

x b d p l

COMS 4115, Spring 2012

Team Members:

D e Li	Project Manager
X iaochen Hu	Language Guru
P eng Li	System Architecture
B onan Liu	System Integrator
L ingyan Yang	Verification & Validation

ROLE ASSIGNMENT



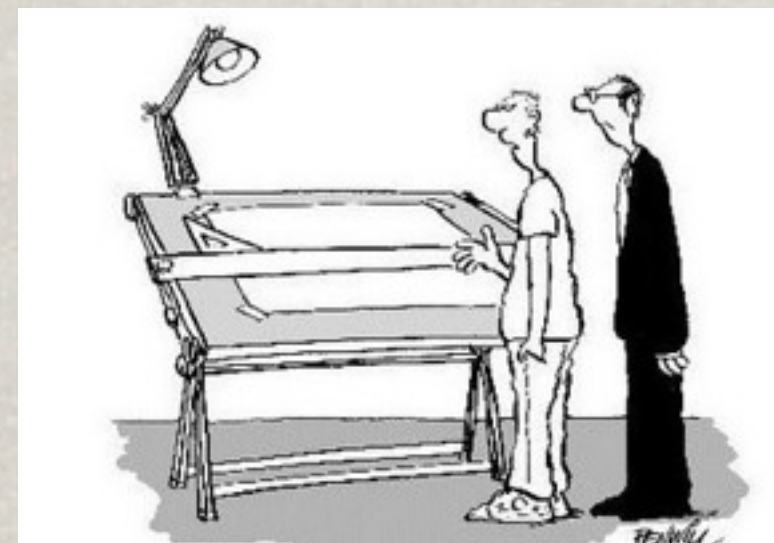
Language Guru



System Integrator



Project Manager



System Architecture



System Tester

MOTIVATION

How to represent the distance between the earth and the sun in micrometer(μm) precisely??
How to calculate 50th Fibonacci ?

How to make division, addition, multiplication, subtraction.... of these huge numbers?

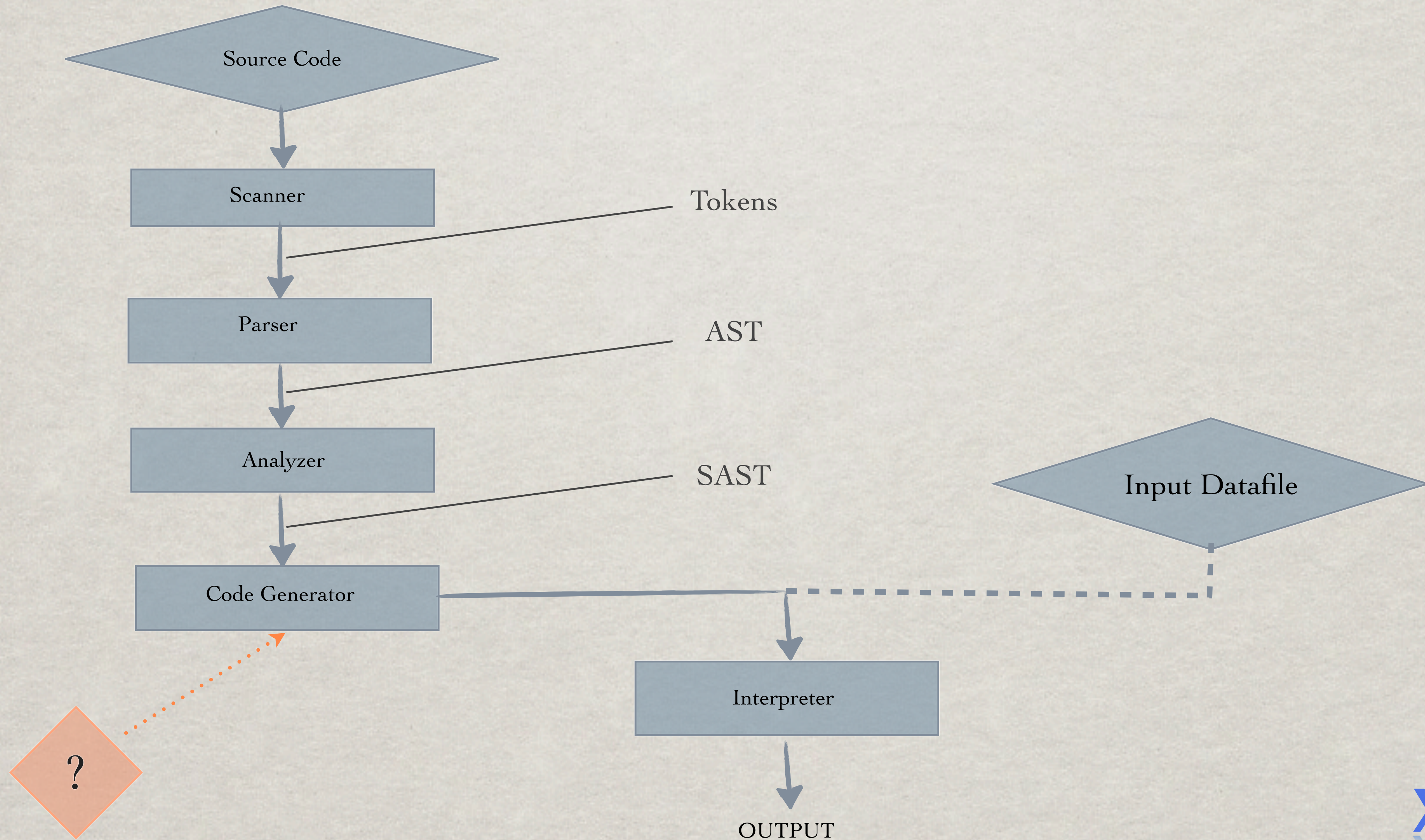
Complicated Algorithm Needed?



