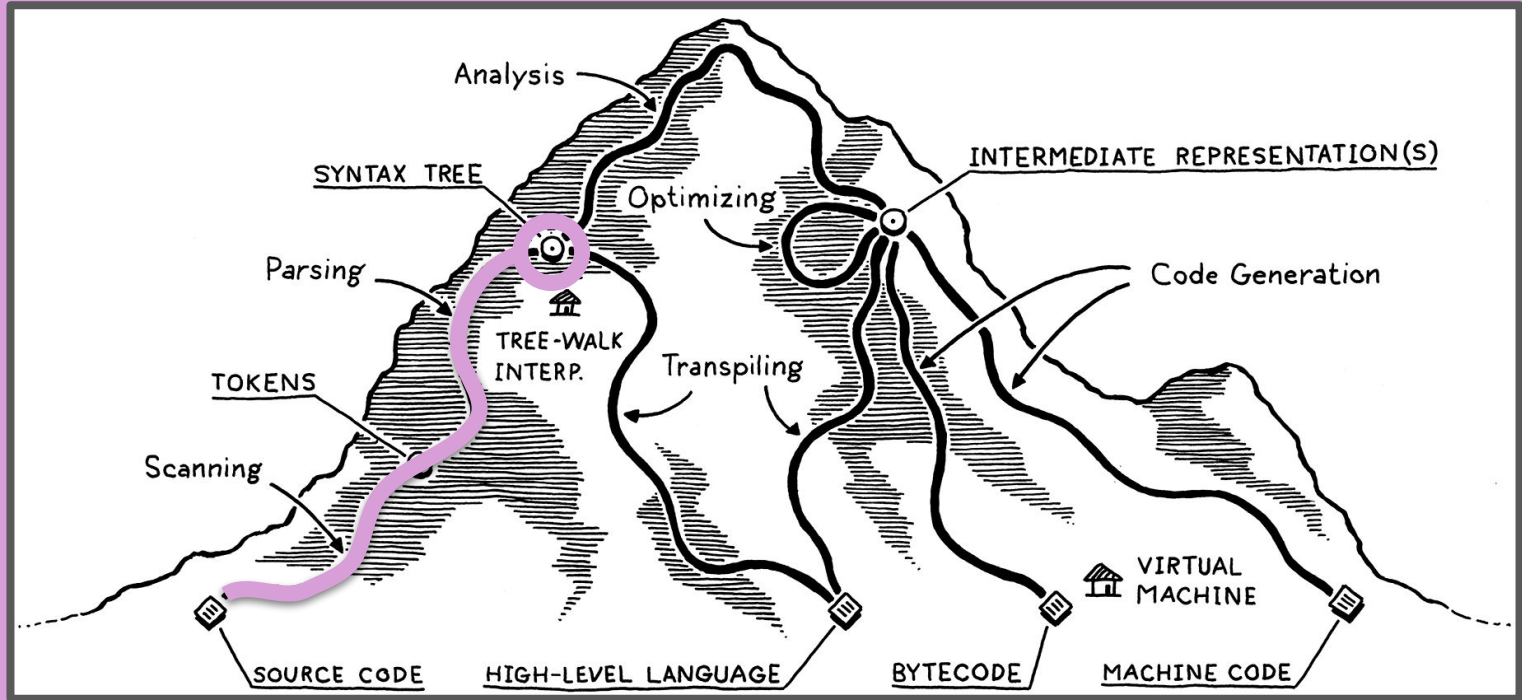
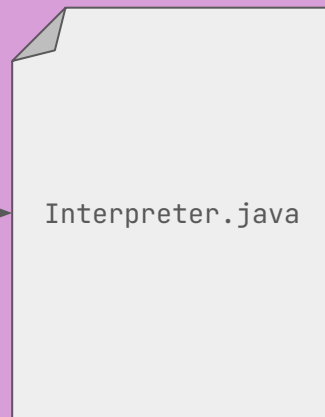
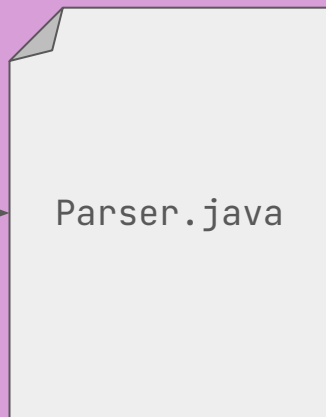
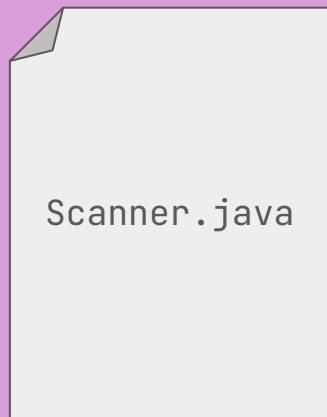




