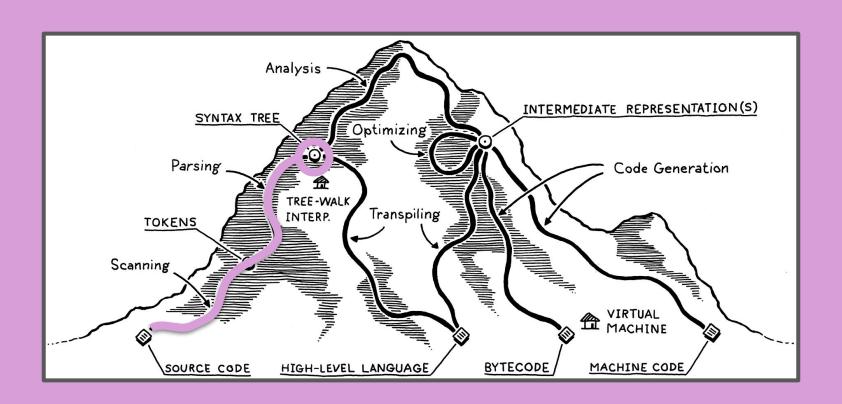
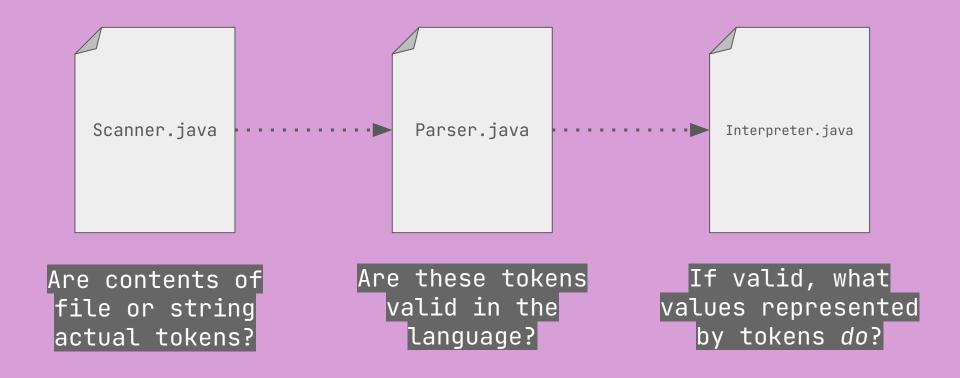


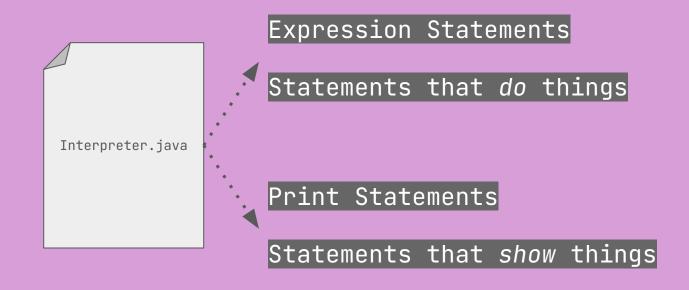
CMPSC 201: PROGRAMMING LANGUAGES



Current state of our interpreter



Interpreting the language



Expression Statements

3 + 5	var a = 3 + 5;
Expression	Expression Statement

Expression Statements

```
Expression

While (true) {
    print "Lox!";
}

Expression
```

Detour: what exactly is a program?

At least insofar as Lox is concerned, a program is…

- a collection of statements, which
- Either:
 - change application state
 - reveal some portion of the application state

Statement grammar

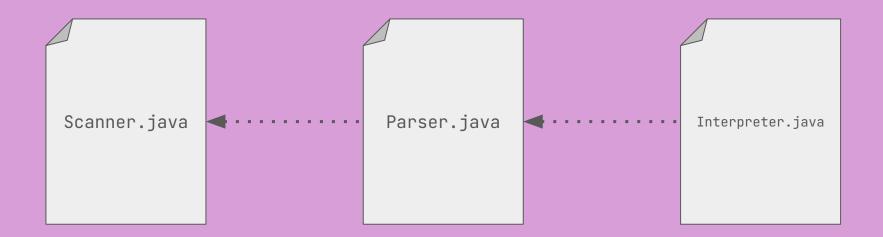
```
program \rightarrow statement* EOF;

statement \rightarrow exprStmt | printStmt;

exprStmt \rightarrow expression ";";

printStmt \rightarrow "print" expression ";";
```

Changing direction...

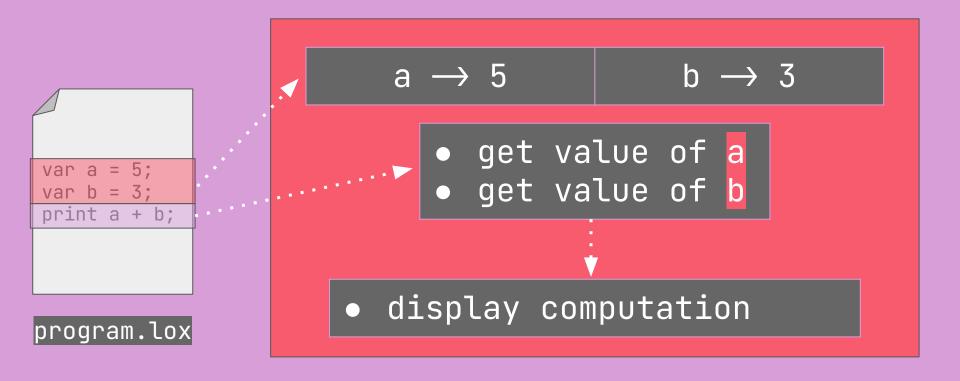


Statement grammar

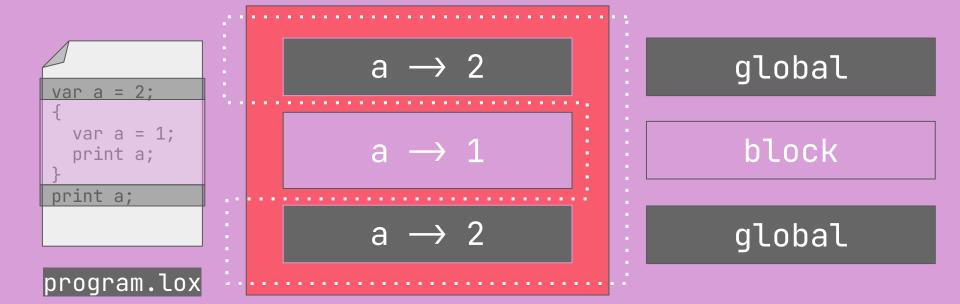
```
\rightarrow declaration* EOF ;
program
declaration

ightarrow varDecl
                  statement ;
                → exprStmt
statement
                 printStmt;
                \rightarrow expression ";";
exprStmt
                → "print" expression ";";
printStmt
```

Changing our environment



Environment and scope



Statement grammar

```
\rightarrow declaration* EOF ;
program
declaration \rightarrow varDecl
                     statement;
statement
                  → exprStmt
                     printStmt
                     block;
                  \rightarrow "{" declaration* "}"
Block
exprStmt
                  \rightarrow expression ";";
                  \rightarrow "print" expression ";";
printStmt
```