**Pascal to MIPS Compiler**

**Software Design Document**

**Version <1.4>**

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**Revisions**

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| Date | Description | Version |
| January 23rd, 2018 | Created the document. | 1.0 |
| January 30th, 2018 | Added cover page and separated sections. | 1.1 |
| January 30th, 2018 | Added documentation about Parser.java | 1.2 |
| February 1st, 2018 | Added graph containing the overview of the compiler. | 1.3 |
| Februrary 3rd, 2018 | Added documentation about ParserTest.java | 1.4 |

**1. Introduction**

This project is for Programming Languages and Compilers course, keystone for Computer Science majors, at Augsburg University. It contains a compiler in Java for Pascal, to finally, convert the code to MIPS. Its components are described below.

**2. Overview**

Token

Syntax

Tree

Syntax

Tree

MIPS

Scanner

Recognizer

(Parser)

Semantic

Analyzer

Code

Generation

Symbol Table

**3. Implemented Components**

**/src/scanner/**

a) Scanner.jflex – we used a JFlex tool to create Scanner.java which currently contains the skeleton of being able to read-in a file and creating their respective Token.

b) Scanner.java – created from the JFlex tool.

c) Token.java – This class contains the simple Token object, which contains String lexeme and TokenType.

d) TokenType.java – This class is an ENUM that contains all the relative token types in Pascal.

e) LookUpTable.java – This class is a HashMap containing lexeme as a key and TokenType as value. The lexeme is matched to their respective TokenType using this LookUpTable.

f) ScannerTest.java – This class currently contains JUnit testing for yytext() and nextToken().

**/src/parser/**

a) Parser.java – contains a parser for Pascal based on the grammar provided by professor. On top of abiding the rules of the grammar, there are six other methods, isMulop(), mulop(), isAddop(), addop(), isRelop(), and relop() for simplicity.

b) ParsertTest.java – contains JUnit testing cases for program(), declarations(), subprogram\_declaration(), statement(), simple\_expression(), and factor().