How Programming Works

cSplash 2011

Paul Gazzillo

Introduction

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- What programming languages do you use?

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- Challenges of programming

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- Why programming languages

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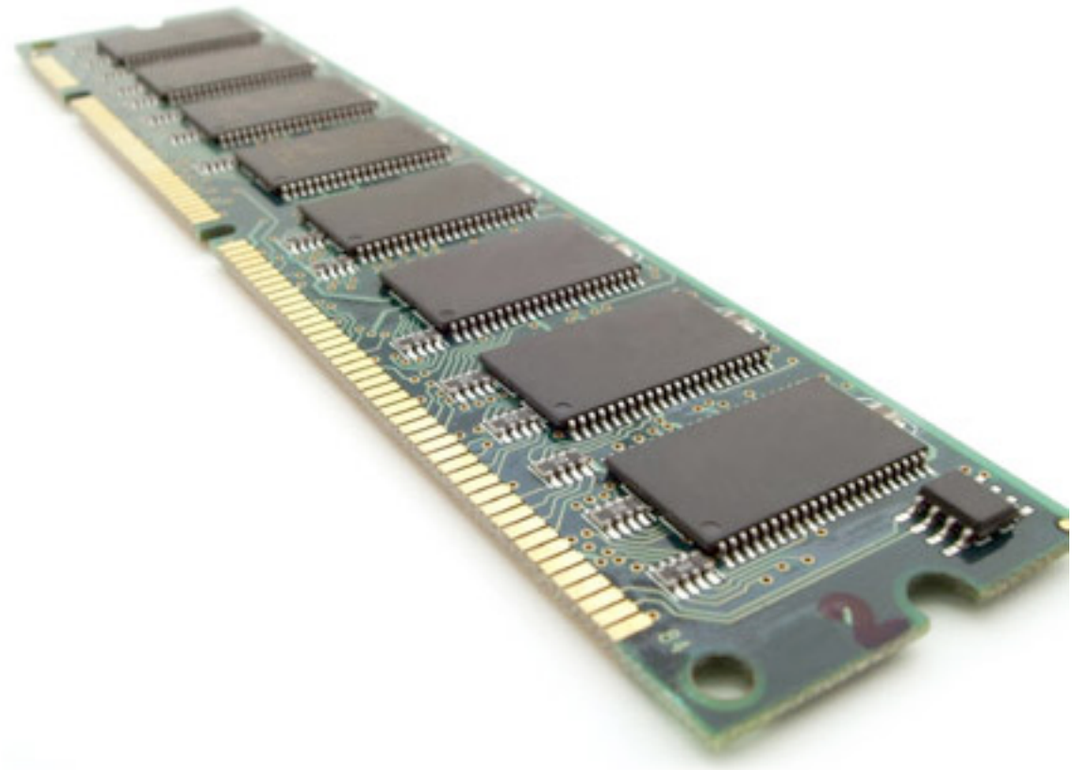
- What programming languages do you use?
- Challenges of programming
- Why programming languages
- Build a expression evaluator together

