ECS 140A Homework 2
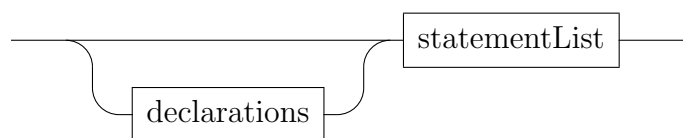
Jones, Hardy
999397426
Professor Olsson
Winter 2014
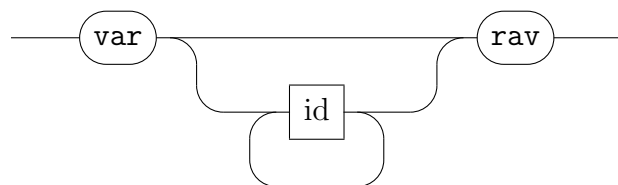
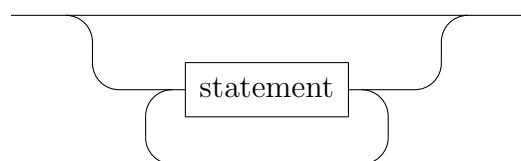*program*

block
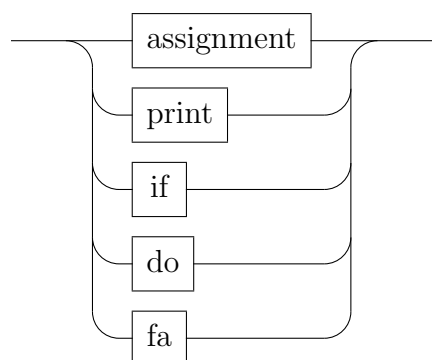
block
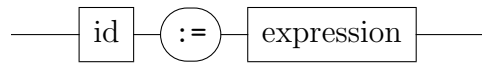
declarations statementList

declarations

(var) id (rav)

statementList

statement

statement

assignment
print
if
do
fa

assignment

—— id —(:=)— expression ——

print

—(print)— expression ——

if

—(if)— guardedCommands —(fi)——

do

—(do)— guardedCommands —(od)——

fa

—(fa)— id —(:=)— expression —(to)— expression —— commands —(af
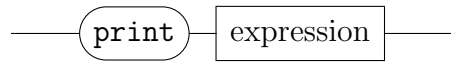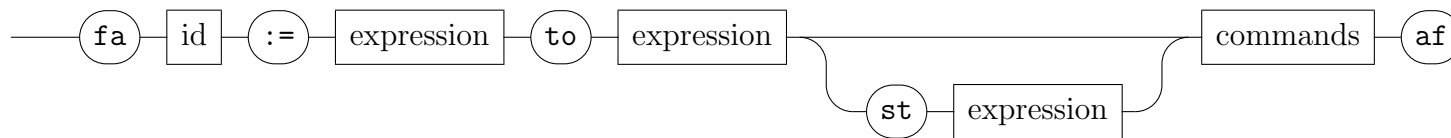
—(st)— expression

guardedCommands

—— guardedCommand ———————— (else)— commands ——

—([])— guardedCommand

guardedCommand

—— expression — commands ——

commands
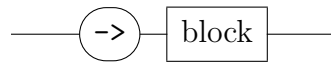
—(->)— block ——

expression

—— simple ——————————
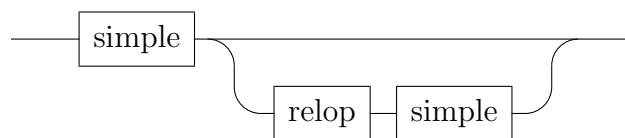
—— relop — simple

simple
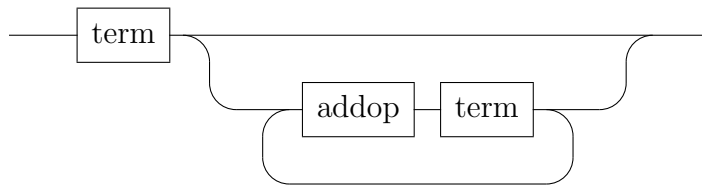
term
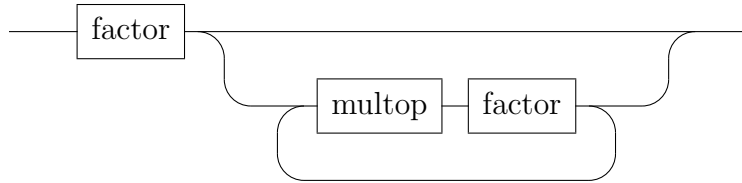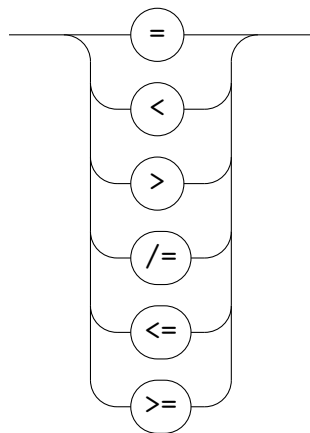

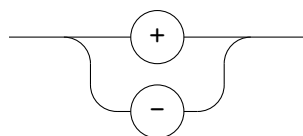*factor*
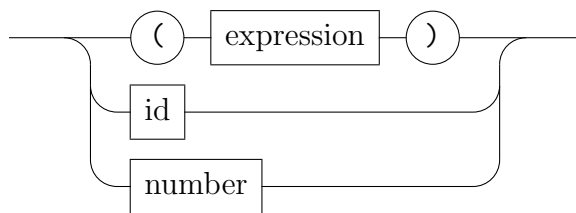
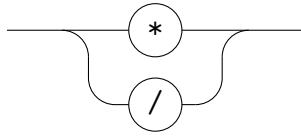*relop*

addop

multop

First sets:

$$First(program) = First(block)$$
$$= First(declarations) \cup First(statementList)$$
$$= \{var\} \cup First(statementList)$$
$$= \{var\} \cup First(statement)$$
$$= \{var\} \cup First(assignment) \cup First(print) \cup First(if) \cup First(do) \cup First(fa)$$
$$= \{var\} \cup First(id) \cup \{print\} \cup \{if\} \cup \{do\} \cup \{fa\}$$
$$= \{var\} \cup \{id\} \cup \{print\} \cup \{if\} \cup \{do\} \cup \{fa\}$$
$$= \{var, \{id\}, print, if, do, fa\}$$

Expressions:

$$First(expression) = First(simple)$$
$$= First(term)$$
$$= First(factor)$$
$$= \{(\} \cup \{id\} \cup \{number\} \qquad = \{(, \{id\}, \{number\}\}$$