Major Assignment 3

Date of Submission - last week of November Weightage - The rest

In the third part of the assignment, you will interpret the G-code. To elaborate, you will write a Haskell program that will have a function `main :: IO ()` (all Haskell programs doing IO need to have a distinguished function called `main`). This will read a file called `pfile` containing G-code instructions and print the value computed by the program on the user terminal. Assume that the final value computed by the program is a non-functional value. Assume that the format of G-code instructions is the same what would be printed by the `Show` function of the datatype `Instn`.

For information about how the G-machine works, refer to the reading material put up on moodle.

```
data Instn = PUSH Int | PUSHINT Int | PUSHGLOBAL String |
             PUSHBOOL Bool | PUSHNIL | POP Int |
             EVAL | UNWIND | MKAP | UPDATE Int |  RETURN |
             LABEL String | JUMP String | JFALSE String |
             ADD | SUB | MUL | CONS | HEAD | TAIL | IF | EQU |
             GLOBSTART String Int | PRINT | STOP

instance Show Instn where
  show (PUSH i) = "   PUSH " ++ show i ++ "\n"
  show (PUSHINT i) = "   PUSHINT " ++ show i ++ "\n"
  show (PUSHGLOBAL str) = "   PUSHGLOBAL " ++ show str ++ "\n"
  show (PUSHBOOL b) = "   PUSHBOOL " ++ show b ++ "\n"
  show PUSHNIL  = "   PUSHNIL " ++ "\n"
  show (POP i) = "   POP " ++ show i ++ "\n"
  show EVAL = "   EVAL" ++ "\n"
  show UNWIND = "   UNWIND" ++ "\n"
  show MKAP = "   MKAP" ++ "\n"
  show RETURN = "   RETURN" ++  "\n"
  show (UPDATE i) = "   UPDATE " ++ show i ++ "\n"
  show (LABEL str) = "LABEL " ++ show str ++ "\n"
  show (JUMP str) = "   JUMP " ++ show str ++ "\n"
  show (JFALSE str) = "   JFALSE " ++ show str ++ "\n"
  show ADD = "   ADD" ++ "\n"
  show SUB = "   SUB" ++ "\n"
  show MUL = "   MUL" ++ "\n"
  show CONS = "   CONS" ++ "\n"
  show HEAD = "   HEAD" ++ "\n"
  show TAIL = "   TAIL" ++ "\n"
  show IF = "   IF" ++ "\n"
show EQU = "   EQU" ++ "\n"
show (GLOBSTART str i) = "\n GLOBSTART " ++ show str ++ " " ++
                         show i ++ "\n"
show PRINT = "   PRINT" ++ "\n"
show STOP = "   STOP" ++ "\n"
```