CS320 Assignment 5 Arion Tripathi

KEY:

Highlight = next nonterminal to derive

- For rightmost derivation, the rightmost nonterminal will always be highlighted
- For leftmost derivation, leftmost nonterminal always highlighted

Underline = derivation result of the previous highlighted nonterminal

- 1. Goal: 12 + 2 * -07 using rightmost derivation
 - a. <expr>
 - b. <expr> * <expr>
 - c. <expr> * <u><int></u>
 - d. <expr> * <u>-<nat></u>
 - e. <expr> * -<digit><nat>
 - f. <expr> * -<digit><digit>
 - g. <expr> * -<digit>7
 - h. <expr> * -<u>0</u>7
 - i. < expr> + < expr> * -07
 - j. <expr> + <int> * -07
 - k. <expr> + <nat> * -07
 - I. <expr> + <digit> * -07
 - m. <expr> + 2 * -07
 - n. <int> + 2 * -07
 - o. <nat> + 2 * -07
 - p. <digit><nat> + 2 * -07
 - q. <digit><digit>+ 2 * -07
 - r. <digit> $\frac{2}{2} + 2 * -07$
 - s. <u>1</u>2 + 2 * –07

(Problem 2 on next page so that it can all be on one page)

2. Goal: for x = -12 to 10 do { y = 0; pass } using leftmost derivation

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a. <stmt>
b. for \langle id \rangle = \langle expr \rangle to \langle expr \rangle do \langle stmt \rangle
c. for x = \frac{\langle expr \rangle}{\langle expr \rangle} to \frac{\langle expr \rangle}{\langle expr \rangle}
d. for x = \frac{\langle int \rangle}{} to \langle expr \rangle do \langle stmt \rangle
e. for x = -\frac{\langle nat \rangle}{\langle nat \rangle} to \langle expr \rangle do \langle stmt \rangle
f. for x = -\frac{\langle digit \rangle \langle nat \rangle}{} to \langle expr \rangle do \langle stmt \rangle
g. for x = -1 < nat > to < expr > do < stmt >
h. for x = -1 < digit > to < expr > do < stmt >
i. for x = -12 to < expr> do <math>< stmt>
j. for x = -12 to \leq int \geq do \leq stmt > do
k. for x = -12 to \frac{\langle nat \rangle}{\langle nat \rangle} do \frac{\langle nat \rangle}{\langle nat \rangle}
I. for x = -12 to \frac{\text{digit}}{\text{nat}} do \frac{\text{stmt}}{\text{dot}}
m. for x = -12 to 1 < nat > do < stmt 
n. for x = -12 to 1 < digit > do < stmt >
o. for x = -12 to 10 do <stmt>
p. for x = -12 to 10 do \{ < stmts > \}
q. for x = -12 to 10 do \{ \frac{\text{stmt}}{\text{stmt}} : \frac{\text{stmt}}{\text{stm}} \}
r. for x = -12 to 10 do \{ \frac{\langle id \rangle}{} = \langle expr \rangle ; \langle stmts \rangle \}
s. for x = -12 to 10 do { < | expr> = < expr> ; < stmts> }
t. for x = -12 to 10 do { y = \frac{<expr>}{}; <stmts> }
u. for x = -12 to 10 do { y = \frac{<int>}{} ; <stmts> }
v. for x = -12 to 10 do { y = \frac{< nat>}{}; < stmts> }
w. for x = -12 to 10 do { y = \frac{\text{digit}}{\text{c}} ; \frac{\text{stmts}}{\text{c}} }
x. for x = -12 to 10 do \{y = 0; <stmts>\}
y. for x = -12 to 10 do \{y = 0; \frac{<stmt>}{\}}
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z. for x = -12 to 10 do { y = 0 ; pass }