CMSC 430: Compiler Theory and Design

Professor Gregory Williams

Project 3

Due Date: December 1, 2020

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Project 3

Approach To Project

My initial approach to this project was downloading the Project 3 Skeleton Code and merging parser.y and scanner.l with what I had previously added to the lexical and syntactical analyzers. I then added the necessary enumerations to values.h. Once I was sure that my productions were in the correct bottom-up order in parser.y, I began to add more cases to the evaluation functions in values.cc. I then added a functioning if/else production and worked on accepting parameters from the command line. Finally, I tried my best but wasn’t able to figure out the case statements.

Test Case Table

|  |  |  |  |
| --- | --- | --- | --- |
| Input File | Expected Result | Result | Pass/Fail |
| Test1.txt | 5 | 5 | Pass |
| Test2.txt | 4 | Syntax error | Fail |
| Test3.txt | 0 | 0 | Pass |
| Test4.txt | 51 | 51 | Pass |
| Test5.txt | 10 | 10 | Pass |
| Test6.txt | -1 | -1 | Pass |
| Test7.txt | 0 | 0 | Pass |
| Test8.txt | 108 | 108 | Pass |

Test Plan Results

**Test Case #1 Result – Testing arithmetic operations**

Text

Description automatically generated

**Test Case #2 Result – Testing case statement**

Text

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**Test Case #3 Result – Testing relational and logical operators**

Text

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**Test Case #4 Result – Testing function with a reduction**

Text

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**Test Case #5 Result – Testing real and Boolean variables**

Text

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**Test Case #6 Result – Testing two parameter declarations**

Text

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**Test Case #7 Result – Testing nested if/else statements**

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**Test Case #8 Result – Testing nested reduction**

Text

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Lessons Learned

I have learned from the past 3 projects that I have a fundamental misunderstanding of compiler theory and design. I am missing something so rudimentary that everyone seems to have grasped. For some reason the readings and the videos do not contain the answers that I need. I hope the future readings make more sense to me.