Lab1 Exercises

Crafting a Compiler

1.11

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

MOSS, (Measure Of Software Similarity) is a program used to find similarites in program code.While it is almost impossible to tell if a program is plagiarized, MOSS works by identifying matching tokens and line structure in one program to another to decide the percentage of possible plagiarism. Common methods of plagiarism in programming will involve copying a function and simnply changing the variable names, but this does not completly fool MOSS, because it is primarliy looking for structure. All MOSS cares about is that there is a variable in the same place in both programs. MOSS cannot provide certainity in plagraism, only suggestions. But with the results of MOSS a professor can see the amount of shared tokens and common structure.

3.1

```
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
      }
}
```

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

Token sequence produced:

IDENTIFIER main

```
LPARENS
RPARENS
LBRACKET
CONST
FLOAT
IDENTIFIER payment
ASSIGNOP
FLOATINGconstant 384.00
SEMI
FLOAT
IDENTIFIER bal
SEMI
INT
IDENTIFIER month
ASSIGNOP
INTERGERconstant 0
SEMI
IDENTIFIER bal
ASSIGNOP
INTERGERconstant 15000
SEMI
WHILE
LPARENS
IDENTIFIER bal
GOP
INTERGERconstant 0
LBRACKET
PRINTF
LPARENS
STRINGLITERAL Month: %2d Balance: %10.2f\n
COMMA
IDENTIFIER month
COMMA
IDENTIFIER bal
RPARENS
SEMI
IDENTIFIER bal
ASSIGNOP
IDENTIFIER bal
SUB
IDENTIFIER payment
ADD
FLOATINGconstant 0.015
MUL
IDENTIFIER bal
SEMI
IDENTIFIER month
ASSIGNOP
IDENTIFIER month
ADD
INTERGERconstant 1
RBRACKET
RBRACKET
```

identifier tokens need extra information returned in addition to their token code

Dragon Book

exercises 1.1.4,1.6.1

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?

C has many compilers available across different platforms so using it as a target language allows thesource to source translator to run easily.

1.6.1
For the block-structured C code below, indicate the values assigned to w, x, y, and z.

```
int w, x, y, z;
int i = 4; int j = 5;
{
  int j = 7; //new instance of j
  i = 6;
  w = i + j;
}
x = i + j;
{
  int i = 8; //new instance of i
  y = i + j;
}
z = i + j;
```

w = 13, x=11, y=13, z=11

When the variables are defined as int x as opposed to just x, they do not overwrite the original variable declared