Assignment: Lab 6

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Part 1)

1.

a) Which Expr directly produce side effects
a. Op Expr Expr
b. := var Expr (unless Expr == var previous to execution)
c. Seq Expr Expr
d. while Expr Expr
b) Which Expr never have side effects?
a. num (value)
b. var (storage)
c) Which sometimes have, give two examples:
a. print(Expr)
i. Expr -> print(Expr)
print(num)
ii. Expr-> print(Expr)
print(Op Expr Expr)
print(+ num Seq Expr Expr)
Etc….
b. If Expr Expr Expr
i. Expr -> if Expr Expr Expr
if num print(Expr) print(Expr)
if num print (num) print(num)
ii. Expr -> if Expr Expr Expr
If num Op Expr Expr Op Expr Expr

Etc…

2. Yes, different results would be produced depending on left to right operations (for example, the < operator would be true or false in one state, read from opposite directions.

Part 2)

1. (- 5 3)
PUSH 5; STORE x
PUSH 3; STORE y
PUSH 0; STORE z
LABEL 111; EQ; JUMPZ 222; JUMP 999;
STORE x. LOAD y; LOAD Z; PUSH 1; ADD
STORE z; LOAD x; JUMP 111

LABEL 999; STORE x; STORE y; LOAD z

(Just looked at your solution for this – I feel silly now!)

2. PUSH 5; PUSH 3; DIVREM; STORE x; POP; POP; LOAD x;
3. PUSH 1; DUP; STORE x
4. PUSH 1; STORE x; PUSH 2
5. LOAD x; STORE x; LOAD y
6. PUSH 1; JUMPZ 111
   POP; PUSH 2; JUMP 999
   LABEL 111; POP; PUSH 3
   LABEL 999; DUP; PRINT
7. LOAD x; JUMPZ 111
   POP; LOAD y;
   LABEL 111; POP; PUSH z;
   LABEL 999; DUP; PRINT