1. parseLMC " INP//some comments\nSTART STA FIRST//\n LDA FIRST\n SUB SECOND\n OUT\nlabel2 HLT\nFIRST DAT 3\nSECOND DAT 5\n"

[(Nothing,INP),(Just "START",STA FIRST),(Nothing,LDA FIRST),(Nothing,SUB SECOND),(Nothing,OUT),(Just "label2",HLT),(Just "FIRST",DAT 3),(Just "SECOND",DAT 5)]

2. putStrLn $ showProgram $ parseLMC " INP//some comments\nSTART STA FIRST//\n LDA FIRST\n SUB SECOND\n OUT\nlabel2 HLT\nFIRST DAT 3\nSECOND DAT 5\n"

INP

START STA FIRST

LDA FIRST

SUB SECOND

OUT

label2 HLT

FIRST DAT 3

SECOND DAT 5

3.mkInitEnv $ parseLMC " INP//some comments\nSTART STA FIRST//\n LDA FIRST\n SUB SECOND\n OUT\n HLT\nFIRST DAT 3\nSECOND DAT 5\n"

Env {mailboxes = [("FIRST",3),("SECOND",5)], accumulator = Nothing, pc = 1, instructions = [INP,STA FIRST,LDA FIRST,SUB SECOND,OUT,HLT,DAT 3,DAT 5], labelAddr = [("START",1),("FIRST",6),("SECOND",7)]}

* Question: DAT作为initialization是否算在instructions内？
* 如果上问回答为否，则labelAddr中应当不包含那些DAT的label咯？

4. evalProgram $ parseLMC " INP//some comments\nSTART STA FIRST//\n LDA FIRST\n SUB SECOND\n OUT\n HLT\nFIRST DAT 3\nSECOND DAT 5\n"

7

2

5. evalProgram $ parseLMC " INP //\nLOOP SUB ONE //ABC \n OUT\n BRZ QUIT \n BRA LOOP \nQUIT HLT\nONE DAT 1\n"

INP

LOOP SUB ONE // The instruction will subtract the value stored at ONE from accumulator

OUT

BRZ QUIT // If the accumulator is 0, jump to the memory address labeled QUIT

BRA LOOP // If the accumulator not 0, jump to the memory address labeled LOOP

QUIT HLT // Label this memory address as QUIT

ONE DAT 1 // Store the value 1 in memory address ONE

3

2

1

0

6. evalProgram $ parseLMC "START LDA ZERO\n STA RESULT\n STA COUNT\n INP\n BRZ END\n STA VALUE\nLOOP LDA RESULT\n ADD VALUE\n STA RESULT\n LDA COUNT\n ADD ONE\n STA COUNT\n SUB VALUE\n BRZ ENDLOOP\n BRA LOOP\nENDLOOP LDA RESULT\n OUT\n BRA START\nEND HLT\nRESULT DAT\nCOUNT DAT\nONE DAT 1\nVALUE DAT \nZERO DAT\n"

-- This program will take a user input, square it, output the answer and then repeat. Entering a zero will end the program.

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16

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225

22

484

0