CS117 (Programming Languages) Fall 2019 Lab Assignment 10 pts. Oct. 11 (F)

Download the syntax (in BNF and syntax chart) of a language named "Mini-language Core" from the Canvas of this course, and upgrade the grammar by adding the following two features: type system and procedure.

Type system should include simple types (int and double) and array type, e.g.,

```
int x, y, list1[10], z, list2 [5];
double  a, b, numbers[20], ave;
```

For the procedure, use only value parameters with simple types (no array parameters) for the simplicity, e.g.,

```
procedure  compute (int num1, int num2, double num3)
  <declaration_sequence>
  begin
  <statement_sequence>
  end;
```

Procedures should appear before main body starts, and each procedure has the declaration part and body part, same structure used in the main program. Assume that nested procedures are not allowed.

- Write the complete syntax of the extended language, which includes the type system and procedure, in BNF within the lab session and submit.

You may skip rewriting the productions below <assignment-statement> since they are not affected.

A sample program in "Mini-Language Core" *(before adding the type system and procedure)*:

```
Program
   declare  COUNT, LIMIT;
   declare  LAST_TERM, THIS_TERM, NEXT_TERM;
begin
   COUNT := 0;
   LAST_TERM := 1;
   THIS_TERM := 1;
   input LIMIT;
   while (COUNT < LIMIT) loop
      output LAST_TERM;
      NEXT_TERM := LAST_TERM + THIS TERM;
      LAST_TERM := THIS_TERM;
      THIS_TERM := NEXT_TERM;
      COUNT := COUNT + 1;
   end loop;
end;
```

Answer sheet **10 pts.** **Name:**

Please write your answers for the type system and procedure in this page and back side.