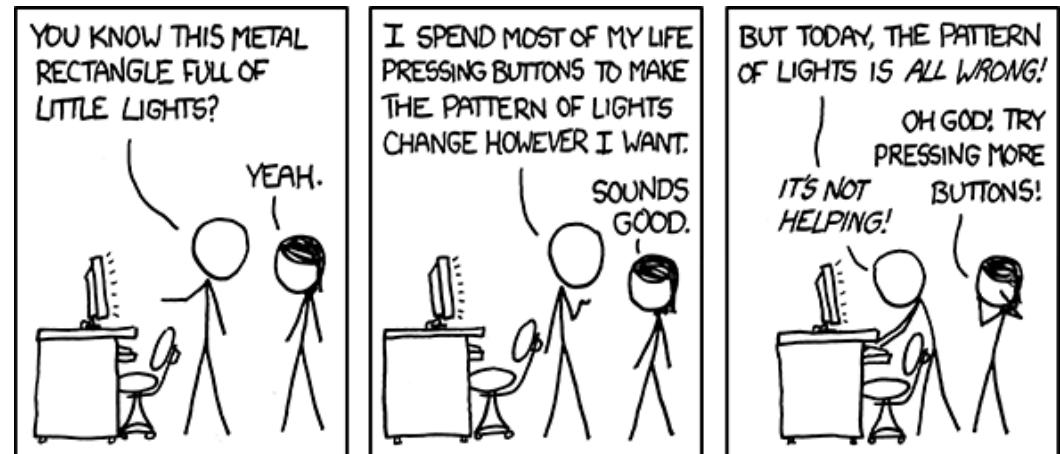




CS 161

Introduction to CS I

- What this class offers you
- What your responsibilities are
- How to communicate with computers



Randall Munroe, xkcd.com



Ph.D. in Computer Science



Jet Propulsion Laboratory
California Institute of Technology

1/6/2020

CS 161

2



M.S. in Geology



MLIS in Library and
Information Science



1/6/2020

Airplane
pilot

CS 161



3

About you

- First year at OSU?
- First quarter at OSU?
- Prior experience with programming?
- Prior experience with C++?

Start with why

- Why are you here?
 - Build apps, games, simulations, robotics, biology, AI, ML, ...
 - What can computer scientists do to improve the world?



How do you become a computer scientist?

- Technical skills: use of tools
 - Programming
 - Testing
 - Debugging
- Conceptual skills: logic and creativity
 - Problem solving
 - Algorithm design
 - Analysis – efficiency, ease of use, what is computable?



Course map



Basics
Storing data, calculations,
interacting with users



Decision making (adaptation)
and **repetition** (write once,
repeat forever!)



Divide and conquer part 2
(recursion)



Structured data
(arrays)



Dynamic growth
(memory allocation
and management)



Divide and conquer
(modularization and code re-use
in functions)

Visit the course website

<http://classes.engr.oregonstate.edu/eecs/winter2020/cs161-020/>

CS 161 - Introduction to Computer Science I

Winter 2020: MWF 2 - 2:50 p.m., LINC 228

Home Syllabus Calendar Assignments Labs Useful Links Student Clubs TA Bios

Important Dates:

01/06 - First day of class
01/12 - Last day to Add a class without dept. approval
01/12 - Last day to Drop a class for 100% refund
01/20 - Martin Luther King, Jr. Day (No School)
03/16 - Final Exam, 6-7:50 p.m. in LINC 228

Instructor: Dr. Kiri Wagstaff
2079 Kelley Engineering Center
kiri.wagstaff@oregonstate.edu
(541) 737-9676
Office Hours (2079 KEC): **Mon 4 - 5 p.m. and Weds 3 - 4 p.m.**

Graduate TAs: Sabrina Jesmin and Yipeng (Roger) Song
jesmins@oregonstate.edu and songyjp@oregonstate.edu
Office Hours: See Below

Syllabus highlights (1)

- You are responsible for following all course policies and info in the syllabus.
- Attend lecture. Missed in-class work cannot be made up.
 - Check the calendar for assigned readings and assignment due dates
 - Silence cell phones in class
- Attend lab: your chance to get hands-on practice!
 - Lab activities cannot be made up without prior approval
 - Jan. 20 – attend another lab or complete outside lab (checked off on Jan. 27)
- Assignments: Sign up to demo your work **within 2 weeks after due date** (earlier is to your advantage)
 - Submitted code must compile (else 0 grade for coding part).
Comment out or remove any parts that prevent compilation (for partial credit).
 - Take notes during demo. Write up ideas for improvements = extra credit.

