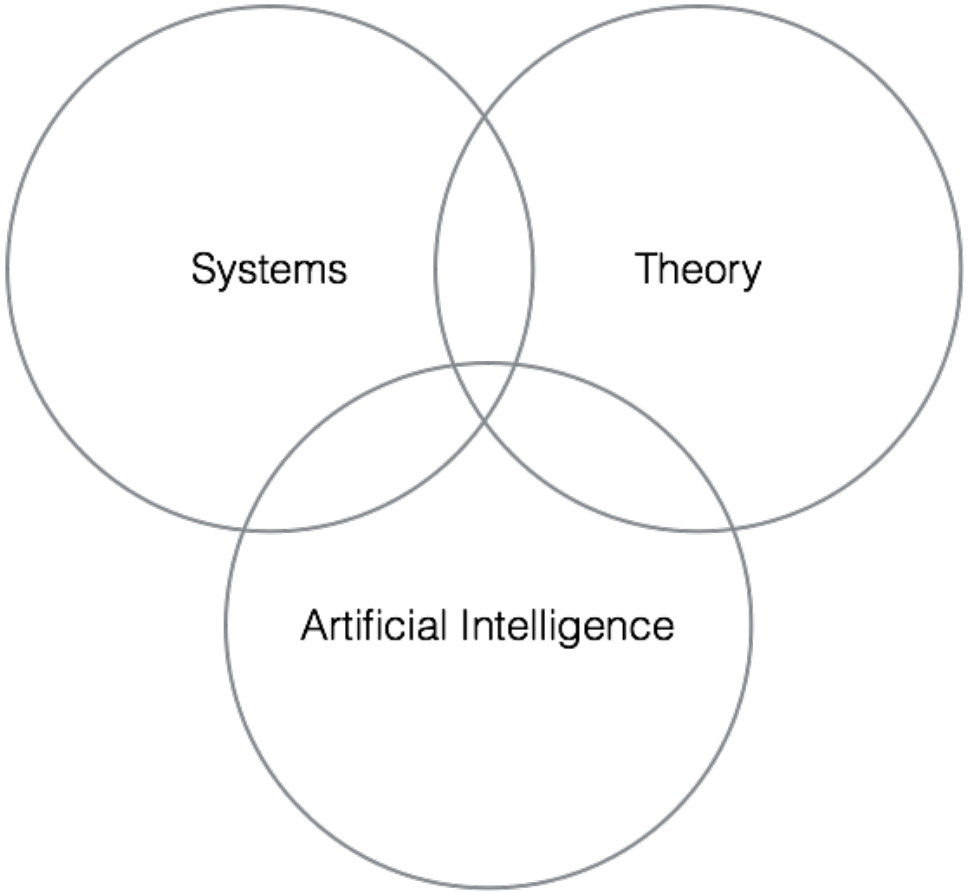

Systems
Theory
Artificial Intelligence

Theory:

What are computers capable of, in principle?

Systems:

