

Introduction to the Tools of Simulations

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Week 1

April 4 2019

Attendance
tinyurl.com/y678pobx

Class Philosophy

- Don't be afraid to ask questions – anytime
 - You can interrupt me anytime
- We are a pro-device class
 - You're all adults, you know how to pay attention
- Think flexibly
 - Computational simulations of biology is taking two ends of a spectrum
- Don't be afraid to ask questions
 - Seriously. This is not an easy topic. We are covering topics from Bioengineering, Biochemistry, CS, Applied Math, Informatics.

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Logistics

- 1 unit of research credit from biochemistry department
- Graded on credit/no credit scale
 - Need to show effort was put into work
 - Attend at least 70% of classes unless excused
 - Put work into assignments
- Most likely a “final” group presentation
- Some weeks will have weekly assignments

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What is Computer Science?

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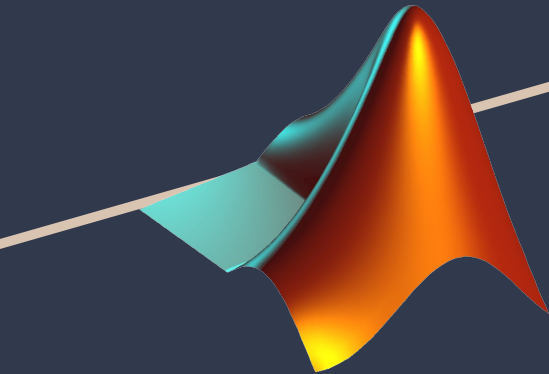
Geometry

Geo – Earth
Metry – Measure

What is the **essence**
Computer Science?

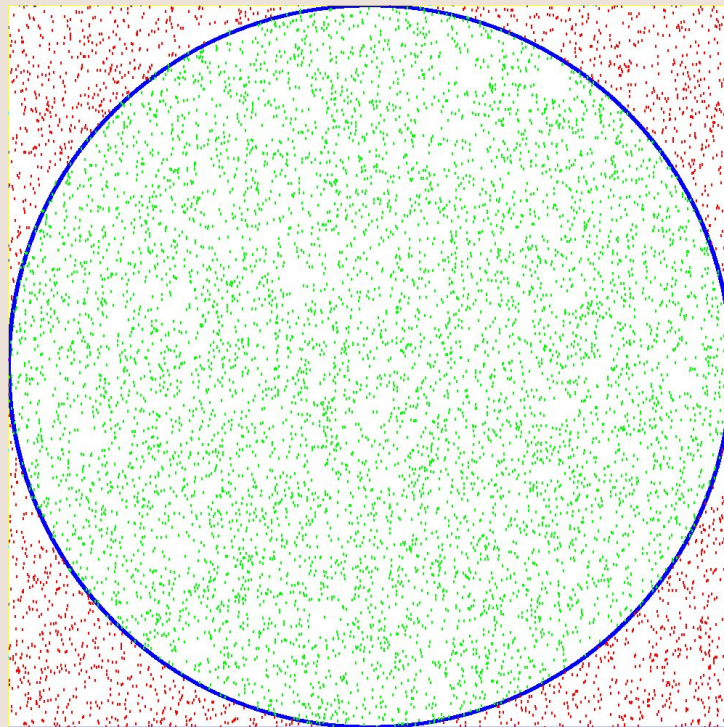
The formalized of
processes that
interact with *data*

Programming Languages



- Allows us to tell a computer exactly what to do
 - Computers are stupid
 - They only do what you tell them
- **Source Code:** Human readable text file, easily translated into something machines can understand
- **Programming languages** are a standardization of processes