CMPSC 201: PROGRAMMING LANGUAGES



Current state of our interpreter

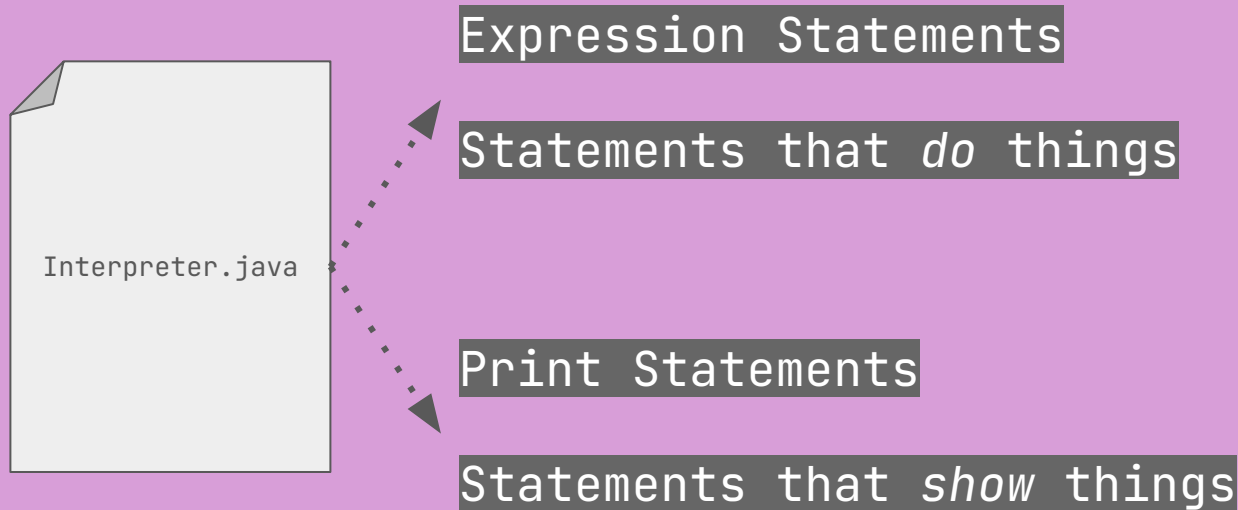


Are contents of
file or string
actual tokens?

Are these tokens
valid in the
language?

If valid, what
values represented
by tokens *do*?

Interpreting the language



Expression Statements

`3 + 5`

`var a = 3 + 5;`

Expression

Expression Statement

Expression Statements

Expression

Example: while loop

```
while (true) {  
    print "Lox!";  
}
```

Expression Statement

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

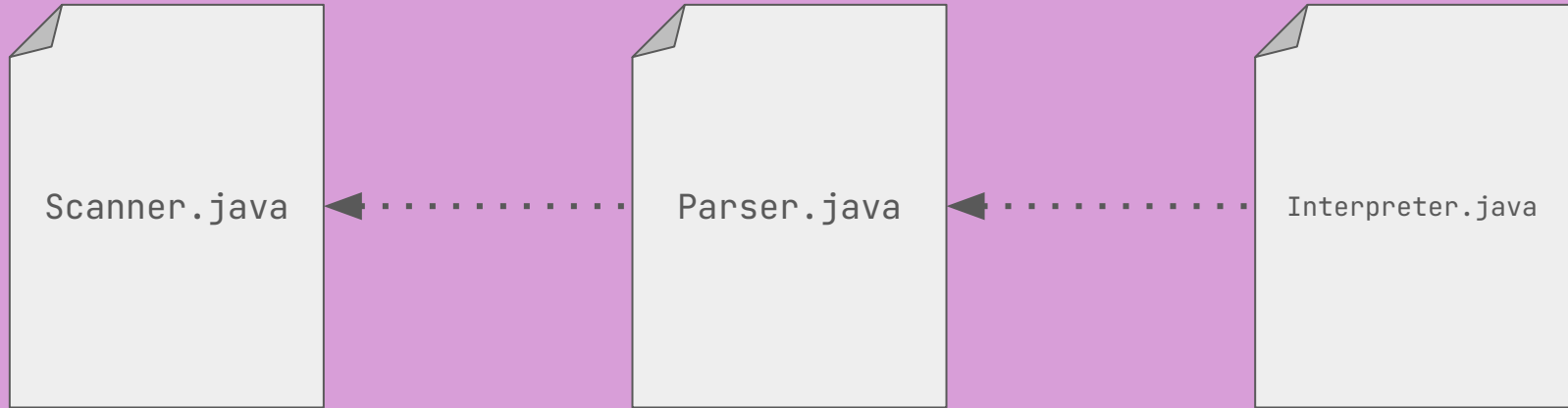
program \rightarrow statement* EOF ;

statement
| \rightarrow exprStmt
| printStmt ;

exprStmt \rightarrow expression ";" ;

printStmt \rightarrow "print" expression ";" ;

Changing direction...



