Lab 1

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Crafting a Compiler 1.11: Measure of Software Similarity

Solution: From what I could find on the Internet, MOSS looks for similar or identical lines of code sprinkled throughout a program and produces the ranked results on an easy to use webpage. The difference between MOSS and other programming plagiarism detection programs is how it ignores variables (tokens) and comments in its parsing.

Crafting a Compiler 3.1: Token sequence of following code:

```
main() {
    const float payment = 384.00;
    float bal;
    int month = 0;
    bal=15000;
    while (bal>0) {
        printf("Month: %2d Balance: %10.2f\n", month, bal);
        bal=bal-payment+0.015*bal;
        month=month+1;
    }
}
```

Solution: The token sequence produced should be: <**func**>, <**{**>, <**const**>, <**float**>, <**id, 1**>, <**=**>, <**384.00**>, <**;**>, <**float**>, <**id, 2**>, <**;**>, <**int**>, <**id, 3**>, <**=**>, <**0**>, <**;**>, <**id, 2**>, <**=**>, <**15000**>, <**;**>, <**while**>, <**(**>, <**id, 2**>, < > >, <**0**>, <**)**>, <**{**>, <**print**>, <**(**>, <**string**>, <**id, 3**>, <**id,**

2>, <)>, <;>, <**id, 2**>, <=>, <**id, 2**>, <->, <**id, 1**>, <+>, <**0.015**>, <*>, <**id, 2**>, <;>, <**id, 3**>, <=>, <**id, 3**>, <+>, <**1**>, <;>, <**}**>, <**}**>.

The tokens represented are abstract symbols for their respective operations (for example, { represents a left brace token). The tokens in the printf statement that replace the variables declared in the string itself should need additional information.

Dragon Book 1.1.4: A compiler that translates a high-level language into another high-level language is called a *source-to-source* translator. What advantages are there to using C as a target language for a compiler?

Solution: C is a widely used programming language with compilers available for every platform, ensuring your language is available on any platform. When compiled correctly, C produces programs that are fast and efficient, and easier to understand than any other intermediate language.

Dragon Book 1.6.1: Indicate the values assigned to w, x, y, and z.

Solution: $w = 13$, $x = 9$, $y = 13$, and $z = 9$.