CSCI 334:
Principles of Programming Languages

Lecture 20: Program interpretation

Instructor: Dan Barowy

Williams

Topics

Program interpretation

Your to-dos

1. Reading response, **due Wednesday 4/27**.
2. Lab 9, **due Sunday 5/1** (partner lab)

What is a programming language?

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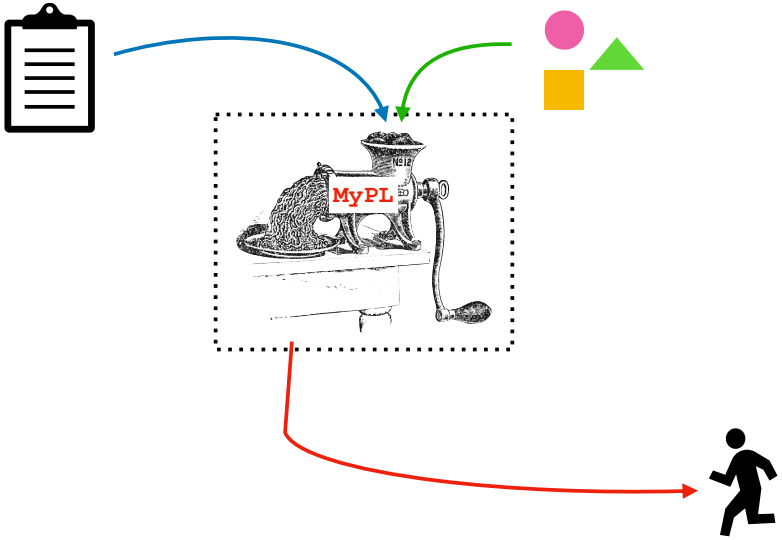

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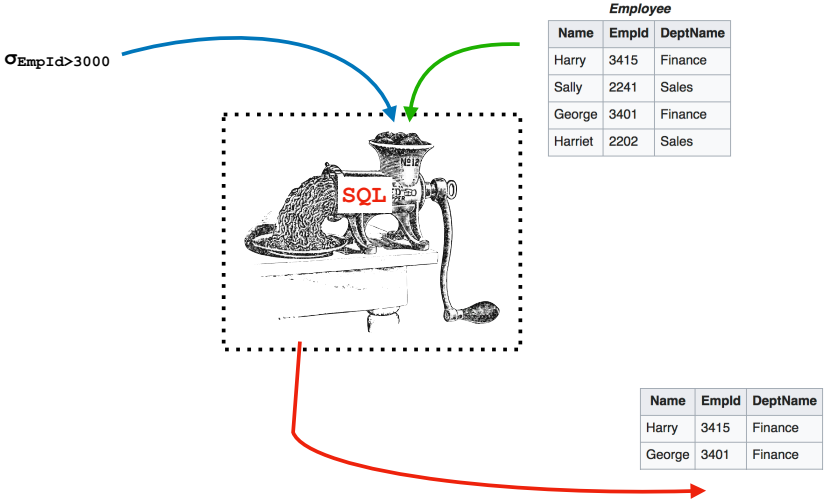

Employee

Name	EmpId	DeptName
Harry	3415	Finance
Sally	2241	Sales
George	3401	Finance
Harriet	2202	Sales

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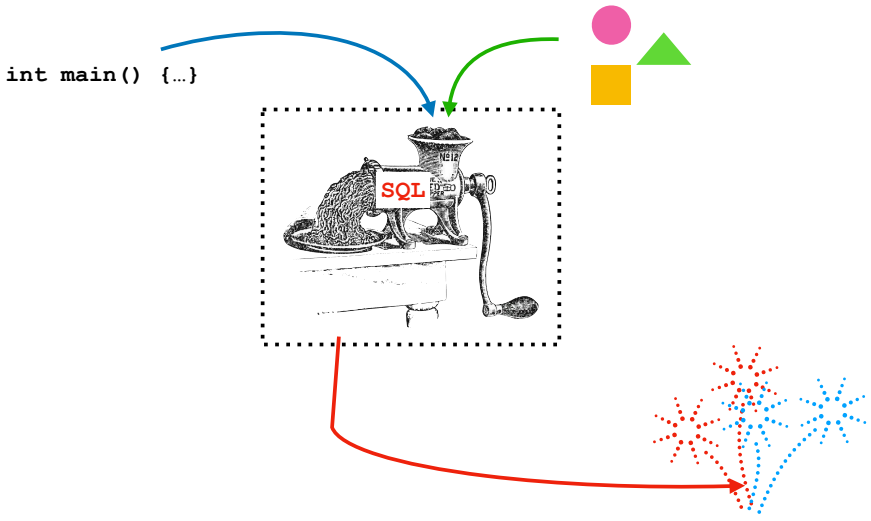

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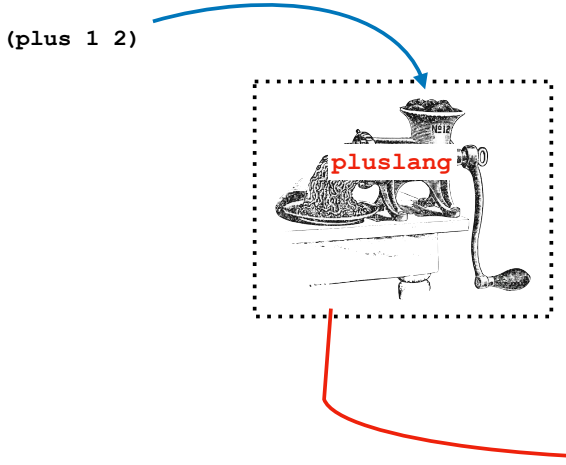