Statement grammar

program → declaration* EOF ;

declaration → varDecl
| statement ;

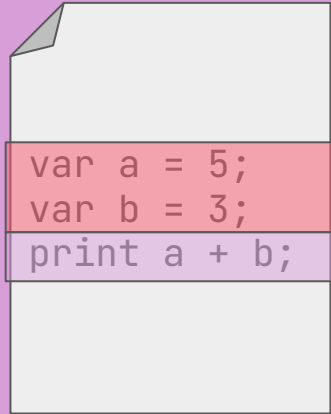
statement → exprStmt
| printStmt ;

exprStmt → expression ";" ;

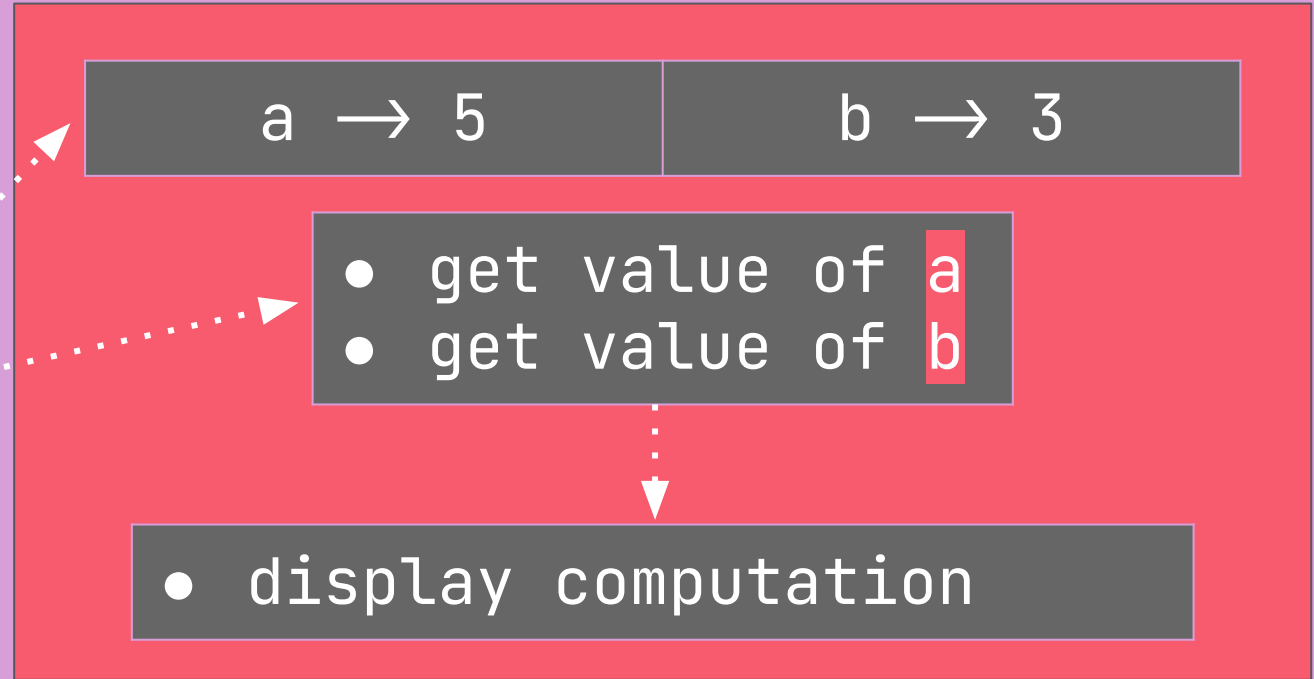
printStmt → "print" expression ";" ;

Changing our environment

Environment.java



`program.txt`

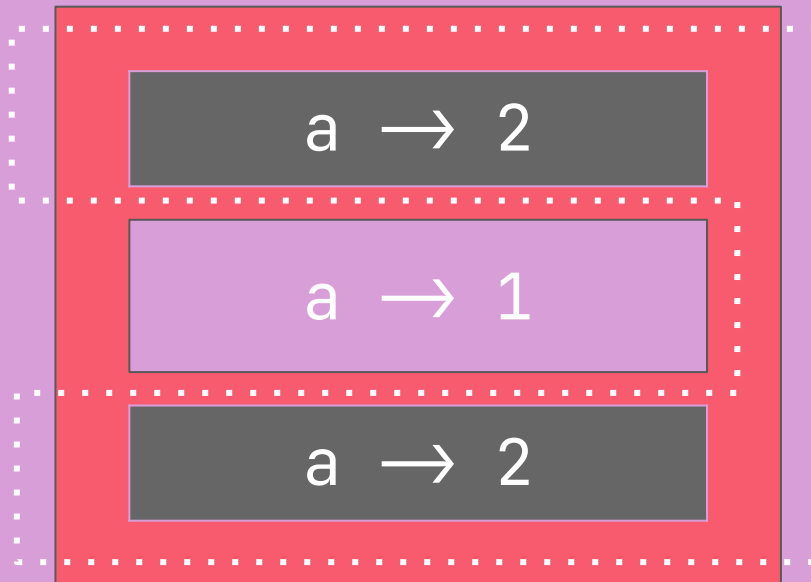


Environment and scope

Environment.java

```
var a = 2;  
{  
  var a = 1;  
  print a;  
}  
print a;
```

program.lox



global

block

global

Statement grammar

program → declaration* EOF ;

declaration → varDecl
| statement ;

statement → exprStmt
| printStmt
| block ;

block → "{" declaration* "}"

exprStmt → expression ";" ;

printStmt → "print" expression ";" ;