Syllabus highlights (2)

- Course grade:
 - 40% - 5 assignments
 - 10% - 10 labs
 - 10% - designs + peer reviews
 - 30% - 2 midterm exams
 - 10% - final exam (cumulative)
- Proficiency demo (week 10)
 - Must pass to maintain a passing grade in the class
 - Practice demo in week 5 so you know what to expect

Syllabus highlights (3)

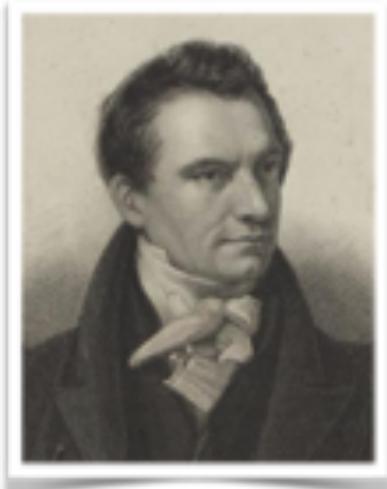
- Getting help: Re-read assignment, textbook, Piazza, TAs, instructor, tutors
 - See guidelines on Email Etiquette
 - My office hours: Mon 4-5 p.m. and W 3-4 p.m., KEC 2079
- Course buddies
 - Strength in numbers!
 - Growth mindset: we are all learning and can help each other
 - Understand when to collaborate/consult and when to work solo

Guest speaker: Casey Patterson

- OSU COE Student Success Coordinator
 - Use free tutoring hours:
<https://engineering.oregonstate.edu/current-students/academic-support/undergraduate-tutoring>
 - Link available on our course website on the “Useful Links” tab, under “Need help?”
 - OSU has a process for handling academic misconduct
 - Be familiar with student code of conduct to know what is allowed
 - In this class: you can discuss problems, assignments, ideas, but **all code and written answers you submit should be your own**



