CompSci 101
Introduction to Computer Science

Sept 1, 2016

Prof. Rodger

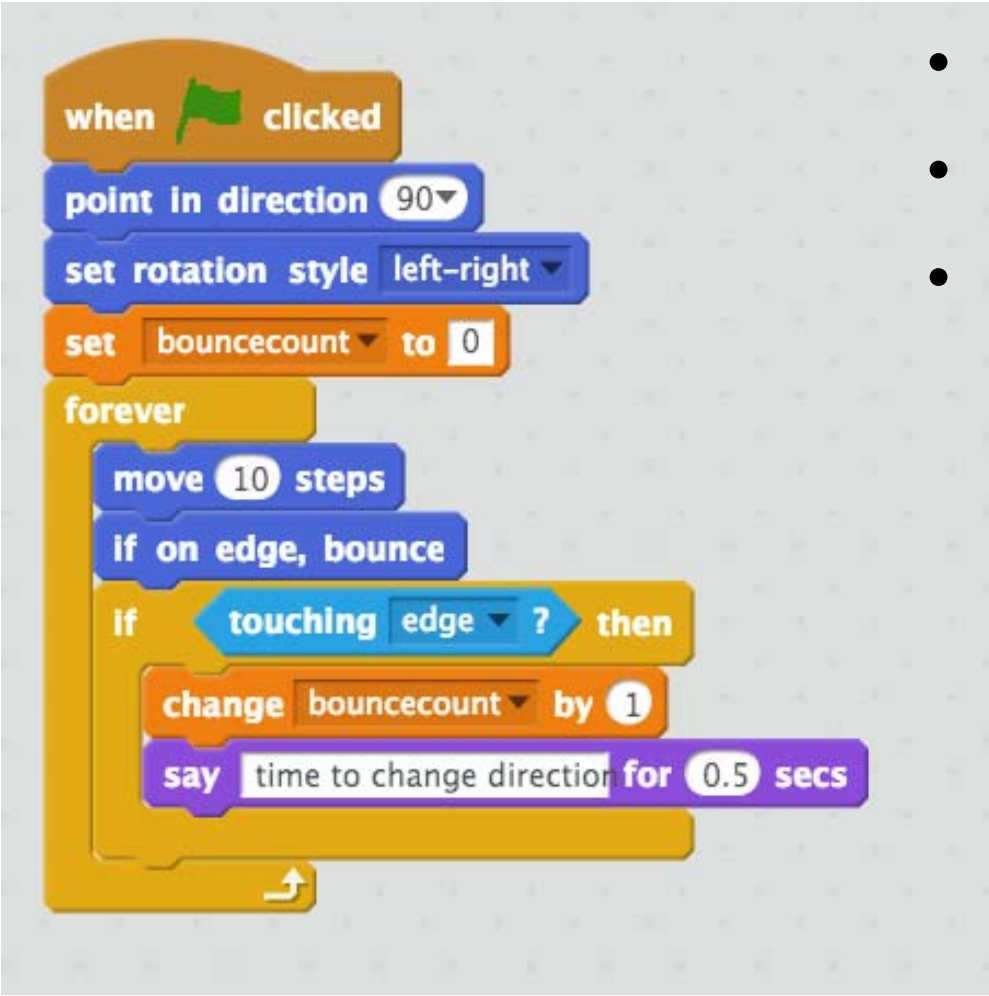
Announcements

- Reading for next time on calendar page
  - RQ 2 due Thursday
- Assignment 1 due Tuesday
  - Have fun with Blockly
- Install your environment! Get Help!
- Lab 1 this week!

- Plan for Today:
  - Problem Solving and Python

Software Failure

Review Scratch program



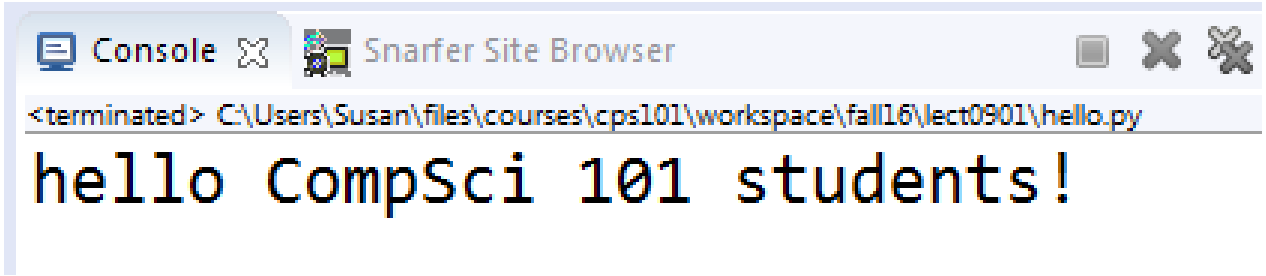
- "Hello World"
- Scratch Program
- Colors
  - Duke blue: motion
  - Mustard: control
  - Light blue: sensing
  - Orange: data
  - Purple: looks

Python code: hello.py

```
1  '''
2  Created on Aug 31, 2016
3
4  @author: Susan
5  '''
6  print "hello CompSci 101 students!"
```

Run hello.py

```
1  '''
2  Created on Aug 31, 2016
3
4  @author: Susan
5  '''
6  print "hello CompSci 101 students!"
```



Python data reading code

```
f = open("kjv10.txt")
st = f.read()
total = len(st)
zc = st.count('z')
print "total # chars = ",total
print "number of z’s",zc
for ch in 'aeiou':
    print ch, st.count(ch)
```

Explaining Python code?

http://bit.ly/101f16-0901-1

Duke Connection: Fred Brooks '53

- What Would FB Say?

