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# Introduction

# What we will cover in this course

- Overview of Scripting Languages
- Perl
- Python
- JavaScript
- Web Programming 101
- NoSQL databases
- Shells and bash programming
- Git/GitHub

# How to succeed in this course

- Show up to class
- Ask questions
- Read ahead
- Do your work
- Turn in assignments on time

# What is a Scripting Language?

- High level “Glue” code that integrates lower level components
- Automation of repetitive sysadmin tasks
- OO characteristics - extensibility, reusability, adaptability, modularization, ease of maintenance.
- Dynamic Typing

# “Hello, World” in 4 different scripting languages

Perl: `say "Hello, World!"`

Python: `print("Hello, World!")`

JavaScript: `<html><body><script>alert('Hello, World!')</script></body></html>`

Ruby: `puts "Hello, World!"`

# What is a Scripting Language?

- Interpreted vs. Compiled
- Compilation steps: syntax tree > byte code > machine code
- Development productivity vs. runtime performance
- Type safety vs. simpler code

# Characteristics of programming languages

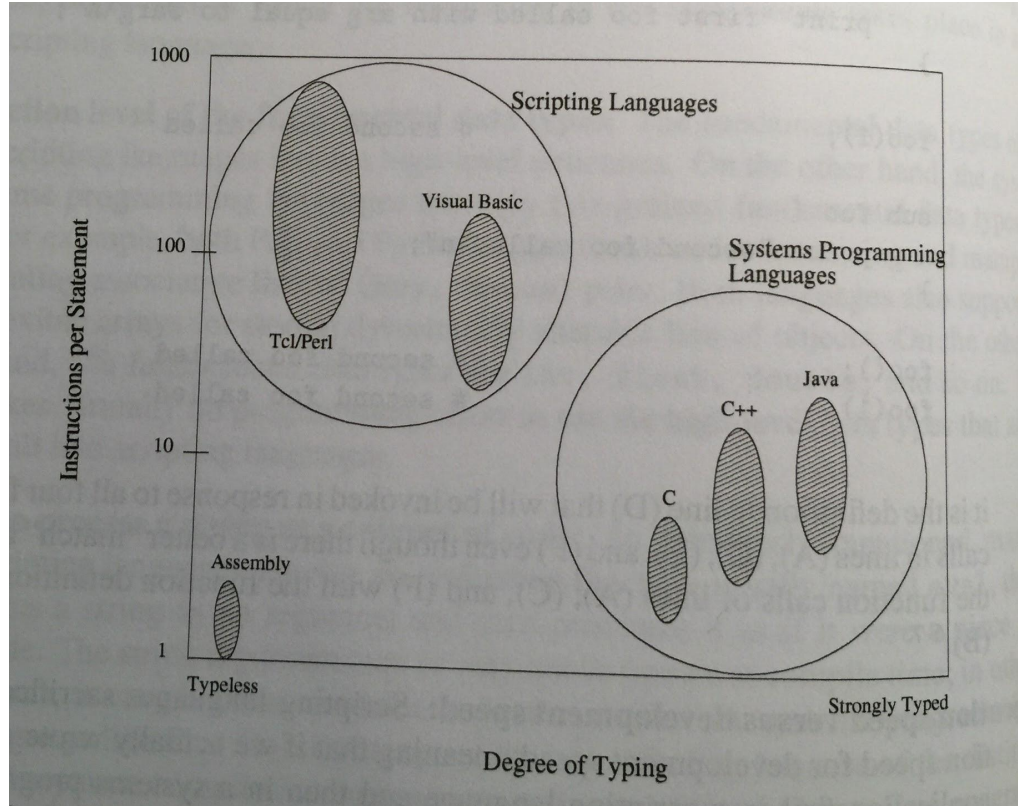
- Closeness to the machine
- Strength of data typing
- Compile-time type checking vs. run-time type checking
- High level vs. low level
- Programmer Productivity

# Characteristics of programming languages

- Abstraction level of the fundamental data types
- Ability to process a string as a piece of code
- Function overloading or lack thereof
- Execution speed vs. development speed
- Purpose



# Comparison of Programming Languages



# Books

Textbook:

- <http://amzn.to/2vPhE0r>

Optional:

- <http://amzn.to/2wITso8>
- <http://amzn.to/2v3W8T3>
- <http://amzn.to/2ihqkrl>

# Reading Assignments

- Syllabus
- Ousterhout's dichotomy -  
[https://en.wikipedia.org/wiki/Ousterhout's\\_dichotomy](https://en.wikipedia.org/wiki/Ousterhout's_dichotomy)
- Ousterhout's scripting paper -  
<https://web.stanford.edu/~ouster/cgi-bin/papers/scripting.pdf>
- Textbook Chapter 1- Pages 1-10
- Textbook Chapter 2 - Pages 13-74, 83-113

# Git Resources

- Book - <https://git-scm.com/book/en/v2>
- Tutorial - <https://www.atlassian.com/git/tutorials/what-is-version-control>
- GitHub Tutorial - <https://try.github.io/levels/1/challenges/1>
- Code School Git/GitHub free course - <https://www.codeschool.com/courses/mastering-github> even has a catchy intro song :)
- Git Extensions - <https://gitextensions.github.io/>
- Git Fork - <https://git-fork.com/>

# Additional Resources

- Homebrew - <https://brew.sh/>
- Installing bash on Windows 10 -  
[https://msdn.microsoft.com/en-us/commandline/wsl/install\\_guide](https://msdn.microsoft.com/en-us/commandline/wsl/install_guide)
- What is a CLI? - [https://en.wikipedia.org/wiki/Command-line\\_interface](https://en.wikipedia.org/wiki/Command-line_interface)
- Linux command line basics -  
<http://www.control-escape.com/linux/cli-basics.html>