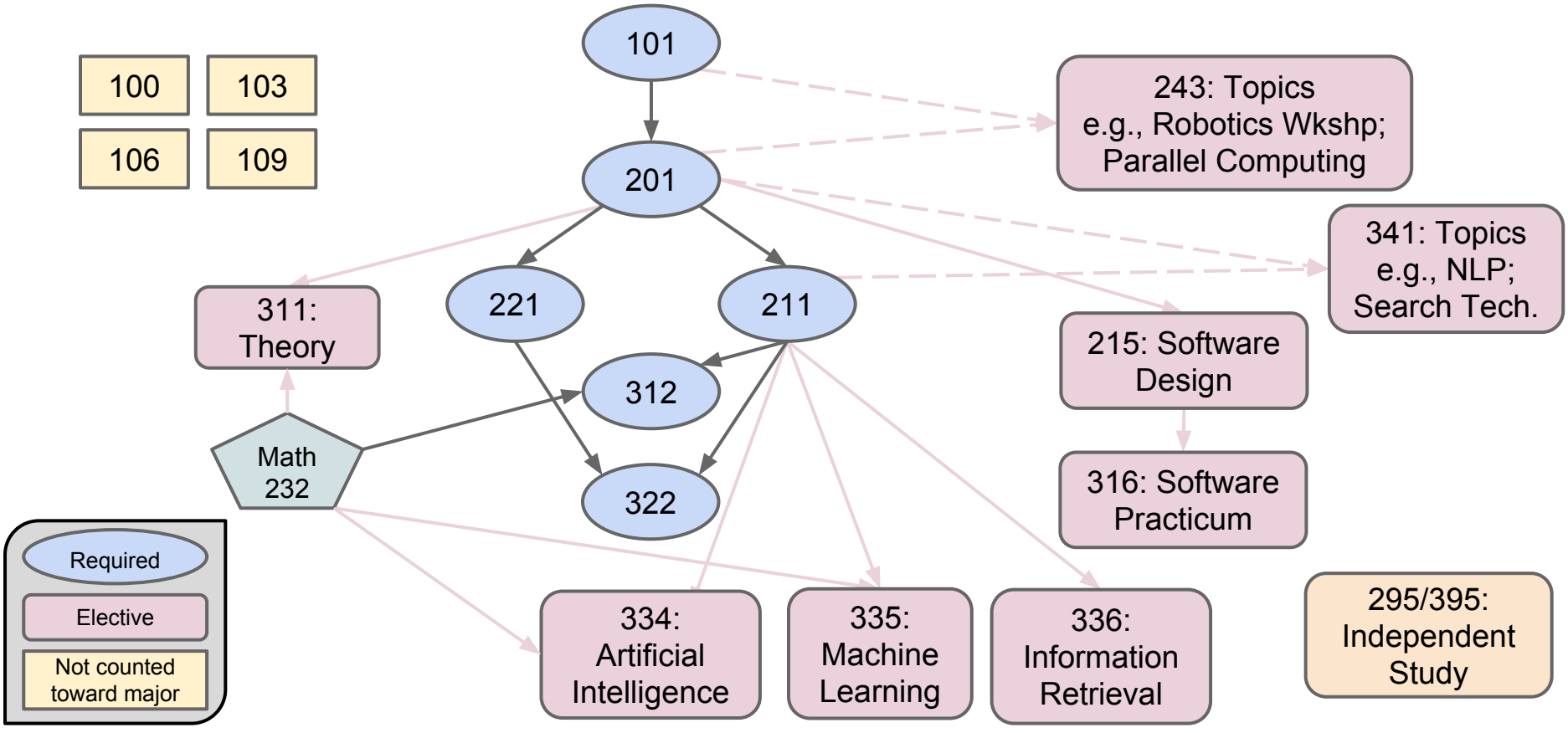
What kinds of computers/software are practical to build?

Artificial Intelligence:

How can we solve real-world problems without human interaction?

updated 10/28/15 HPB

MHC Computer Science Courses

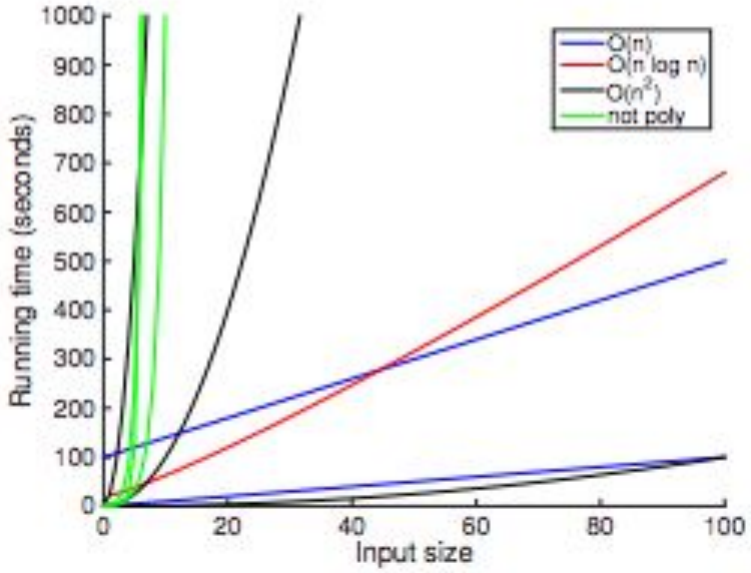


Some Examples

CS 312: Algorithms

Visualizing Running-Times

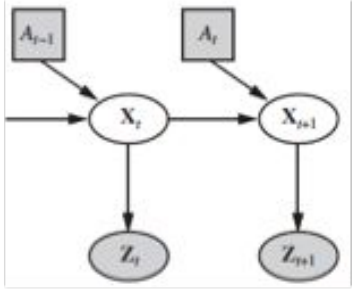
What is the difference between polynomial and non-polynomial in practice?