Monte Carlo π Simulations

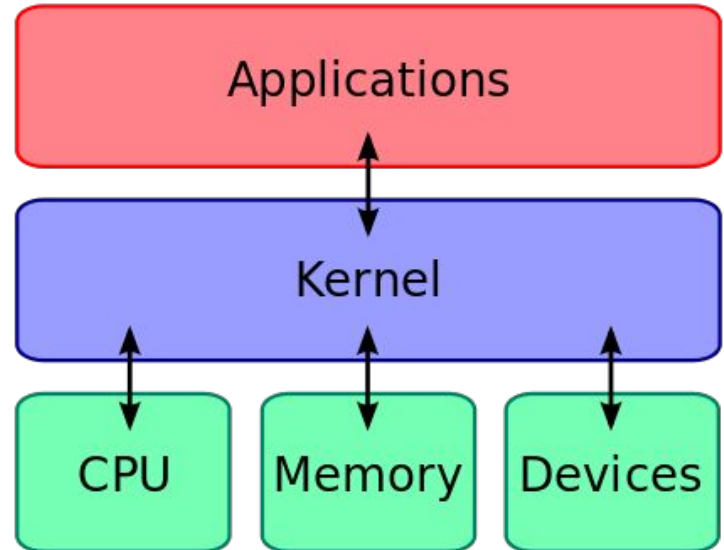


What is an operating system?

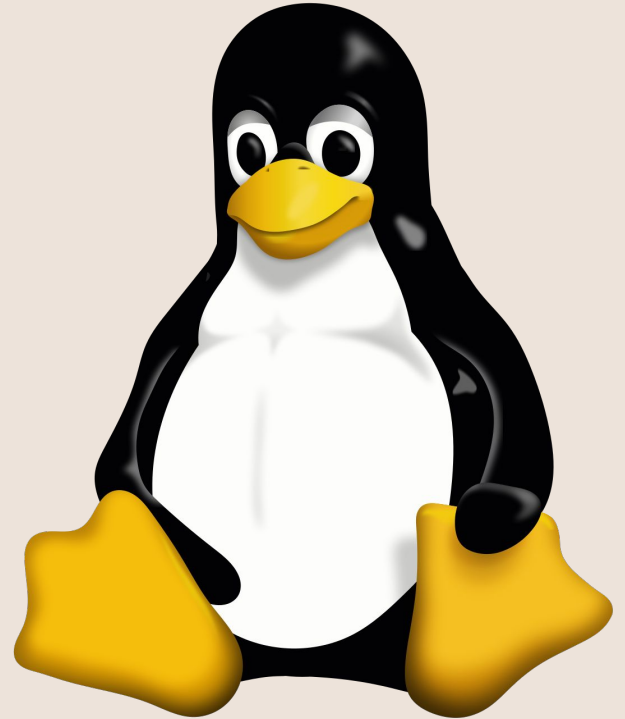
Operating Systems



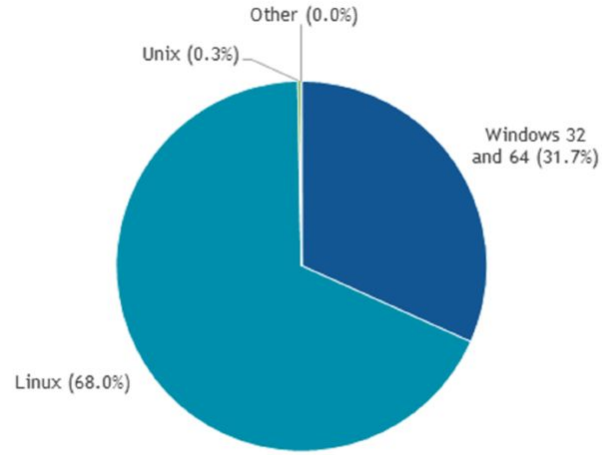
- What makes your computer run
 - The tools that allow your computer system to operate



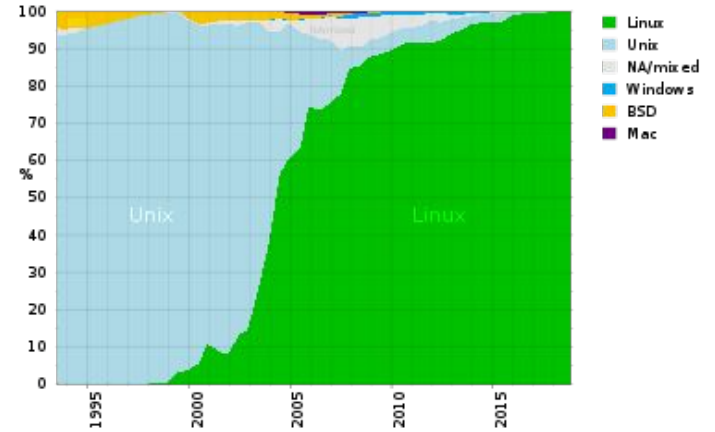
What is the most common
operating system in the
world?



