Lab 1

Andrew Hatch

Andrew.Hatch1@Marist.edu

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1 Crafting a Compiler Exercises

1.1 Chapter 1.11

Investigate the techniques MOSS uses to find similarity. How does MOSS differ from other approaches for detecting possible plagiarism?

Moss is able to detect plagiarism through a pattern-matching algorithm, which splits the document into different pieces, tokenizes them and compares them against its codebase. This lets it essentially catch programs that have swapped functions or changed variable names, and instead compare if two programs have the same general parts working to produce the same output.

1.2 Chapter 3.11

What token sequence is produced? For which tokens must extra information be returned in addition to the token code?

The order of tokens is as follows (variables will be marked):

- Main identifier

- (

-)

- {

- const

- float

- payment (variable)

- =

- 384.00

- ;

- float

- bal (variable)

- ;

- int

- month (variable)

- =

- 0

- ;

- bal (variable)

- =

- 15000

- ;

- while

- (

- bal (variable)

- >

- 0

-)

- {

- printf

- (

- String: "Month: %2d Balance: %10.2f

- ,

- month (variable)

- ,

- bal (variable)

-)

- ;

- bal (variable)

- =

- bal (variable)

- -

- payment (variable)

- +

- 0.015

- *

- bal

- ;

- month (variable)

- =

- month (variable)

- +

- 1

- ;

- }

- }

Note that for identifier tokens (the one that handle our variables) we need to return their types/identifiers in addition to the usual information.

2 DRAGON BOOK

2.1 CHAPTER 1.1.4

What advantages are there to using C as a target language for a compiler?

C is a commonly used language that is easily compiled by most machines, making it incredibly versatile since you can easily use it in tandem with other languages. Additionally, C is also a highly portable language that is able to run in any environment, making it even more applicable to any case.

2.2 CHAPTER 1.6.1

For the block structured C code of Fig. 1.13a, indicate the values assigned to w, x, y, and z.

w = i (6) + j (7) = **13**

x = i (6) + j (5) = **11**

y = i (8) + j (5) = **13**

z = i (6) + j (5) = **11**