"The most important single decision I ever made was to change the IBM 360 series from a 6-bit byte to an 8-bit byte, thereby enabling the use of lowercase letters. That change propagated everywhere."

- "Fred Brooks" by Copyright owned by SD&M (www.sdm.de) - Request for picture sent by email to Fred Brooks by uploader (Mark Pellegrini; user:Raul654) Fred sent this photo back, along with contact information for Carola Lauber at SD&M, who gave copyright permission.. Licensed under CC BY-SA 3.0 via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Fred_Brooks.jpg#/media/File:Fred_Brooks.jpg

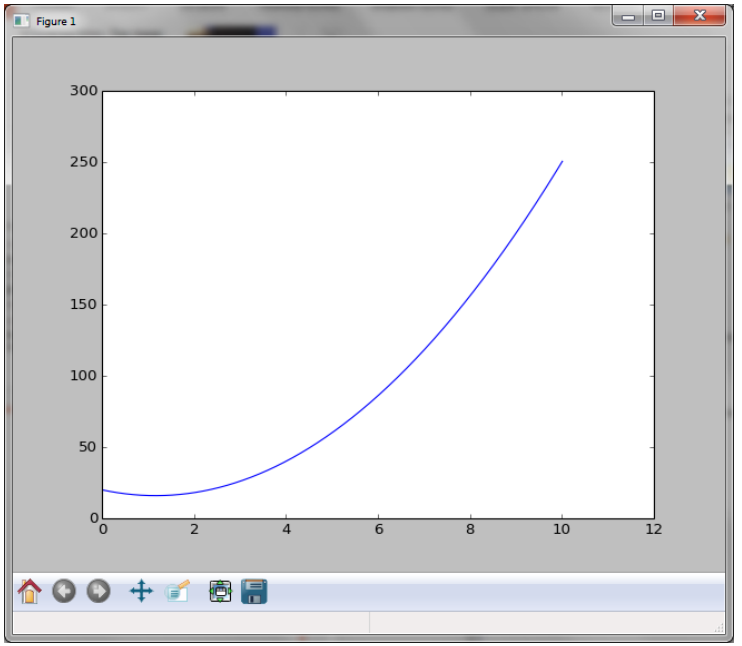
Why is programming fun?

Fred Brooks

- First is the sheer joy of making things
- Second is the pleasure of making things that are useful
- Third is the fascination of fashioning complex puzzle-like objects of interlocking moving parts
- Fourth is the joy of always learning
- Finally, there is the delight of working in such a tractable medium. The programmer, like the poet, works only slightly removed from pure thought-stuff.

Lab 1 This Week

- Install Before attending if can
- Modify Python program
- Scratch program



Our Programming Environment

- Install 5 items

- Why Java? – not using
- Eclipse – platform for development

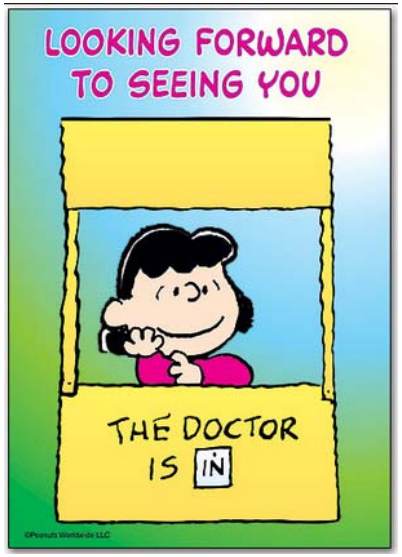
- Python – programming language
  - Pydev – Python IDE for Eclipse

- Canopy – python libraries

- Ambient – turnin/snarf files to/from Duke

How does one get help in CompSci 101?

- Consulting hours
  - Sunday-Thursday 7:30-11:30pm
- Office hours (prof, TAs)
- Collaborate with other students
- Piazza
  - Ask questions
  - Do not post your code and ask what is wrong!
  - Post error message and line of code for error message
  - If added class late, may need to add yourself



How to succeed in Compsci 101

- Start assignments early, they'll take longer than you think
- Read the book, we'll build on it in class
- Collaborate well, but be sure you can do work on your own!
- Be curious, work hard at beginning, think carefully

Your goal is to …

- Get all assignments completed and turned in on time.

