CMPT 432 - Spring 2022 - Compilers

Sean Kohler

Sean.Kohler1@marist.edu

February 8, 2022

Objective: This Lab we have a few tasks to accomplish. We must reach chapter 3 in both the Crafting a Compiler book as well as reading chapter 3 in the Dragon book. We then must complete exercises 1.11 (MOSS) and 3.1 (token sequence) from the Crafting a Compilers book. We must also complete exercises 1.1.4 (Advantages of C as a target language) and exercise 1.6.1 (Variables in blockstructured code) from the Dragon book.

1 Crafting a Compiler

This section contains the assignments from the Crafting a Compiler book

1.1 1.11 (MOSS)

MOSS stands for Measure Of Software Similarity. MOSS uses special techniques to detect possible plagiarism. One technique used by MOSS is Document Fingerprinting. This works by precomputing a set of hashes related to the document and comparing the fingerprints of the whole document saving on computation

1.2 3.1 (Token Sequence)

```
1  main(){
2      const float payment = 384.00;
3      float bal;
4      int month = 0;
5      bal=15000;
6      while (bal>0){
7          printf("Month:␣%2d␣Balance:␣%10.2f\n", month, bal);
8          bal=bal-payment+0.015*bal;
9          month=month+1;
10     }
11 }
```

The following token sequence is produced from the code block above:

[ID,'main'][OpenParen,'('][CloseParen,')'][OpenBrace,''][ID,'const'][Type,'float'][ID,'payment']
[Assignment,'='][Number,384.00][EOL,';'][Type,'float'][ID,'bal'][EOL,';'][Type,'int'][ID,'month']
[Assignment,'='][Number,0][EOL,';'][ID,'bal'][Assignment,'='][Number,15000][EOL,';'][ID,'while']
[OpenParen,'('][ID,'bal'][GT,'¿'][Number,0][CloseParen,')'][OpenBrace,''][ID,'printf'][OpenParen,'(']
[Quote,'"'][ID,'Month: %2d Balance: %10.2f][Quote,'"'][Comma,','][ID,'month'][Comma,','][ID,'bal']
[CloseParen,')'][EOL,';'][ID,'bal'][Assignment,'='][ID,'bal'][Subtraction,'-'][ID,'payment'][Addition,'+']
[Number,0.015][Times,'*'][ID,'bal'][EOL,';'][ID,'month'][Assignment,'='][ID,'month'][Addition,'+']
[Number,1][EOL,';'][CloseBrace,''][CloseBrace,'']

2 Dragon

This section contains the assignments from the Crafting a Compiler book

2.1 1.1.4 (Advantages of C as a target language)

There are many advantages to use C as a target language for a compiler. Some
of these reasons are that it is a low level language making it very easy to generate
code for as well as it being highly available and executing very quickly

2.2 1.6.1 (Variables in blockstructured code)

For the block-structured C code of Fig. 1.13(a) there are values assigned to
w,x,y,z. w=13 x=11 y=13 z=11