CSE 474/574 – Compiler Design
Homework #1 – 50 pts

Objectives: Implementing the FSM that recognizes a hexadecimal number in Pascal

Submission: In a text file, give the regular expression that defines the allowed strings of a hexadecimal number in Pascal and the regular grammar of that regular expression. You are also asked to supply a picture representation of the corresponding FSM (snipping tool might be the easiest or possibly your phone). Lastly, I want a *.cpp file that is the implementation of this FSM. Your C++ code should be able to open a file (input.txt) and print to STDIN whether the file contents is a legal hexadecimal number or not. BE CAREFUL, you must face some type conversion issues.

Your application should be able to open and read the input from a file called input.txt. You want to be sure to test your code against many different legal and illegal hexadecimal numbers. Here is some sample code for reading characters from a file:

```
#include <fstream>
Int main( int, char**)
{
        char next;
        std::ifstream inputFile( "input.txt" );
        while( inputFile >> next )  {
                // do whatever with the next character read from file
        }
        inputFile.close();
}
```

Grading Rubric: Listed are the max possible points per category. These maximums will be adjusted depending upon the severity of the error(s).

Regular expression and grammar: 10pts
Picture version of FSM: 6 pts
Implementation of FSM:
- Provides the correct results: 20 pts
- Appropriate file input processing: 4 pts
- Good solution structure (should have at least one separate function – the FSM itself): 5 pts
- Good programming practice: 5 pts