

CSE105 - HOMEWORK 3 SOLUTIONS

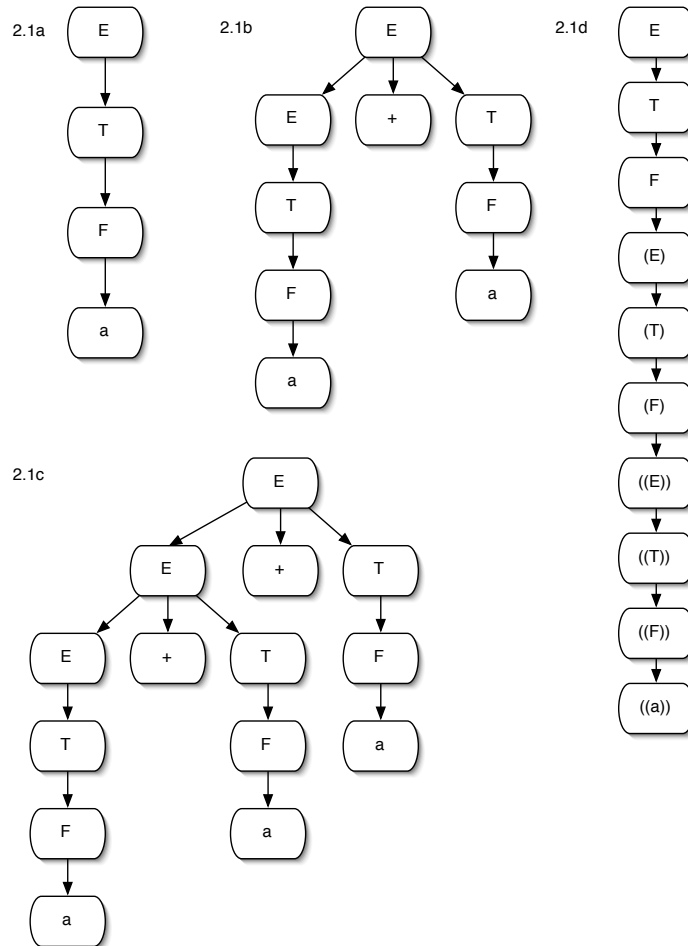
2.1 a. $E \Rightarrow T \Rightarrow F \Rightarrow a$

b. $E \Rightarrow E + T \Rightarrow E + F \Rightarrow E + a \Rightarrow T + a \Rightarrow F + a \Rightarrow a + a$

c. $E \Rightarrow E + T \Rightarrow E + T + T \Rightarrow T + T + T \Rightarrow F + T + T \Rightarrow a + T + T \Rightarrow a + F + T \Rightarrow a + a + T \Rightarrow a + a + F \Rightarrow a + a + a$

d. $E \Rightarrow T \Rightarrow F \Rightarrow (E) \Rightarrow (T) \Rightarrow (F) \Rightarrow ((E)) \Rightarrow ((T)) \Rightarrow ((F)) \Rightarrow ((a))$

Parse trees:



2.3 answer in text

2.4 a. answer in text

b.

$$S \rightarrow 0A0 \mid 1A1$$

$$A \rightarrow AA \mid 0 \mid 1 \mid \epsilon$$

c.

$$S \rightarrow 0 \mid 1 \mid SSS$$

d. answer in text

e.

$$S \rightarrow 0 \mid 1 \mid 0S0 \mid 1S1 \mid \epsilon$$

f.

$$S \rightarrow S$$