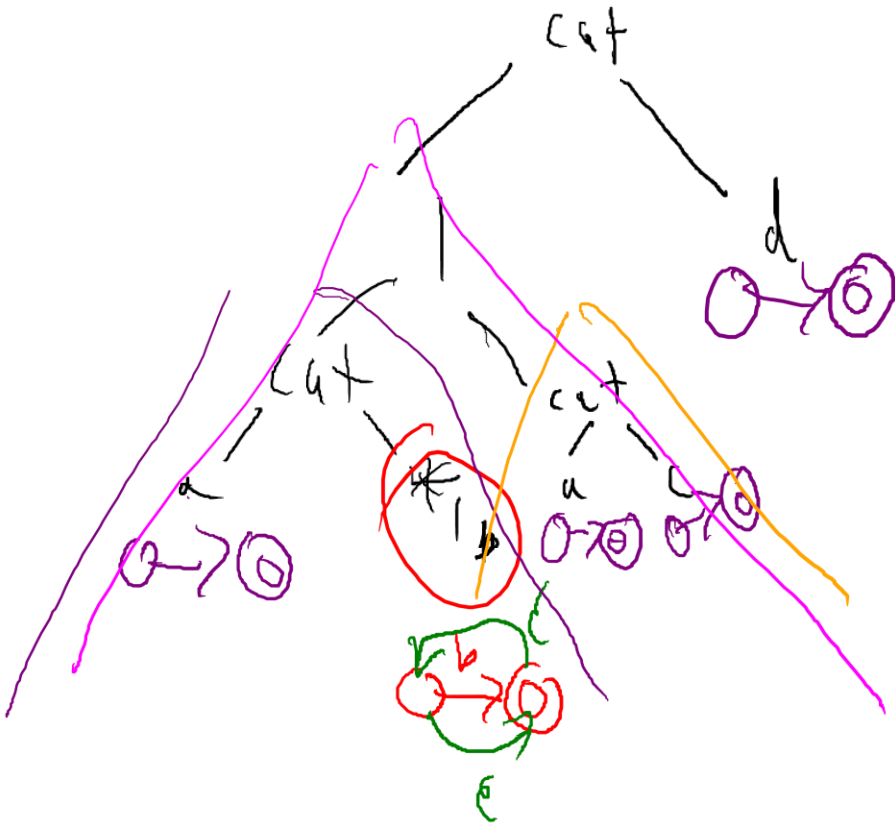Draw out the expression tree representation of the following regular expression

(ab*|ac)d

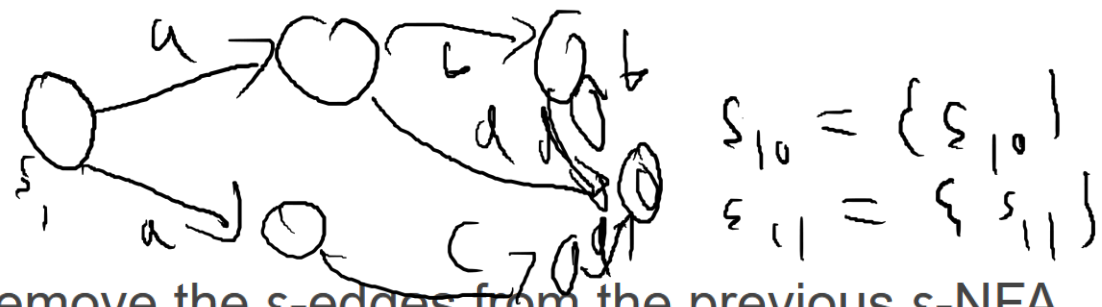Remember to respect the precedence of regex operators.

Question 2

$(ab^* | ac)d$

Convert the regular expression from above into an ε-NFA (i.e. an NFA with ε-edges) using Thompson's algorithm.

