

Lua!

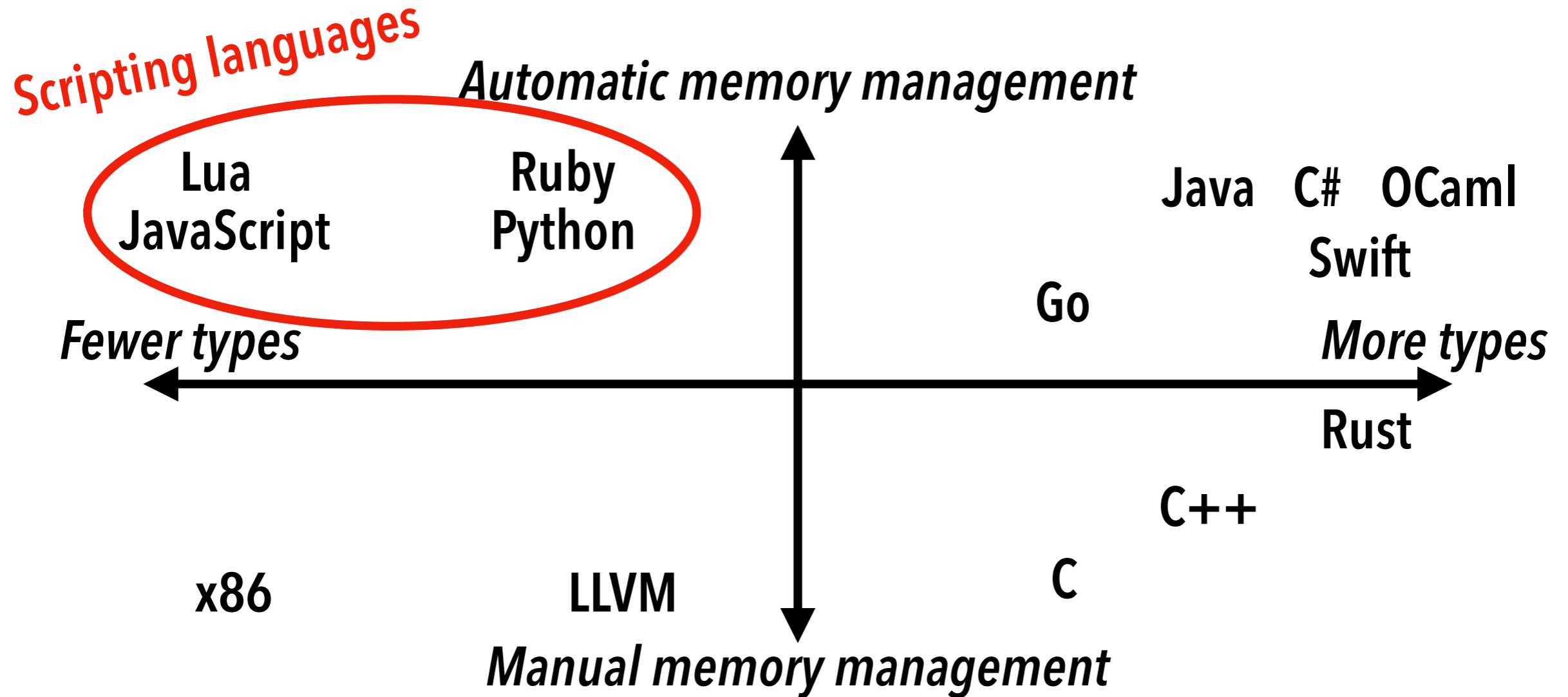
CS 242

September 26, 2017

Today's goals

- **Understand what defines a scripting language**
- **Become familiar with Lua's syntax and semantics**
- **Be able to write small Lua programs**

Taxonomy of modern GPLs



What is a scripting language?

- **Common features of a scripting language**
 - Dynamically typed
 - Garbage collected
 - Rich standard library
 - Reflection/metaprogramming
- **Ousterhout's dichotomy: scripts vs. systems**
 - Scripting languages are primarily "glue code"