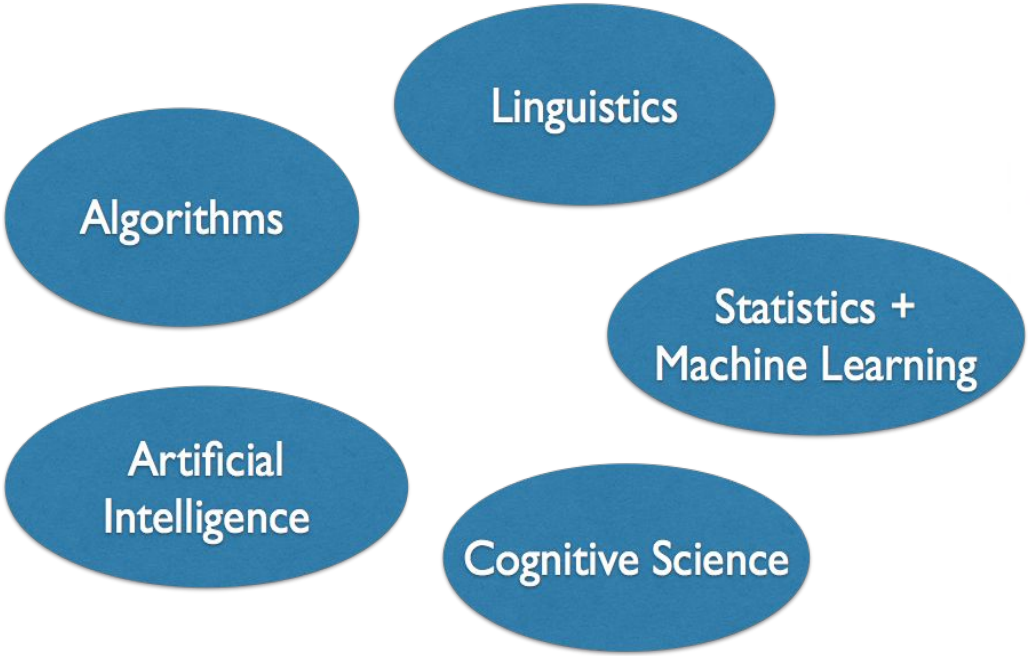
graph from Dan Sheldon

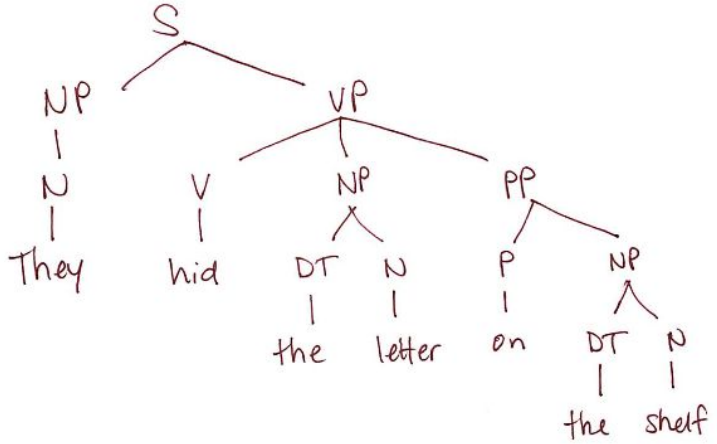
CS 334: Artificial Intelligence



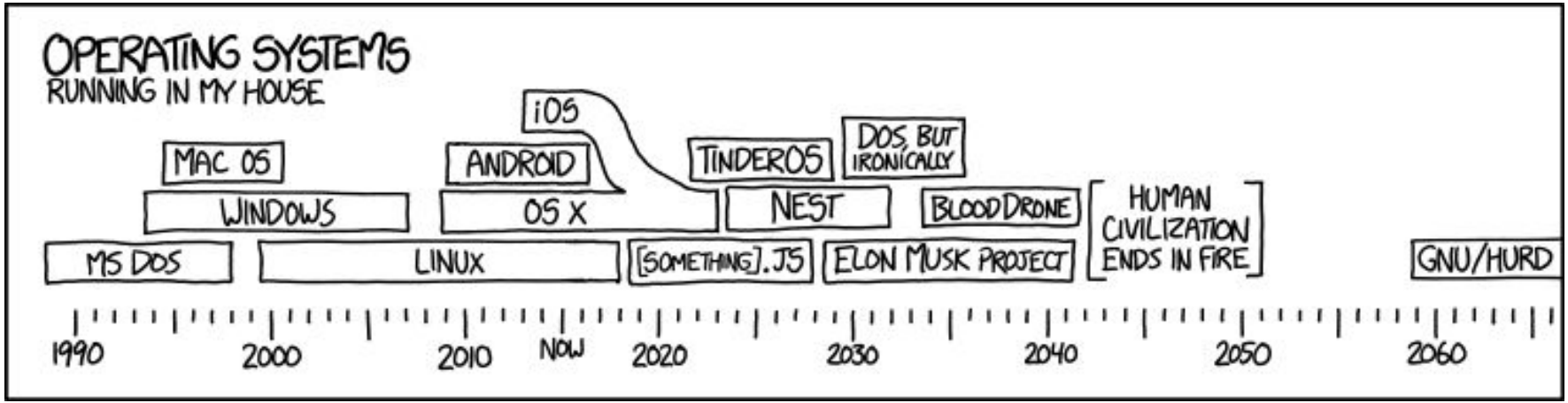



CS 341: Natural Language Processing





CS 322: Operating Systems



HTTP://XKCD.COM/1508/

Practice, Practice, Practice

Spring semester is 1+ month away...

- Codeacademy
- Games, e.g., CodinGame
- Create a Unity project
- Learn a new language, e.g., python
- Online courses, e.g., Coursera
- Find a friend to keep you accountable
- Teach others how to write code!

Start shared session

What are shared sessions?

Java Tutor - Visualize Java code execution to learn Java online

(also visualize Python, Java, JavaScript, TypeScript, Ruby, C, and C++ code)

Java

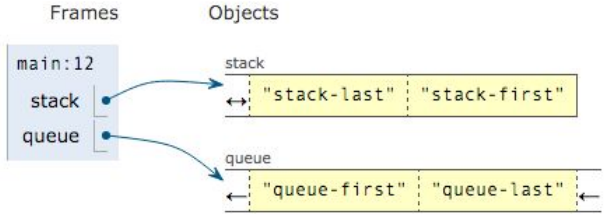
```
 1 public class StackQueue {
 2    public static void main(String[] args) {
 3       Stack<String> stack = new Stack<>();
 4       Queue<String> queue = new Queue<>();
 5
 6       stack.push("stack-first");
 7       stack.push("stack-last");
 8
 9       queue.enqueue("queue-first");
10       queue.enqueue("queue-last");
11
12       for (String s : stack)
13          System.out.println("stack contains " + s);
14       for (String s : queue)
15          System.out.println("queue contains " + s);
16
17       while (!stack.isEmpty())
18          System.out.println(stack.pop());
