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
Error

An unexpected error has occurred.

Send a bug report

To send a bug report, describe what you were doing when the problem occurred, in the space below, and press the submit button.

Recovery

To recover from this error without sending in a bug report, please do the following:

- Press the Logout button above to log out.
- Close your browser to assure a clean start.
- Re-open your browser and start again.
Error

An unexpected error has occurred.

Recovery

To recover from this error without sending in a bug report, please do the following:

- Press the Logout button above to logout.
- Close your browser to assure a clean start.
- Re-open your browser and start again.
Your User ID and/or Password are invalid.

Sign in to ACES/STORM
Review Scratch program

- "Hello World"
- Scratch Program
- Colors
  - Duke blue: motion
  - Mustard: control
  - Light blue: sensing
  - Orange: data
  - Purple: looks
Python code:  hello.py

'''
Created on Aug 31, 2016
@author: Susan
'''
print "hello CompSci 101 students!"
Run hello.py

```python
'\nCreated on Aug 31, 2016
@author: Susan
'\nprint "hello CompSci 101 students!"
```

```
hello CompSci 101 students!
```
Python data reading code

```python
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)
```

Woa!!!
Am I suppose to understand all that code right now!!!!
    No!!!
We will learn all that over The next month!
Explaining Python code?

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…
Your goal is to …

• Get all assignments completed and turned in on time.

AND…

• Understand the code you turn in.
• Be able to explain the code you turn in.
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

Hillary Clinton: 73.8%
Donald Trump: 26.1%
Google “algorithm”

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
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, ...