

## Declaration on Plagiarism Assignment Submission Form

This form must be filled in and completed by the student(s) submitting an assignment

**Name(s):** Simon Lowry

**Programme:** Computer Applications

**Module Code:** CA4003

**Assignment Title:** A Lexical and Syntax Analyser

**Submission Date:** 12/11/2017

**Module Coordinator:** David Sinclair

I/We declare that this material, which I/We now submit for assessment, is entirely my/our own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my/our work. I/We understand that plagiarism, collusion, and copying are grave and serious offences in the university and accept the penalties that would be imposed should I engage in plagiarism, collusion or copying. I/We have read and understood the Assignment Regulations. I/We have identified and included the source of all facts, ideas, opinions, and viewpoints of others in the assignment references. Direct quotations from books, journal articles, internet sources, module text, or any other source whatsoever are acknowledged and the source cited are identified in the assignment references. This assignment, or any part of it, has not been previously submitted by me/us or any other person for assessment on this or any other course of study. I/We have read and understood the referencing guidelines found at <http://www.dcu.ie/info/regulations/plagiarism.shtml> , <https://www4.dcu.ie/students/az/plagiarism> and/or recommended in the assignment guidelines.

Name(s): Simon Lowry

Date: 12/11/2017

## **Project Description:**

For the lexical analysis I began with all of the elements that I wanted the compiler to skip. This included comments (single-line and multi-line) followed by spaces, tabs, newline characters and carriage returns. The next part was made up of all of the valid tokens that the compiler would accept. These were split into three different sets of tokens: the reserved keywords, the operators and punctuation of the language and finally the acceptable identifiers.

When working on the syntax analyser a number of conflict choices and left-recursion errors arose. The vast majority of these were taken care of by introducing factorisation. This meant extracting the common parts of conflicting alternatives and moving them to the front. I also made use of the regular expression syntax to allow for iteration as opposed to recursion. By the end I reduced the amount of choice conflicts to two, I was unable to fix these last two. From my research I'm aware that choice conflicts don't necessarily harm the running of the code. I was reluctant to introduce any lookaheads as I knew they'd result in a sharp deductions of marks so I left them as they are. With this in mind, I was able to run the four sample code files given without any problems or errors arising.

## **References:**

**Multi-line nested comment was adapted from here (not my code):**  
[http://www.engr.mun.ca/~theo/JavaCC-FAQ/javacc-faq-moz.htm#tth\\_sEc3.17](http://www.engr.mun.ca/~theo/JavaCC-FAQ/javacc-faq-moz.htm#tth_sEc3.17)