19       while (!queue.isEmpty())
20          System.out.println(queue.dequeue());
21    }
22 }
```

Edit code

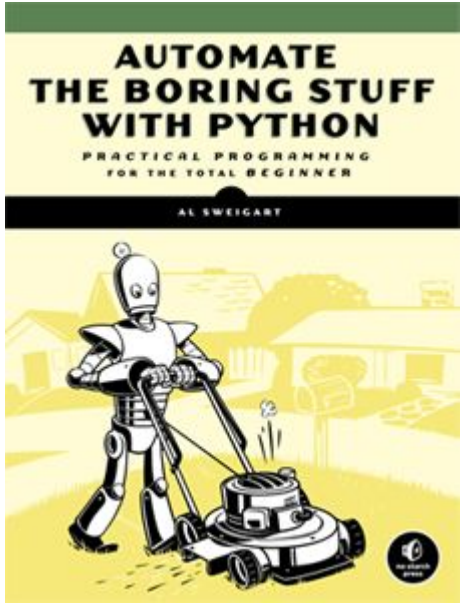
<< First | < Back | Step 8 of 24 | Forward > | Last >>

line that has just executed

next line to execute



http://pythontutor.com/java.html



https://automatetheboringstuff.com/

Part 1 - The Basics of Python Programming

0. Introduction
1. Python Basics
2. Flow Control
3. Functions
4. Lists
5. Dictionaries and Structuring Data
6. Manipulating Strings

Part 2 - Automating Tasks

7. Pattern Matching with Regular Expressions
8. Reading and Writing Files
9. Organizing Files
10. Debugging
11. Web Scraping
12. Working with Excel Spreadsheets
13. Working with PDF and Word Documents
14. Working with CSV Files and JSON Data
15. Time, Scheduling Tasks, and Launching Programs
16. Sending Email and Text Messages
17. Manipulating Images
18. Controlling the Keyboard and Mouse with GUI Automation

What have we learned?

Learning Goals for CS201

Sophistication in programming (process of conceiving a program, designing classes, methods, implementing, iterative testing, debugging)

Development of:

- analytical skills (e.g., recursion)
- problem solving skills
- debugging skills

Familiarity with abstraction, object-oriented design

Familiarity with basic data structures (linked lists, stacks, queues, binary trees)