ECS 140A Homework 3 – Non-Programming

1 Compute FIRST Sets

1.1

$$FIRST(assign) = FIRST(var)$$
$$= \{a, b, c, d\}$$

1.2

$$FIRST(var) = \{a, b, c, d\}$$

1.3

$$FIRST(expr) = FIRST(simp\_expr)$$
$$= FIRST(term)$$
$$= FIRST(factor)$$
$$= \{(\} + FIRST(const) + FIRST(var)$$
$$= \{(\} + \{0, 1\} + \{a, b, c, d\}$$
$$= \{(, 0, 1, a, b, c, d\}$$

1.4

$$FIRST(simp\_expr) = FIRST(term)$$
$$= FIRST(factor)$$
$$= \{(\} + FIRST(const) + FIRST(var)$$
$$= \{(\} + \{0, 1\} + \{a, b, c, d\}$$
$$= \{(, 0, 1, a, b, c, d\}$$

1.5

$$FIRST(rel\_op) = \{==, <, >, <=, >=, ! =\}$$

1.6

$$FIRST(term) = FIRST(factor)$$
$$= \{(\} + FIRST(const) + FIRST(var)$$
$$= \{(\} + \{0, 1\} + \{a, b, c, d\}$$
$$= \{(, 0, 1, a, b, c, d\}$$

1.7

$$FIRST(add\_op) = \{+, -\}$$

1.8

$$FIRST(factor) = \{(\} + FIRST(const) + FIRST(var)$$
$$= \{(\} + \{0, 1\} + \{a, b, c, d\}$$
$$= \{(, 0, 1, a, b, c, d\}$$

1.9

$$FIRST(mul\_op) = \{*, /, \%\}$$

1.10

$$FIRST(const) = \{0, 1\}$$