COM2041-B Lab Project 1 Report

Description of the Rules

1-) All programs start with the "<:" token and ends with the ":>"

2-) All statements must be ended by ";"

3-) There are 3 different data types:

- $ wn(Whole number) which corresponds to 'int' in c language.
- $ fpn(Floating point number) which corresponds to 'float' in c language.
- $ ch which corresponds to 'char' in c language.

4-) Variable declerations should be as given below:

- $ wn variable_name -> value;
- $ fpn variable_name -> value;
- $ ch variable_name -> value;

5-) Variable names must start with alphabetic character but can continue with any alphanumeric charachter

6-) An expression can contain unlimited variables or constants

7-) The token "incase" is used for the conditional statements. The token is followed by an expression and after an expression a statement takes places in between 2 ":"

- $ incase expression: statement:

8-)The token "notincase" should be used as given format:

- $ incase expression : statement: notincase : statement :

9-) The token "during" is used for loops. The usage of during:

- $ during expression : statement

10-) There are four arithmatic operations (+-/*)

11-) Assingments support the arithmetic operations. For example following line codes are valid:

- $ wn x -> 4;
- $ x-> + 1;

12-) The "disp" token is used to print outputs and the usage of it:

- $ disp (expression);

13-) There are 5 comparision operations (is equal, bigger than, less than, less than or equal, bigger than or equal):

```
$    expression ?= expression

$    expression < expression

$    expression > expression

$    expression <= expression

$    expression >= expression
```

14-) We can create commnet lines in betwen two “#” signs:

```
$    #I am a comment line#
```

BNF Notation of Grammar

```
<program> ->    START <stmntlst>  END


<stmntlst> ->    <stmntlst> <stmnt>
                | (NULL)


<stmnt> ->       DISPLAY <exp> SEMI
                | DURING <exp> COLON <stmnt>
                | INCASE <exp> COLON <stmnt>
                | INCASE <exp> COLON <stmnt> COLON NOTINCASE <stmnt>COLON
                | WN VARIABLE ASSIGN <exp> SEMI
                | FPN VARIABLE ASSIGN <exp> SEMI
                | CH VARIABLE ASSIGN <exp> SEMI
                | VARIABLE ASSIGN <exp> SEMI
                | VARIABLE ASSIGN PLUS <exp> SEMI
                | VARIABLE ASSIGN MINUS <exp> SEMI
                | VARIABLE ASSIGN MULTI <exp> SEMI
                | VARIABLE ASSIGN OVER <exp> SEMI
```

```
<exp> ->        INTEGER
                | FLOAT
                | CHAR
                | <exp> PLUS INTEGER
                | <exp> MINUS INTEGER
                | <exp> MULTI INTEGER
                | <exp> OVER INTEGER
                | <exp> PLUS FLOAT
                | <exp> MINUS FLAOT
                | <exp> MULTI FLAOT
                | <exp> OVER FLOAT
                | <exp> PLUS VARIABLE
                | <exp> MINUS VARIABLE
                | <exp> MULTI VARIABLE
                | <exp> OVER VARIABLE
                | VARIABLE
                | <comp>
                | LPAR <exp> RPAR
                | <exp> OR INTEGER
                | <exp> OR FLOAT
                | <exp> OR VARIABLE
                | <exp> AND INTEGER
                | <exp> AND FLOAT
                | <exp> AND VARIABLE
                | NOT INTEGER
                | NOT FLOAT
                | NOT VARIABLE
```

```
<comp> ->     INTEGER ISEQ INTEGER
              | INTEGER BIG INTEGER
              | INTEGER LES INTEGER
              | INTEGER BIGEQ INTEGER
              | INTEGER LESEQ INTEGER
              | FLOAT ISEQ FLOAT
              | FLOAT BIG FLOAT
              | FLOAT LES FLOAT
              | FLOAT LESEQ FLOAT
              | FLOAT BIGEQ FLOAT
              | VARIABLE ISEQ FLOAT
              | VARIABLE BIG FLOAT
              | VARIABLE LES FLOAT
              | VARIABLE LESEQ FLOAT
              | VARIABLE BIGEQ FLOAT
              | VARIABLE ISEQ INTEGER
              | VARIABLE BIG INTEGER
              | VARIABLE LES INTEGER
              | VARIABLE LESEQ INTEGER
              | VARIABLE BIGEQ INTEGER
```

The right hand side of BNF notations extended untill get no more conflict warnings.

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