Architecture

Processor

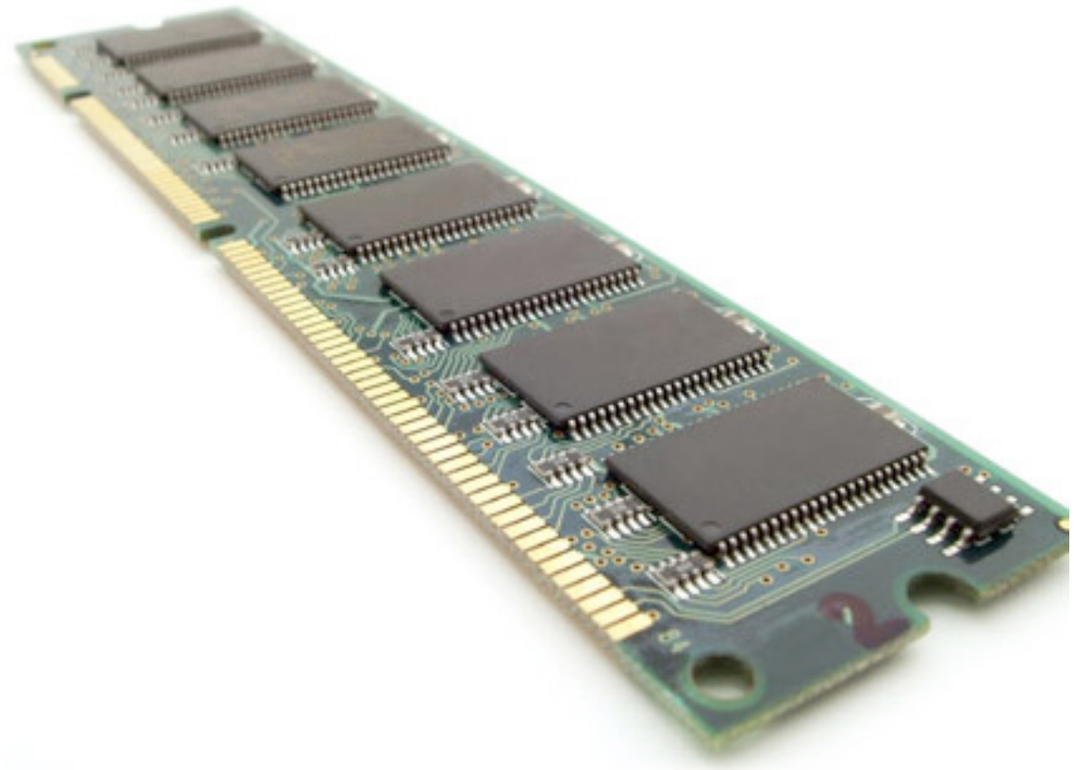


Memory

Architecture

Processor

Crunching numbers



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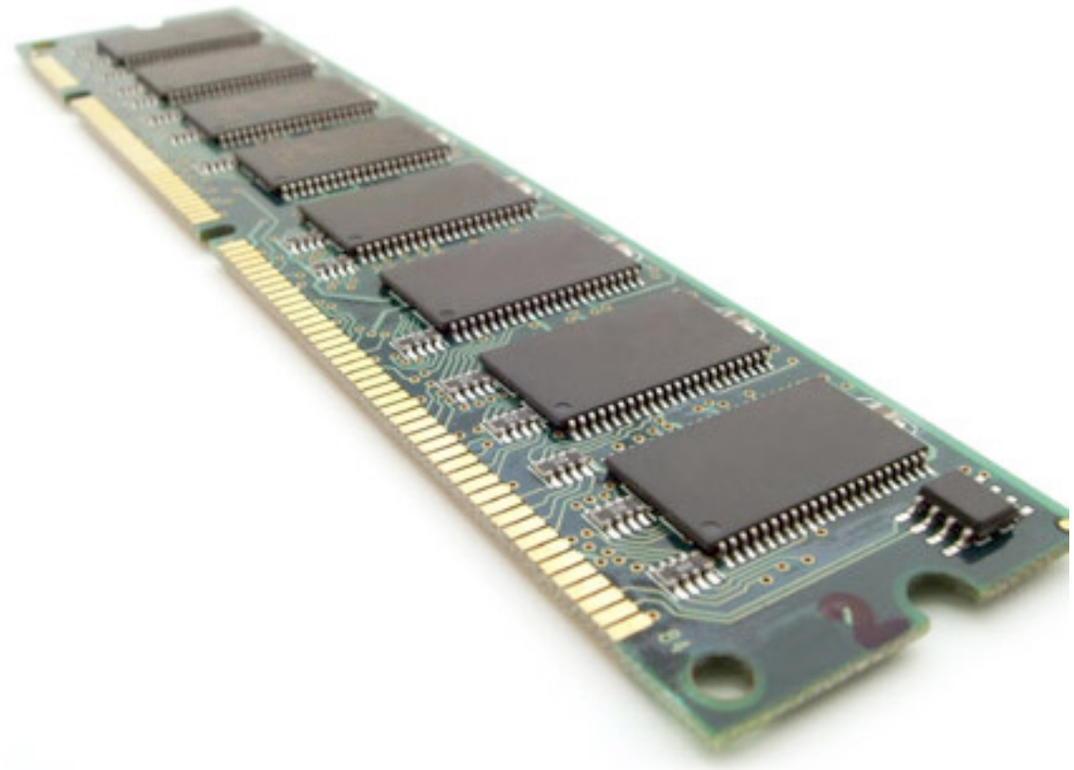