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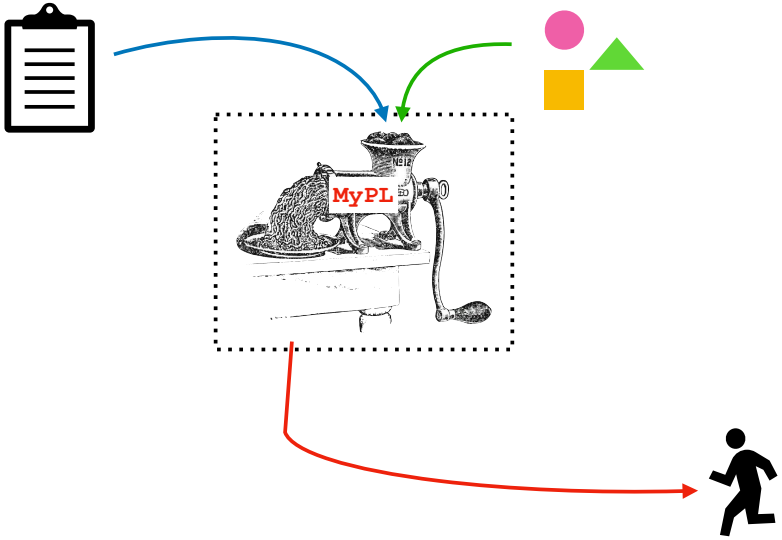

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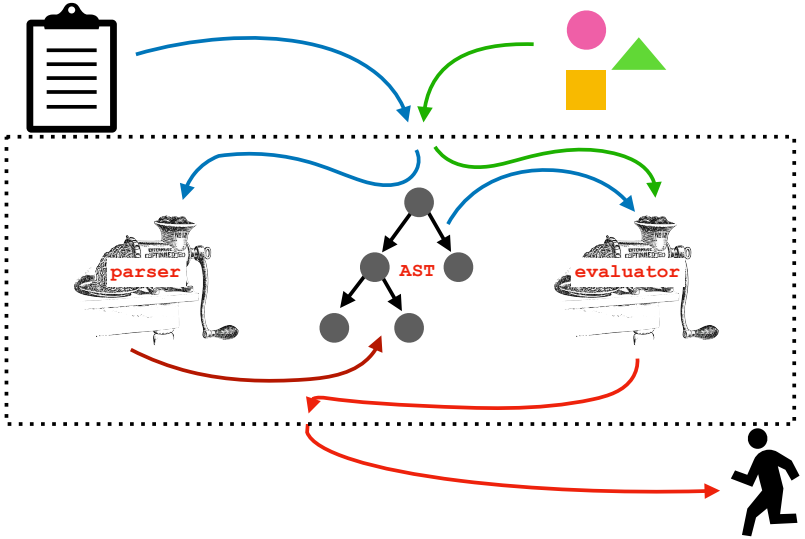


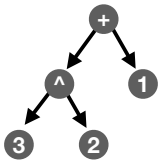
Program Interpreter

Program Interpreter

A **program interpreter** is a computer program that "interprets" given statements or expressions in a programming language. Unlike a compiler, an interpreter **directly** interprets code, often in the form of an **abstract syntax tree**.

Example

```
3^2 + 1
```



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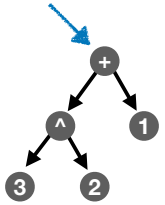

Eager evaluation: usually a **post-order traversal** of an AST.

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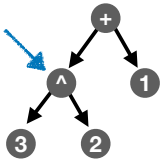

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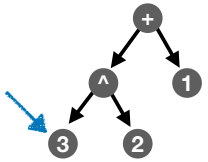

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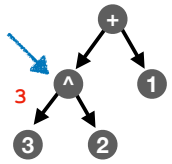

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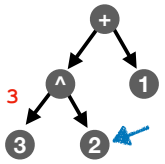

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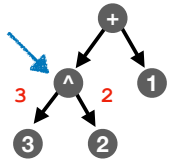

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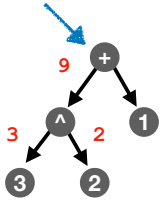

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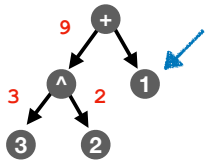

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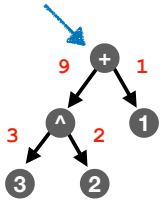

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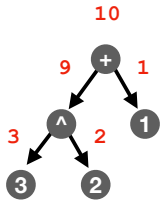

Eager evaluation: usually a **post-order traversal** of an AST.

This traversal is conveniently written as a **recursive function**.

pluslang

$$\texttt{<expr>} ::= \texttt{(plus <expr> <expr>}^{+}\texttt{)} \mid n \in \mathbb{N}$$

```
(plus 1 2)

(plus 1 2 3 4 5)
```

(code)

Recap & Next Class

Today:

Program interpretation

Next class:

Testing