The answer is NO!! WE HAVE **XBDPL!**

XBDPL

SYSTEM ARCHITECTURE



GRAMMAR

- JFlex -> Scanner; CUP->Parser

- Grammar

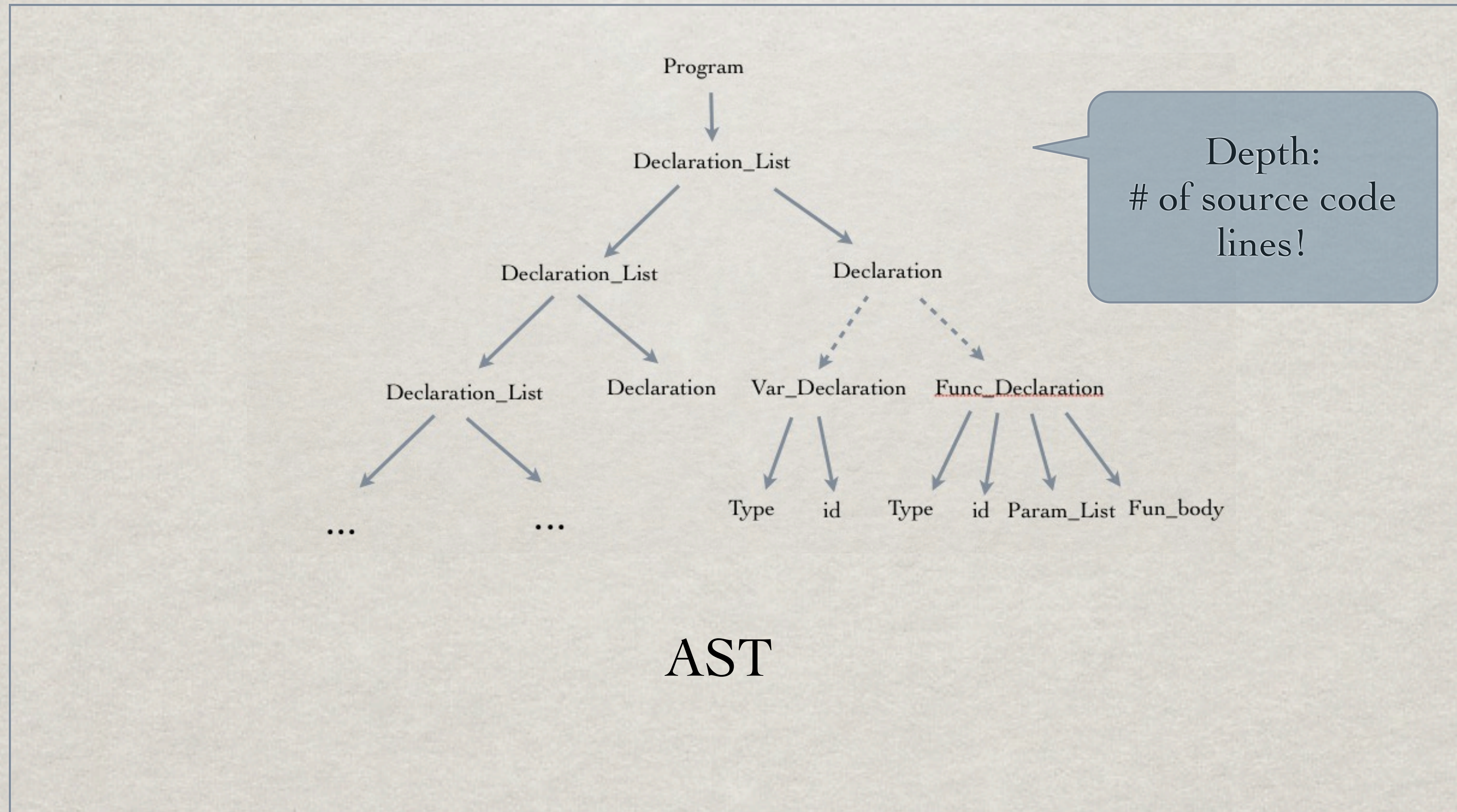
- If-Else, For Statement:

