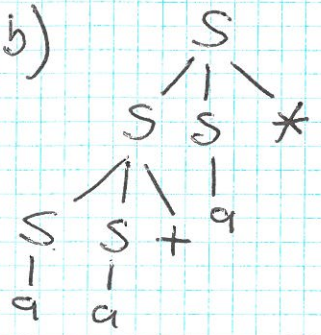
Solutions for EECS337 Homework #02

2.2.1 a) $\underline{S} \rightarrow \underline{S}S* \rightarrow \underline{S}\underline{S}+\underline{S}* \rightarrow 9\,9+9*$

b)



c) postfix for example $9_1 9_2 + 9_3 *$

where: $9_1 = 1$ $9_2 = 2$ $9_3 = 3$ $\quad 12+3*$

$\quad 33*$

$\quad 9$

2.2.2 a) $S \rightarrow 0S1 \mid 01$

output: 01, 0011, 000111, ...

$\underbrace{0\cdots0}\,\underbrace{1\cdots1}$

equal number of 0's and 1's

b) $S \rightarrow +SS \mid -SS \mid 9$

output: 9, +99, -99, +-999, +9-99

addition and subtraction of 9's in prefix format

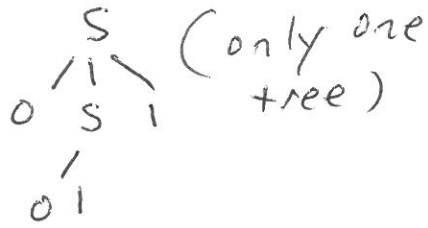
c) $S \rightarrow S(S)S \mid \epsilon$

output: empty, ( ), (( )), ( )( ), ( )( )( )

zero or more sets of parentheses in sequence or embedded

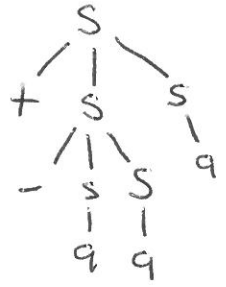
Solutions for EECS 337 Homework #02

2.2.3 a) is NOT ambiguous for 0011



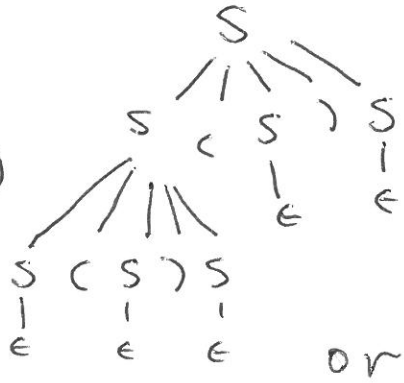
(only one tree)

b) is NOT ambiguous for +-999

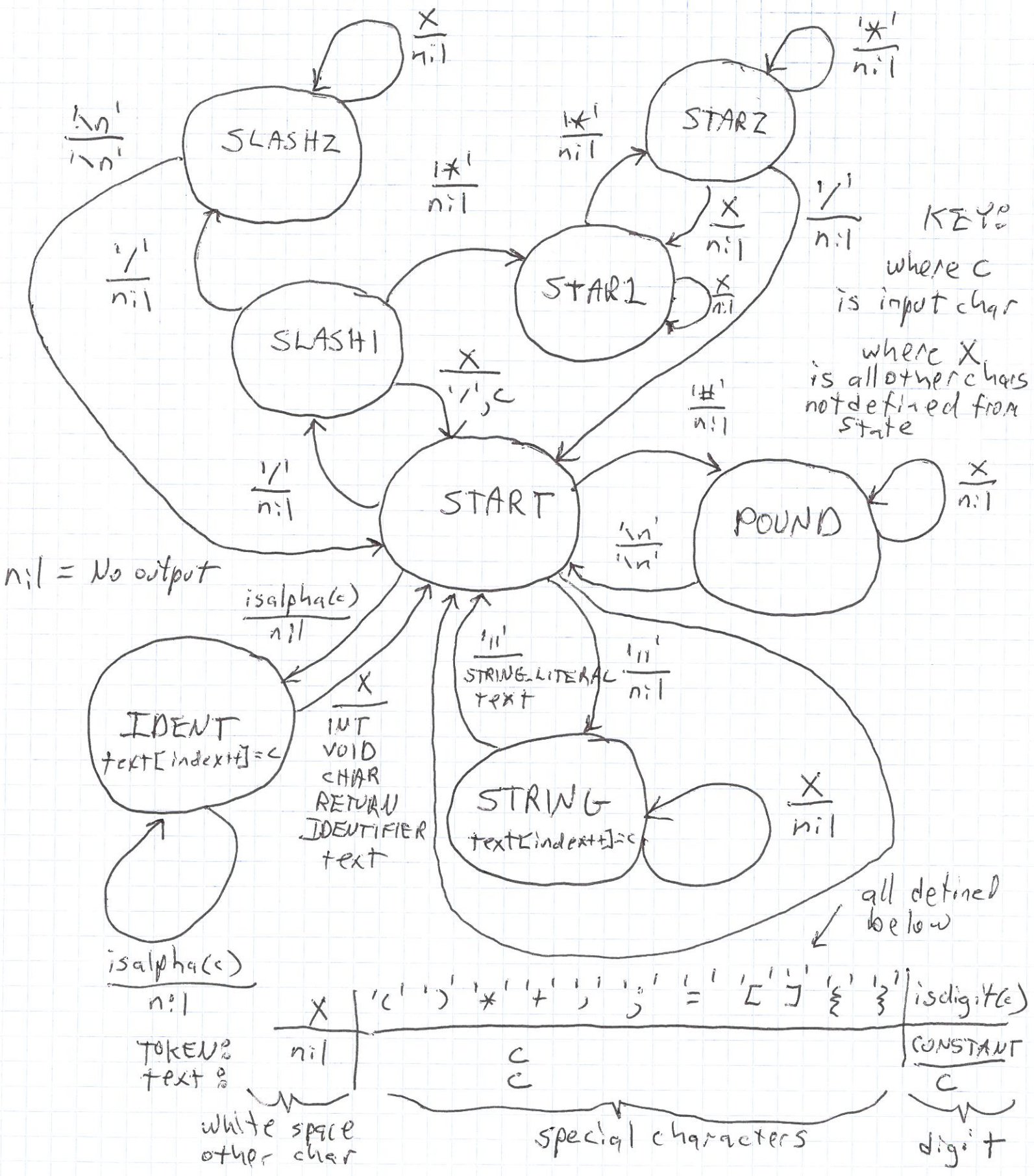


c) is ambiguous for ()()

(two trees are possible)



or

Solutions EECS337 HW02

State Transition Diagram