Memory

Storing numbers and programs

Instruction Set

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Add, subtract, etc two numbers

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Compare two numbers

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Jump to another part of the program

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Read and write a number to memory

Humans use *expressions*

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$$x = v_0 t + \frac{at^2}{2}$$

Processors only do *single steps*

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$$temp2 = a * t$$

$$temp3 = temp2 * t$$

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Compiler

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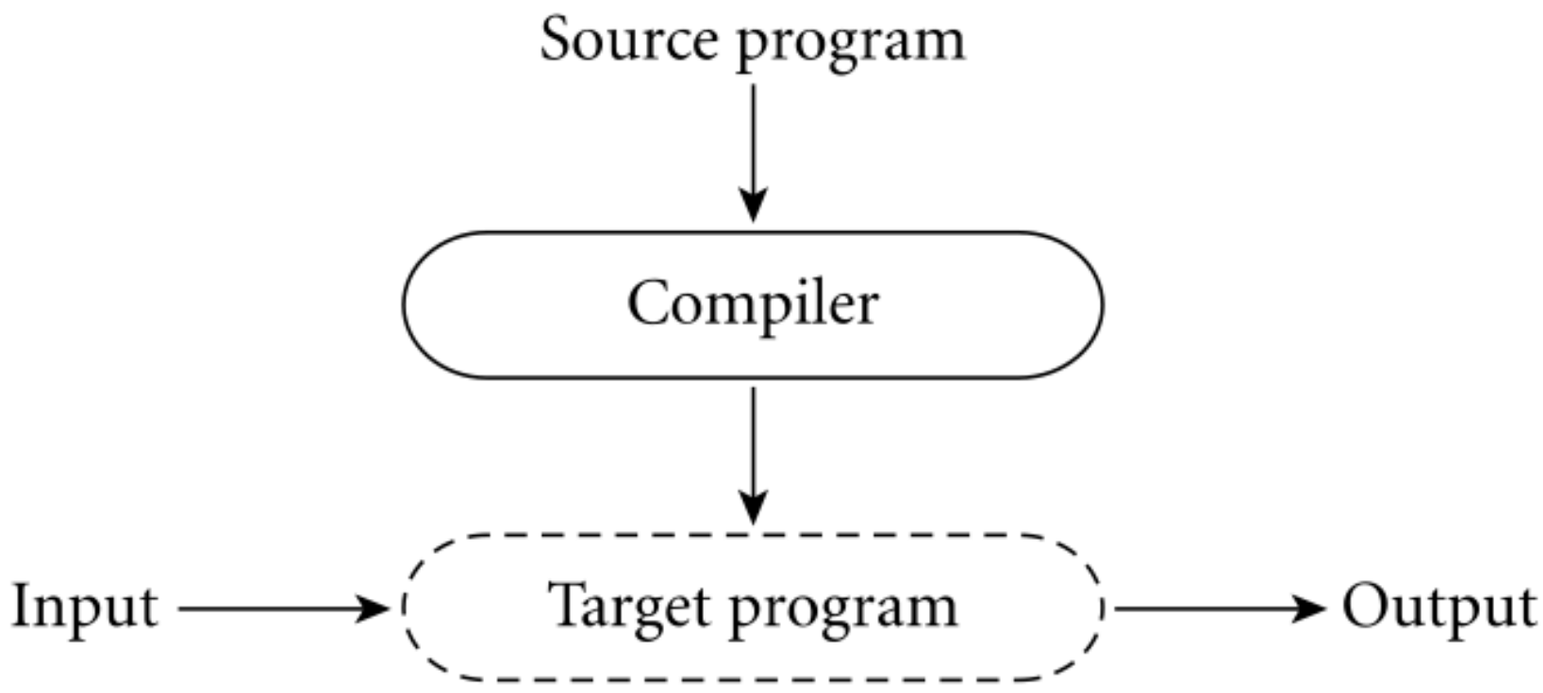
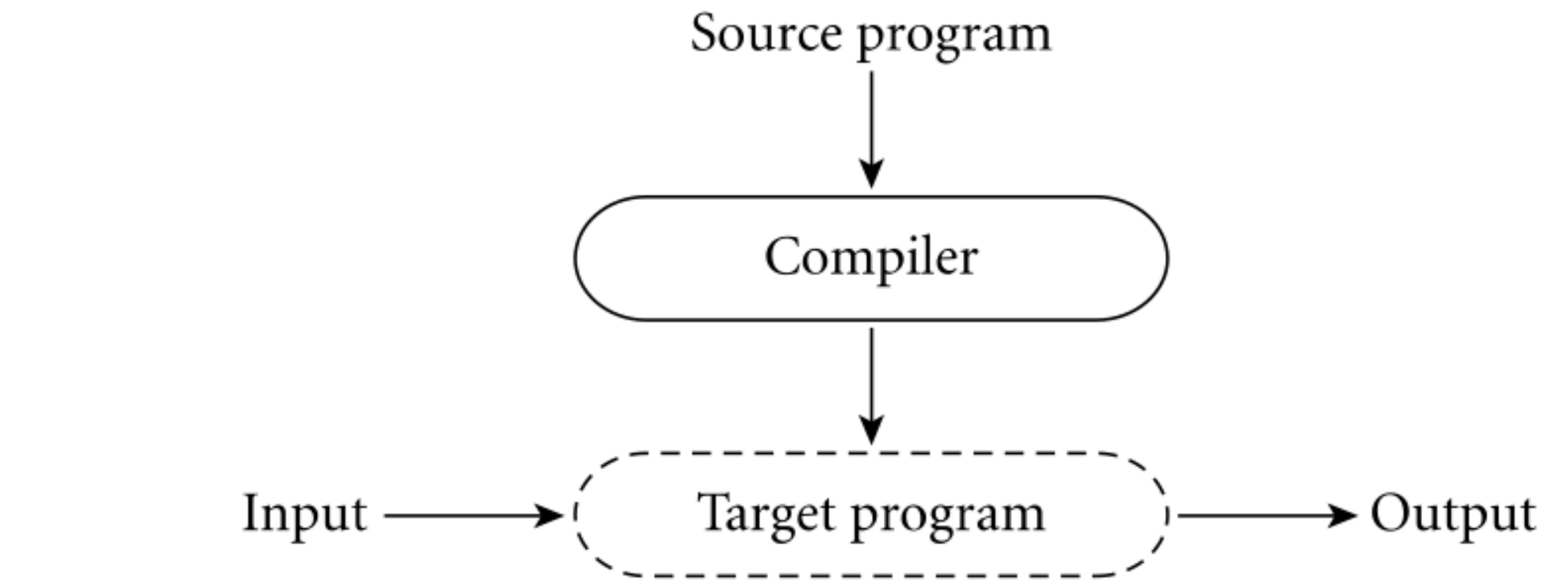
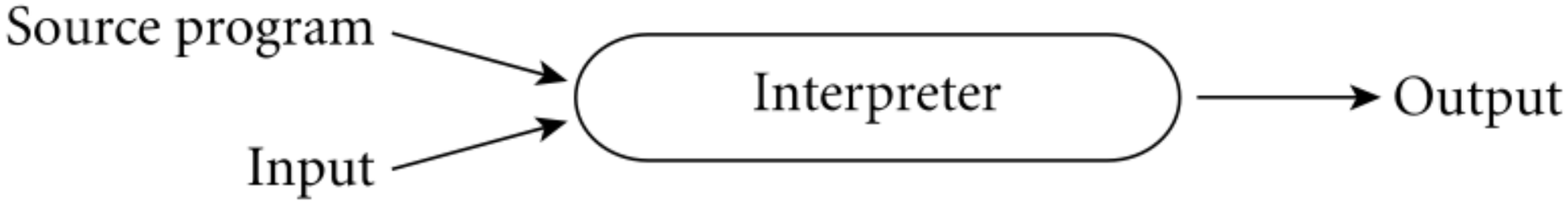


Compiler vs Interpreter





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  - (8+2)*3
- And computes the result, e.g.
  - 30
- We will be using a *stack*

Stack

Implementation Time!

Questions?