AND…

Algorithm

- Recipe
- Sequence of steps that constitute instructions
- Step-by-step procedure for calculations

What does Nate Silver do?

http://53eig.ht/1tZy909

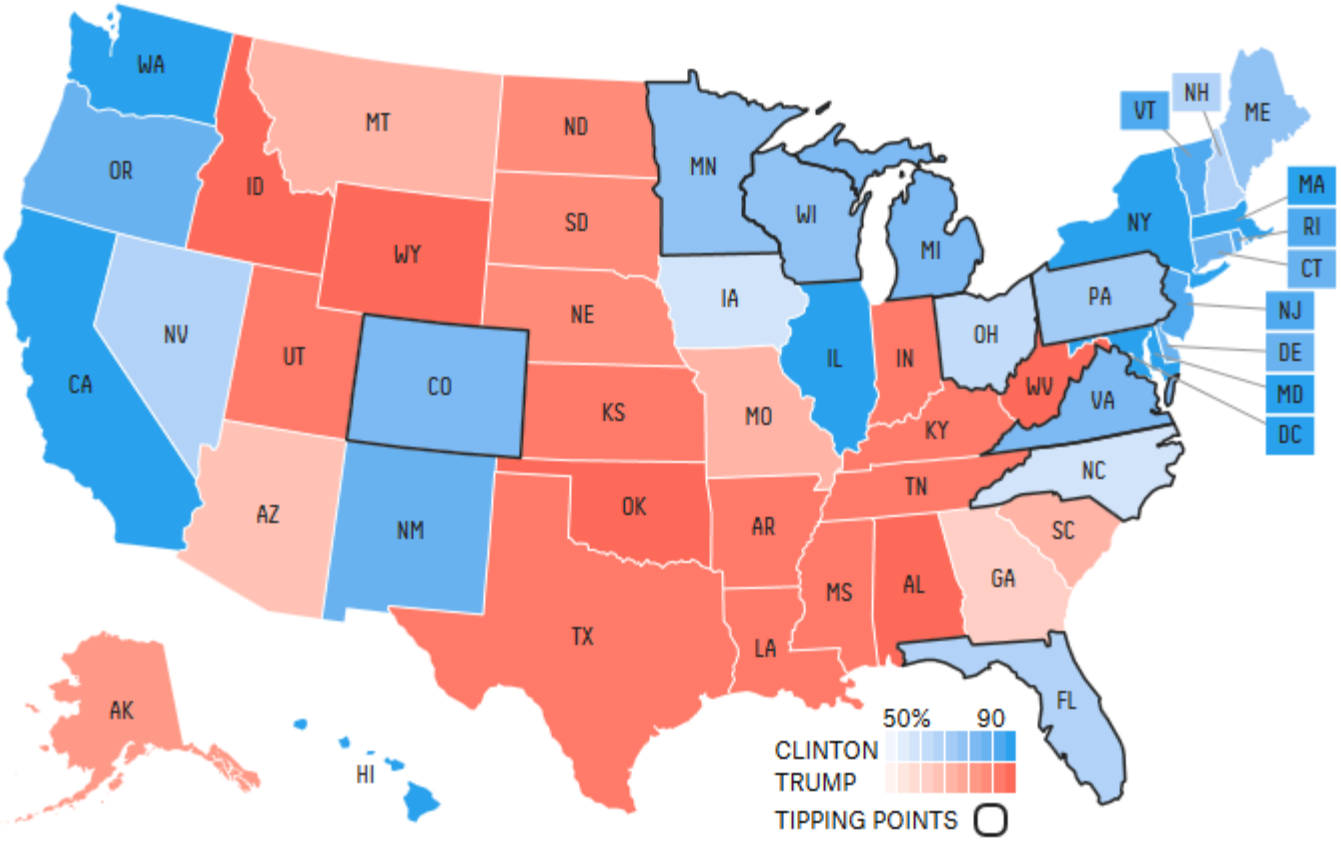
How do Netflix and Amazon know me?

- Compsci101 project: capable of implementation as a program, but much more basic

http://moreintelligentlife.com/content/features/anonymous/slaves-algorithm

Who will win the presidency?

Chance of winning



Google “algorithm”

Google

algorithm

All News Images Books Videos More Search tools

About 1,100,000 results (0.34 seconds)

Simple diagnostic **algorithm** to assess pulmonary embolism risk can ...
News-Medical.net - 22 hours ago
Now, new findings presented at ESC Congress 2016, suggest a simple diagnostic **algorithm** can be used to rule out PE in a significant number ...

AI **Algorithm** chooses most attractive selfies from 6000 submissions
Daily Mail - Aug 30, 2016
AI beauty contest used five **algorithms** to evaluate youthfulness, face symmetry, skin and other parameters, and then compare them to models ...

New **Algorithm** Manages Bitcoin Price Volatility for Everyday Users
Bitcoin Magazine - Aug 29, 2016
The newly launched **algorithm** for Bitcoin trading, TWAP (Time Weighted Average Price), could save both money and headaches for people ...
TWAP Bitcoin **Algorithm** Makes Trading Easier During Volatile Periods
Live Bitcoin News - Aug 30, 2016
View all

An **Algorithm** to Predict a Bestseller
Wall Street Journal - 11 hours ago
20, have detected through an **algorithm** they designed to identify the DNA of bestselling novels. For the last five years, Matthew L. Jockers, ...