Using Semi-colon to eliminate ambiguity

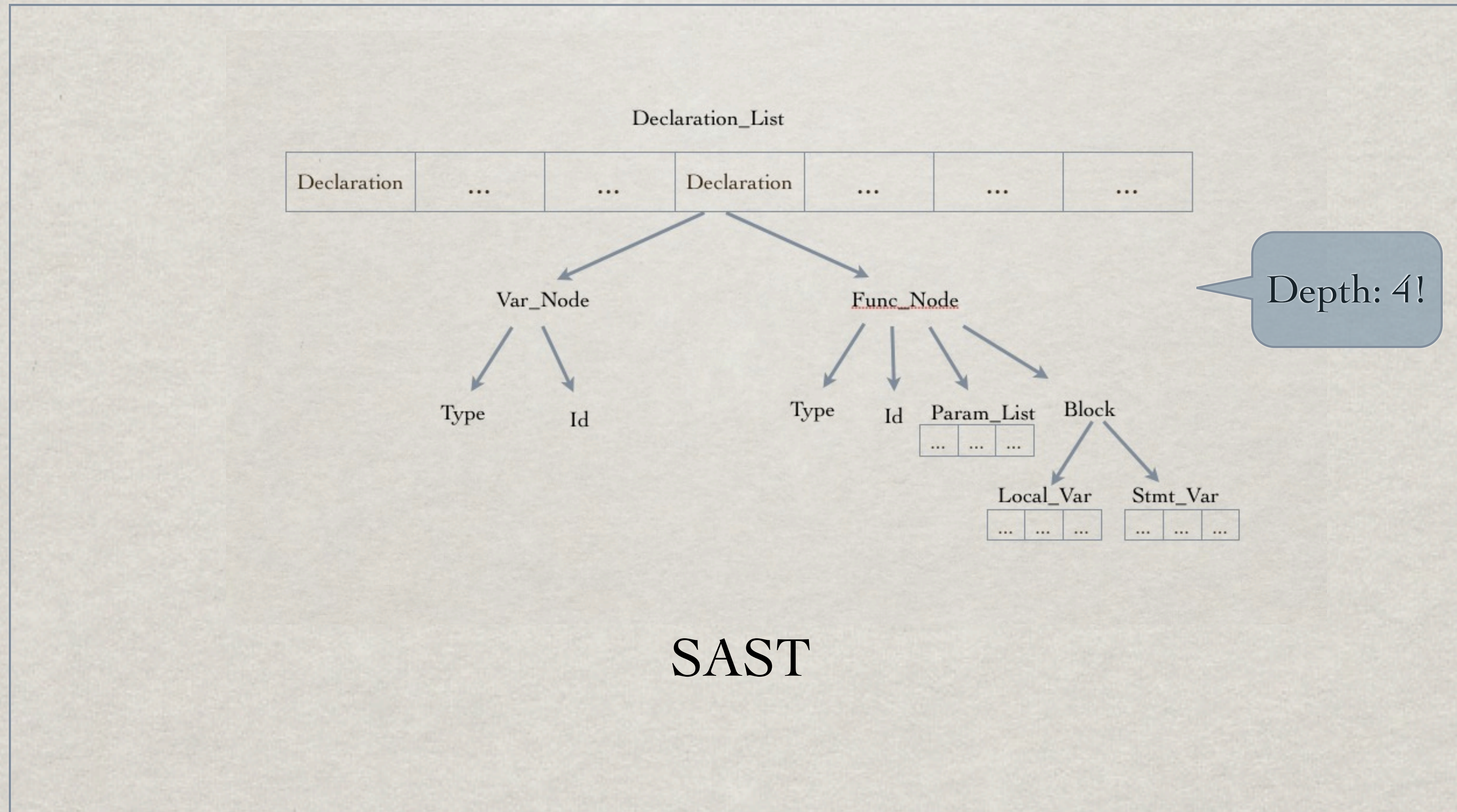
e.g.: `if() {}; if() {}else {};`
`if() {}else {if() {}};`
`For(;;) {};`