Ousterhout's dichotomy

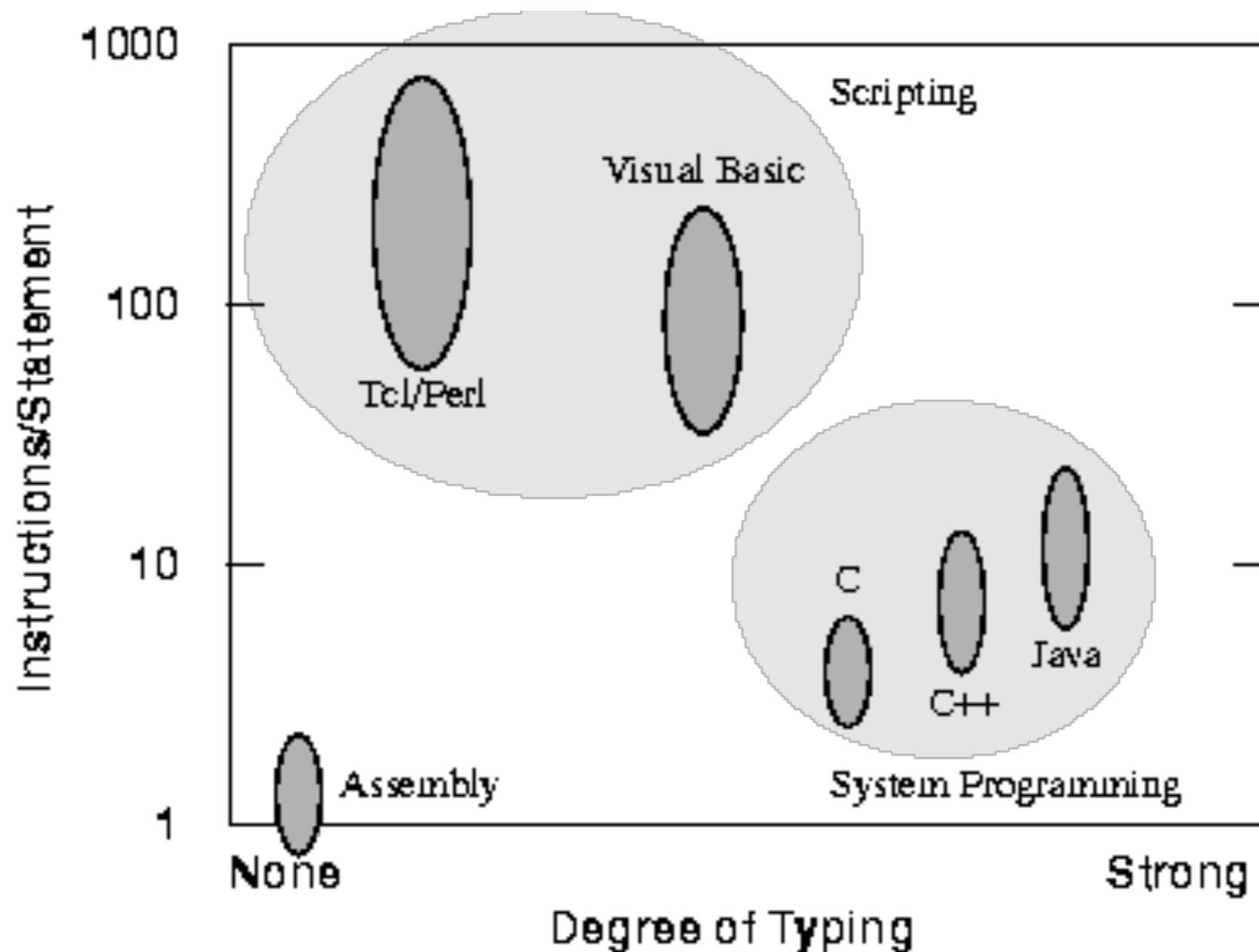


Figure 1. A comparison of various programming languages based on their level (higher level languages execute more machine instructions for each language statement) and their degree of typing. System programming languages like C tend to be strongly typed and medium level (5-10 instructions/statement). Scripting languages like Tcl tend to be weakly typed and very high level (100-1000 instructions/statement).

Why are scripting langs so productive?

- **Key idea: encode program information as you go**
 - e.g. type information, data lifetime
 - No one likes commitment!
- **Easy to use certain idioms hard to express in static types**
 - Interfaces/duck typing
 - Polymorphism
 - Heterogeneous data structures
 - Extensible classes
- **Abstractions barriers are recommendations, not requirements**

Moving between encoding schemes is an open problem!

Scripting langs are semi-specialized

- **Bash-like scripting languages ("Swiss Army Knife")**
 - e.g. Python, Perl
 - For file manipulation, data crunching, command line parsing
- **Web scripting languages**
 - e.g. JavaScript, PHP
 - Specialized constructs for dealing with webpages or HTTP requests
- **Embedded scripting languages**
 - Mostly just Lua
 - Lightweight, easy to build, simple semantics for games, config files

Why Lua?

- **Simplest, cleanest scripting language still in use**
- **"Correct" scoping**
- **No class system (let's build our own!)**
- **Easy to learn in a day**

Lua time!

Final thoughts

- **Assignment 1 will be out tonight**
 - **Implementing serialization library + RPC class wrapper**
- **Will is out until Saturday**
- **Start early to iron out the logistics!**
- **Office hours start Friday 1pm-3pm @ Huang basement**
- **Private Piazza is only for personal issues**