Houses



Charles Babbage



Ada Lovelace



Grace Hopper



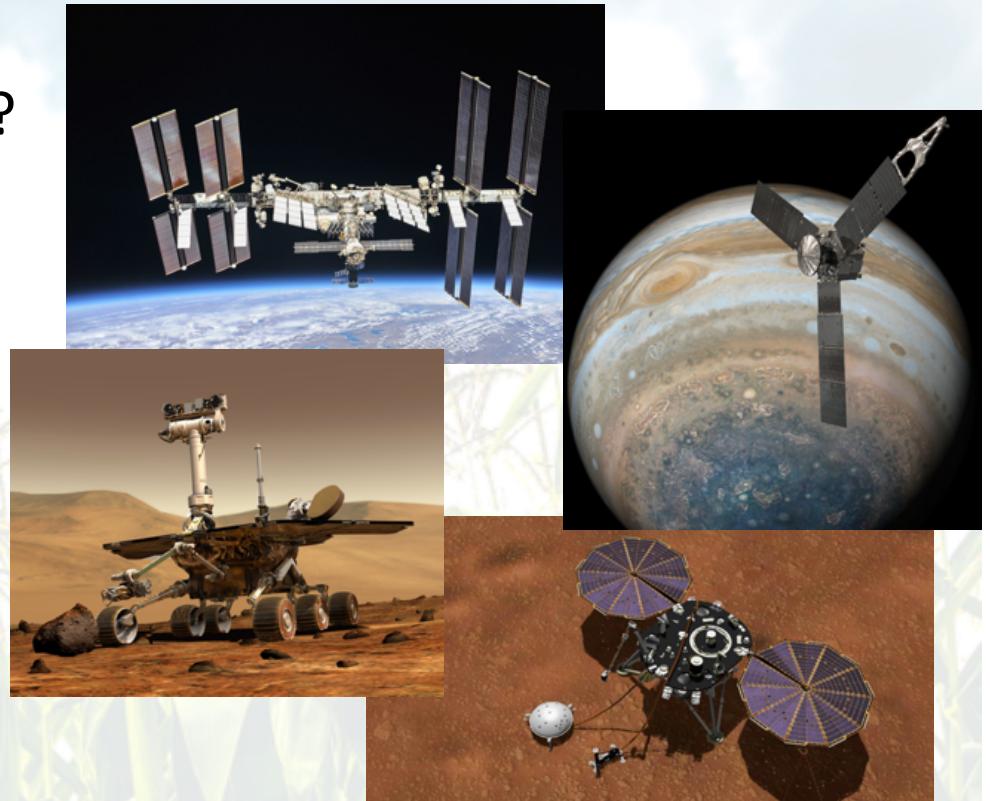
Alan Turing

Course map



Computers in our lives

- How many are in this room?
- They're also in space and on other planets

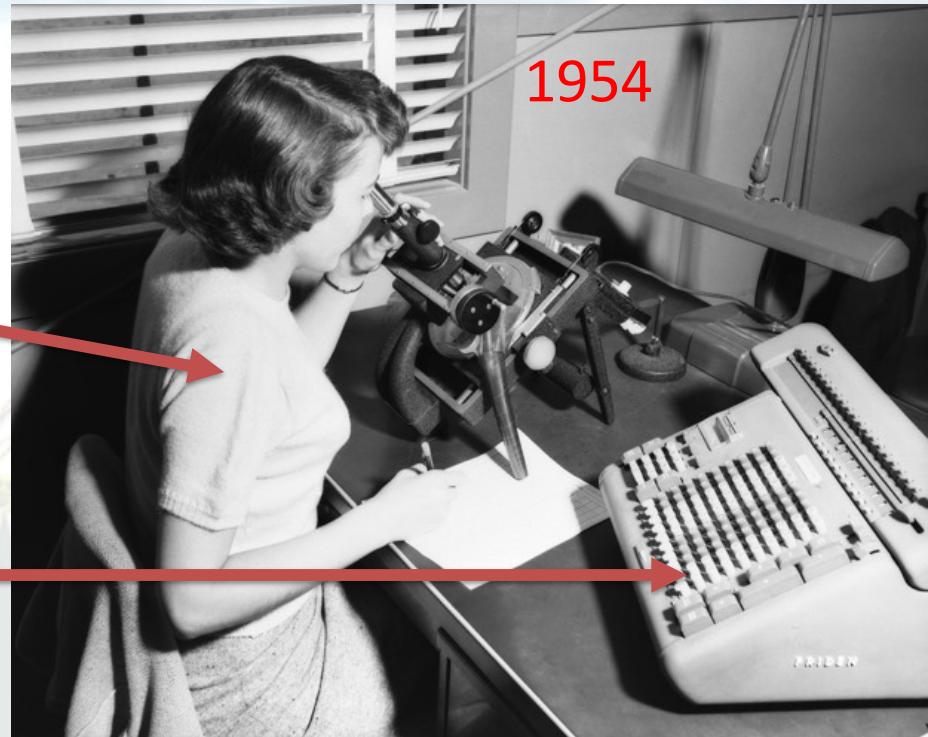


Computers in our lives

- What is a computer?

Computer
(a person's job)

Calculator



Computers in our lives

- What is a computer?
 - “Computer: an electronic device for storing and processing data, typically in binary form, according to instructions given to it in a variable program.” (Oxford)

Communicating with computers

- Not there yet: <https://youtu.be/LkqiDu1BQXY?t=64>



C++
(code)



Compiler
(translator)



Computer



- Think about this class as a foreign language class
- What strategies work for you when learning a foreign language?

What ideas and skills did we learn today?

- Approach learning to program like learning a foreign language
 - Practice is your most powerful tactic!
- Programming process
- Tools: editor, compiler (later: debugger)
- Submit your own work. Ask for help from course staff anytime!
 - Piazza discussions, TAs, instructor, tutors

How to succeed in this class

- Start with why
- Get lots of practice writing your own programs
 - You are your own best teacher. Experience makes the best programmers.
- If your lab is early in the week, read ahead in **Rao** to prepare for lab.
- If your lab is late in the week, read the **lab** in advance and practice on your own so you are prepared for assignments.
- Use office hours. If something isn't clear, ask questions.
- Use tutoring hours (**get extra credit!**)
- Be proactive (e.g., accommodate absences, other issues early)
- Take good care of yourself: sleep, food, exercise, breaks

You are ready for week 1!

- Attend and complete **lab** (laptop required)
- Read **Rao Lesson 1** (pp. 1-15) **and Lesson 2** (pp. 17-29)
- Try **Rao Exercise 2.1** (p. 29) – answers at the back of the book
- Get started on **Assignment 1** (due **Sunday, Jan. 12**)
 - Don't wait until your lab to start working on it. Reading, designing, thinking, and planning do not require access to an editor or compiler.

See you Wednesday for more adventures!

- Bring: the **number of light switches** in your home
- Bring: scratch paper and writing utensil