- Three unique types: small, big, file
- File manipulations: `infile open`, `infile close`, `outfile open`, `outfile close`
- Input and Output:
`input << variable (<< fileName), out >> value/variable (>> fileName)`
- User Defined Function

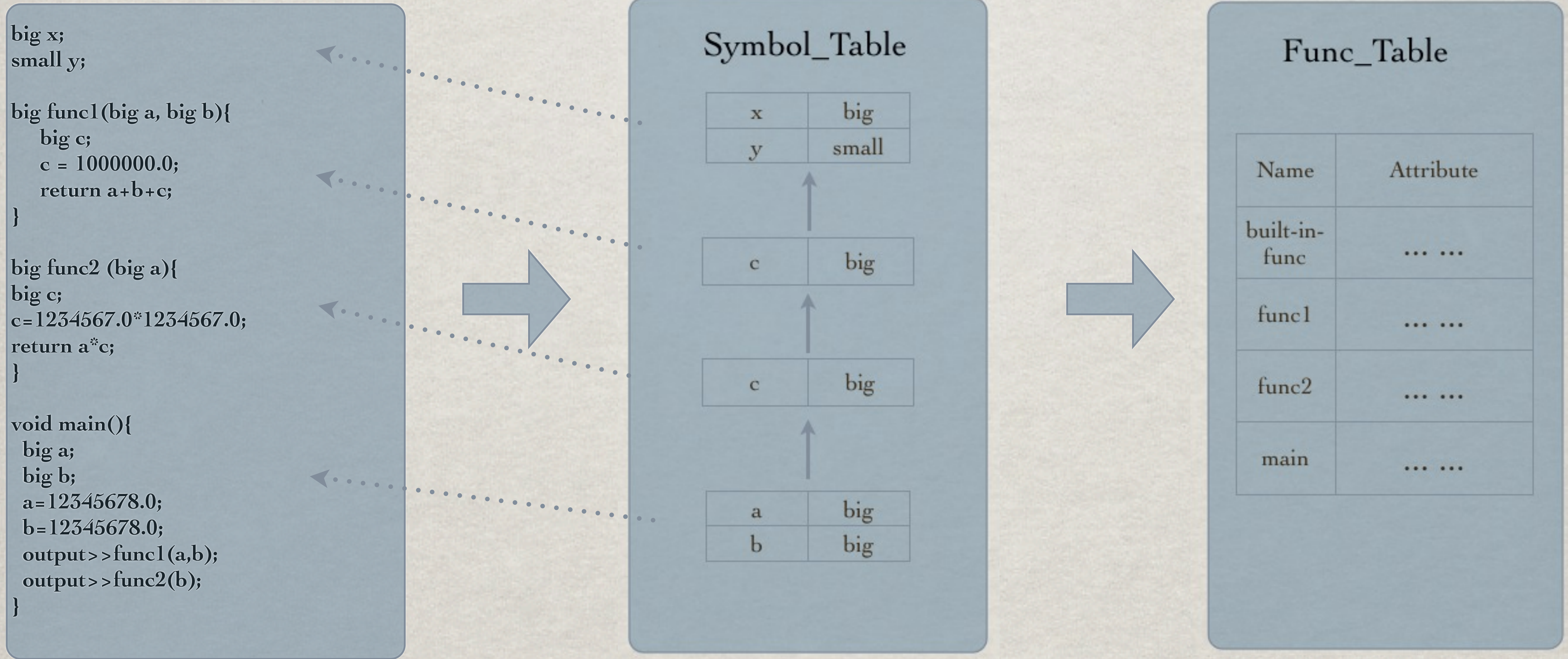
CONVERT FUNCTION DESIGN



CONVERT FUNCTION DESIGN



TYPE CHECKING



CODE INITIALIZATION

- Overload

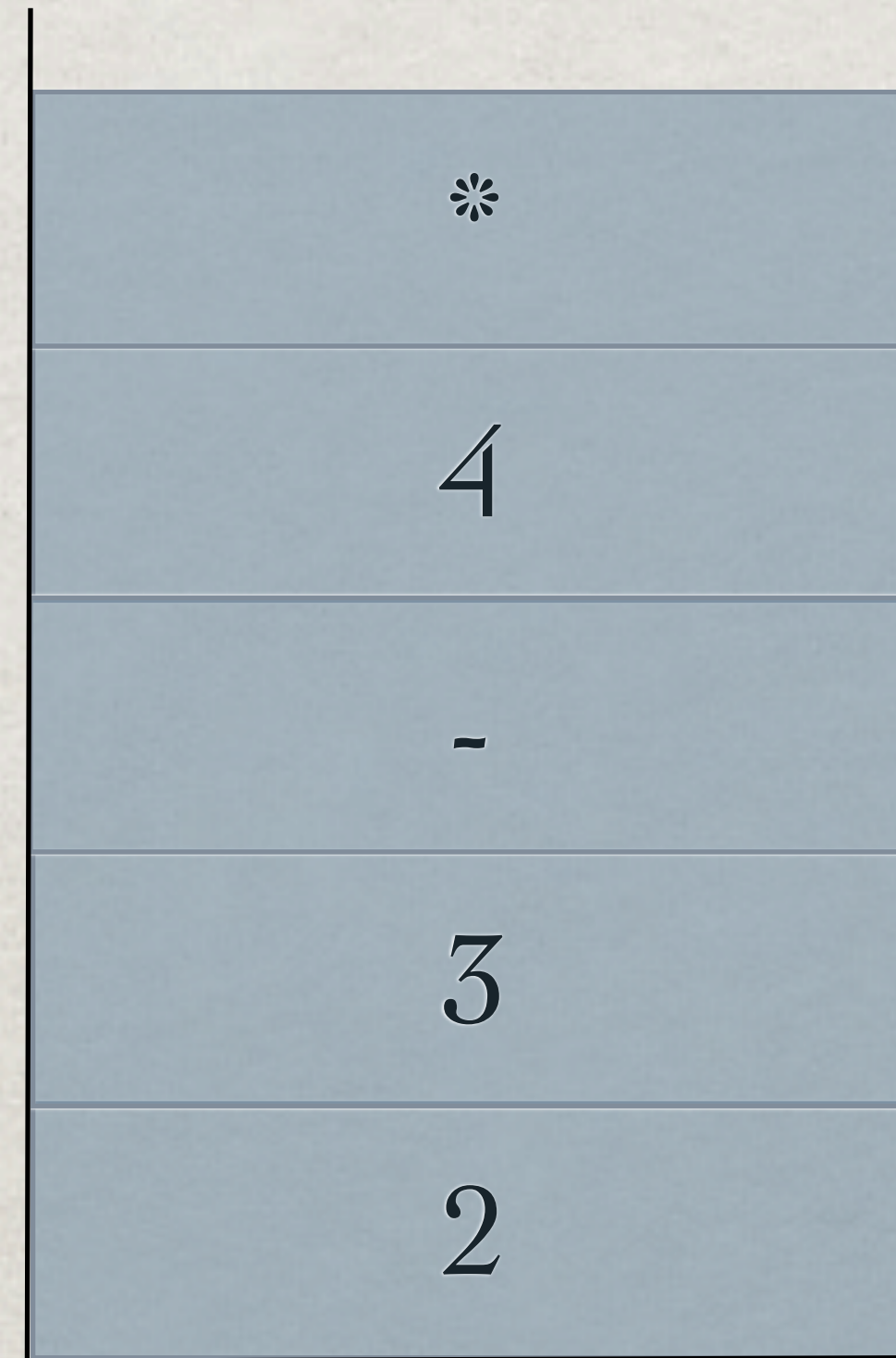
```
public static Integer mul(Integer a, Integer b) {  
    return a * b;  
}
```

```
public static BigDecimal mul(BigDecimal a, BigDecimal b) {  
    return a.multiply(b);  
}
```

- Standard Library Function

```
public static BigDecimal toBig(Integer i) {  
    return new BigDecimal(String.valueOf(i) + ".0");  
}
```

EXPRESSION GENERATION



Stack

HOW TO RUN CODE?

- Local Compiler Jar

```
java -jar xbdpl.jar test.db
```

- Web based IDE



TESTING METHODOLOGIES

Regression Testing

Black Box

White Box

TESTING

- Case 1: Unable to define multiple variables

Solution: Modify naming rules of BufferedReader/BufferWriter and FileReader/FileWriter

- Case 2: Can't support pass array elements as argument

Solution: Expression Matching

- Case 3: Can assign small typed variable to big typed variable

Solution: Type Checking

TOOLS USED



XBDPL

DEMO

XBDPL

**THANK
YOU!**

XBDPL