Question 3

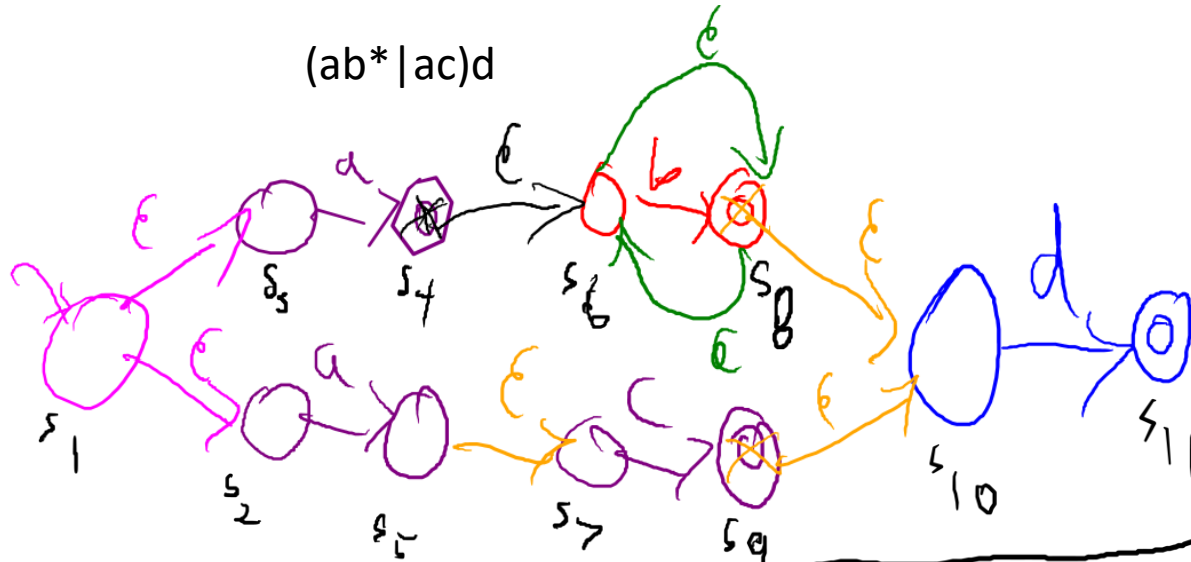Use the ε-elimination technique to remove the ε-edges from the previous ε-NFA.