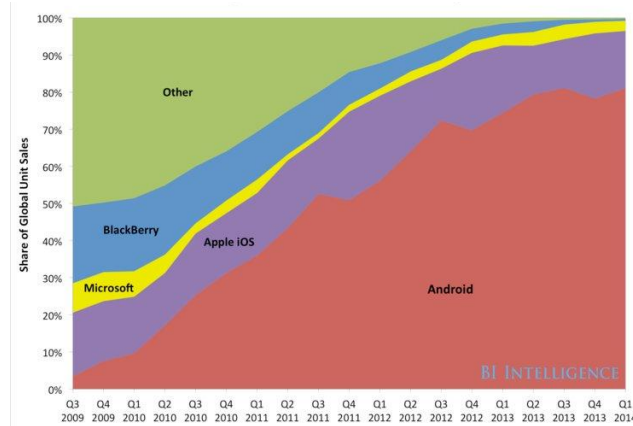
Servers



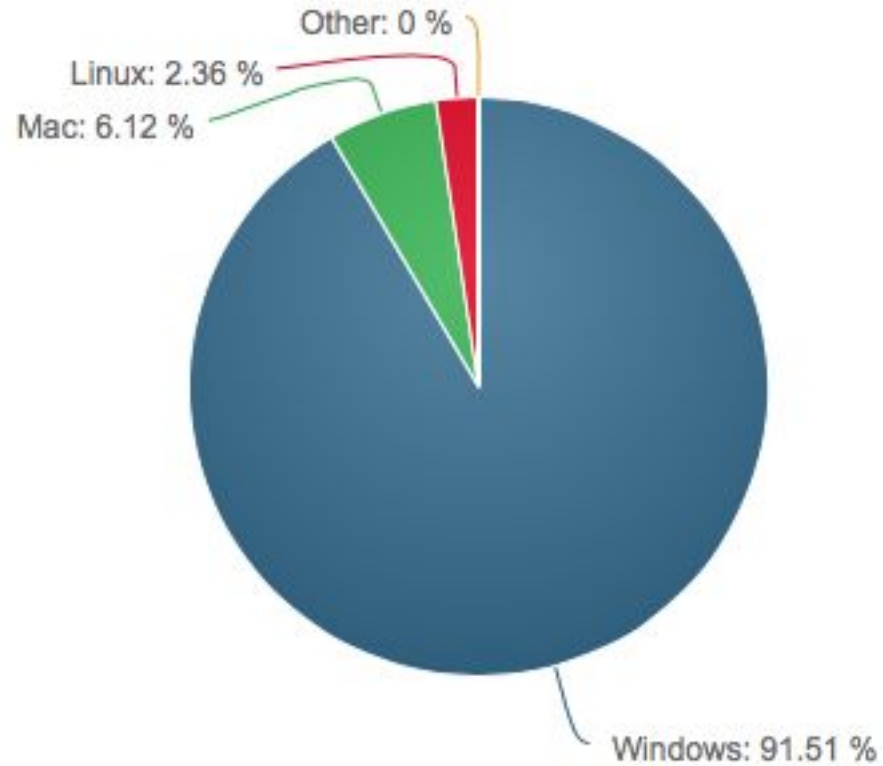
Supercomputers



Mobile



Personal Computers



Linux



- Linux is an “operating system” like Windows or Mac
 - Designed with programmers in mind
- Comes in many different ***distributions*** (distros)
 - Debian, **Ubuntu**, Arch, Fedora, Gentoo
- **Open Source**
 - Free to use
 - Anyone can view source code and make changes
 - Made by the community
- Rosetta is mainly designed to work on Linux

Weekly Assignments

- Add profile picture to Zulip
- Create GitHub account
- Install “git”
 - Windows: git bash
 - Linux: comes with git
 - Mac: can be installed
- Watch for updates on Zulip!