

Assignment 03 - Java RDP Syntax Errors (DUE: Thursday March 22, 2018)

The provided zip file provides you with all of the files need to execute the current version of the _Java "compiler" that attempts to recognize and process _Java source programs. First you will need to compile the two components:

```
c:\_Java>javac FSMLA.java
```

```
c:\_Java>javac _JavaRDP.java
```

Then you can use the provided "batch file" as a script to invoke the compiler to read and process source code files. The file, _Javac.bat, is provided for those of you using Windows machines, and the file _Javac is provided for those of you using Apples. The two files are essentially the same except for the necessary syntactic differences in the scripting languages.

```
c:\_Java>more HelloWorld._java
// _Java Example Program - HelloWorld._java
//
import _java.lang;
program HelloWorld {
    output console.new();
    {
        console.println("Hello World!");
    }
}
```

```
c:\_Java>_Javac HelloWorld._java
```

```
PMJ's FSMLA 2016.03.24 ...
Final State of Start
PMJ's _JavaRDP 2016.03.25 ...
```

```
true
```

```
c:\_Java>_Javac MeanProgramV2ERROR._java
```

```
PMJ's FSMLA 2016.03.24 ...
Final State of Start
PMJ's _JavaRDP 2016.03.25 ...
```

```
9:      integer count.new(0)
==> Syntax Error: (ObjectDeclaration) ; expected
false
```

Note that in the case of the HelloWorld program the compiler recognizes it as a syntactically valid source program and reports no error messages. In the case of the mutilated version of the MeanProgram the compiler reports an error and does not recognize it as a valid program.

However, in the following example a mutilated version of the HelloWorld program does not report any error messages and the compiler does not recognize it as a valid program.

```
c:\_Java>c:\_Java>more HelloWorld_ERROR._java
// _Java Example Program - HelloWorld._java
//
import _java.lang;
program Hello World {
    output console.new();
    {
```

```
        console.println("Hello World!");
    }
}

c:\_Java> Javac HelloWorld_ERROR._java
PMJ's FSMLA 2016.03.24 ...
Final State of Start
PMJ's _JavaRDP 2016.03.25 ...

false

c:\_Java>
```

From this it can be seen that the compiler is not yet complete as regards the reporting of syntax errors. The purpose of this assignment is to have you exercise the compiler in an attempt to illustrate those syntax errors that the compiler does handle well, document those errors that the compiler does not handle and make modifications to the Recursive Descent Parser (RDP) to rectify these omissions, and to further offer any related recommendations.

Your work on this assignment needs to be methodical. What I mean is that since you will be working with a number of different versions of source code files you need to develop a consistent and clear naming scheme. As evidence of your work on this assignment you are to produce a MS Word readable document file (with a .docx extension) in which you present your findings with detailed illustrations and corresponding explanations. It is important that the reader of your document (that would be me, at least) be able to recreate all of the illustrations you provide.

You will submit this document along with a zip file (named `_Java.zip`) containing all of the various files you have written or modified for this assignment. Please do not include any of the files I've provided which you have not modified. The included files will represent those various versions of `_Java` source code files and the modified Java source code files (`_JavaRDP.java`).

We could easily spend months on this assignment, but of course we can't commit that much time to it. Thus, I do not expect anyone to be able to do comprehensive work on this assignment. Instead, I am looking for each of you to do something worthwhile that illustrates your understanding of the task. You certainly can (and should) put more than just minimal effort into this, and when you do you should be able to shake out some holes in the compiler and this will be productive.

I think you have all that you need at this point, but certainly I remain available via email (and even on campus) to field any questions you may have during break.

Good luck,
P.m.J.