(ab*|ac)d

$$S_{10} = \{S_{10}\}$$
$$S_{11} = \{S_{11}\}$$

$$\varepsilon\text{-}clse(S_1) = \{S_1, S_2, S_3\}$$

$$S_2 = \{S_2\}$$

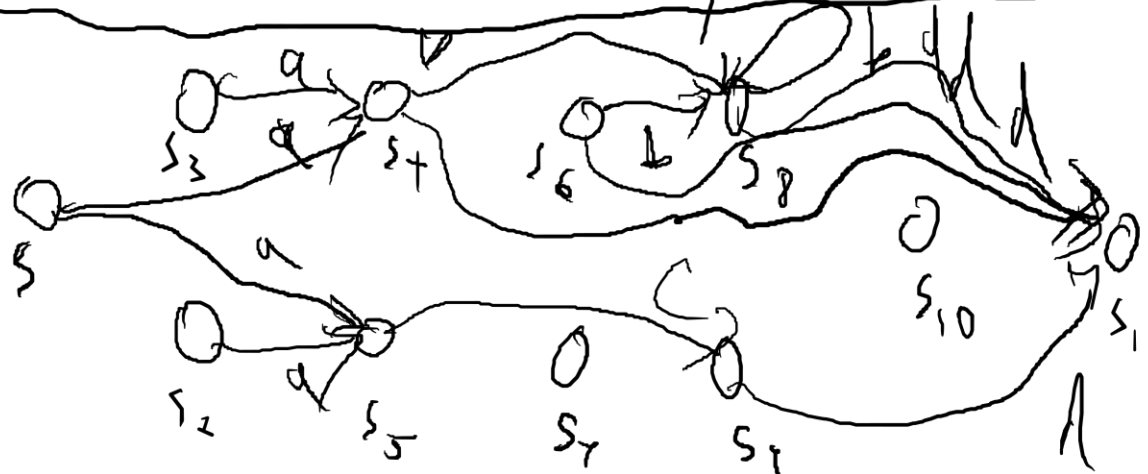$$S_3 = \{S_3\}$$

$$S_4 = \{S_4, S_6, S_8, S_{10}\}$$

$$S_5 = \{S_5, S_7\}$$

$$S_6 = \{S_6, S_8, S_{10}\}$$
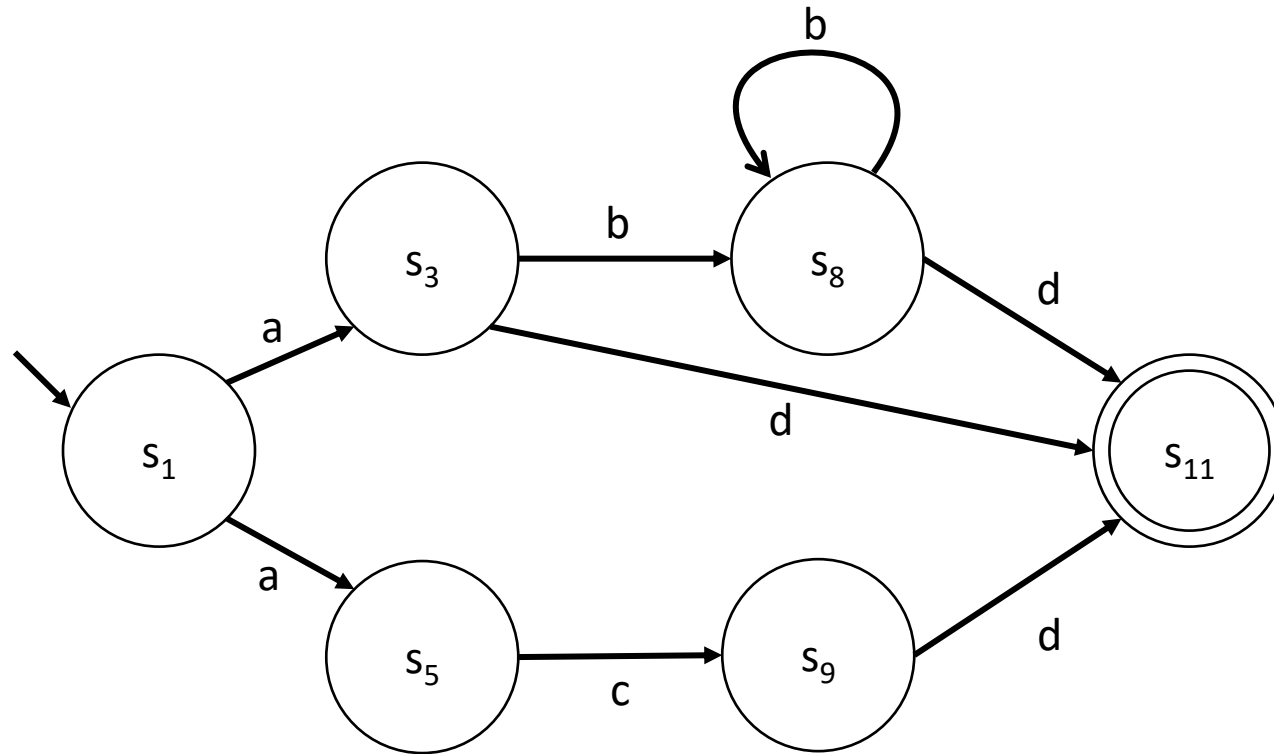
$$S_7 = \{S_7\}$$

$$S_8 = \{S_8, S_6, S_{10}\}$$

$$S_9 = \{S_9, S_{10}\}$$

Question 3

Use the ε-elimination technique to remove the ε-edges from the previous ε-NFA.

(ab*|ac)d

Question 4

Let *DotList* be a language such that:

- The empty string is in the language
- The single terminal **dot** is in the language
- Sequences of more than 1 **dot** terminal separated by the **comma** terminal are in the language. e.g.:
  - **dot comma dot**
  - **dot comma dot comma dot**

No other strings are in the language

Write an unambiguous grammar that recognizes *DotList*

$$DL ::= \varepsilon$$

$$DL ::= \text{dot comma } DL$$
$$\quad | \quad \varepsilon$$
$$\quad | \quad \text{dot}$$

$$CL ::= \text{dot comma } CL$$
$$\quad | \quad \text{dot}$$