

Welcome to COGS 18:

Introduction to Python

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COGS 18

Reminder: This (and all lectures) in COGS 18 are being **recorded**.

Slides available: https://cogs18.github.io/assets/intro/01_welcome.pdf







TAs

Shivani
David

"IAs"

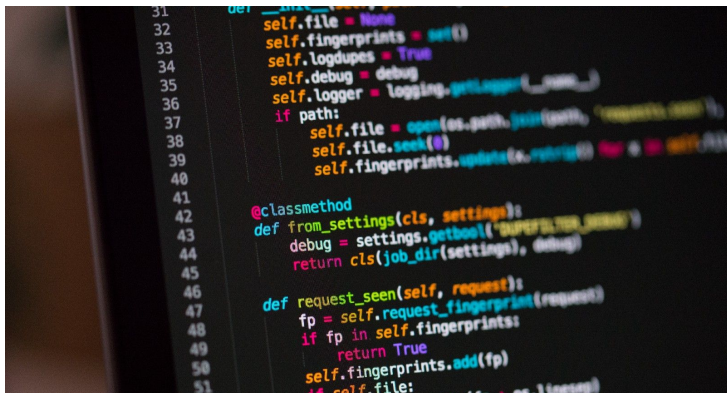
Qixuan
"Harrison"
Anuujin
Frank
Bora
Emma
Mani
Boning
Bob (Chongbin)

Note: Office Hours & CodingLabs begin **Week 1**

Zoom links/passwords are on Canvas homepage.

Let's chat: Teaching &
Learning Programming

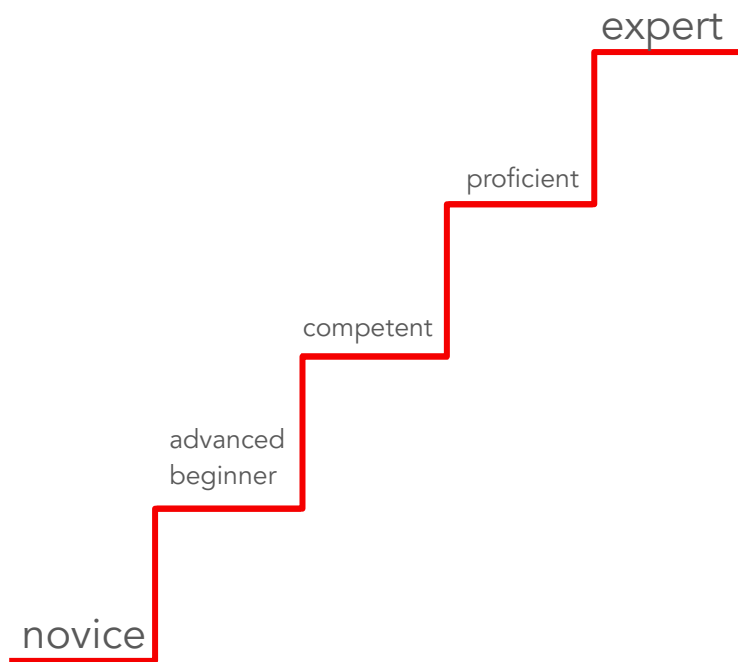
Intro Programming courses
are often **thought of as**
difficult and are courses with
the **highest dropout rates**



....yet, the only thing that is slightly
predictive of success in an intro
programming course is...*how successful*
the student thinks they will be

Things that do NOT predict success:

- gender
- age
- personality
- math ability



My goal is to have you all be able to **program at an introductory level**

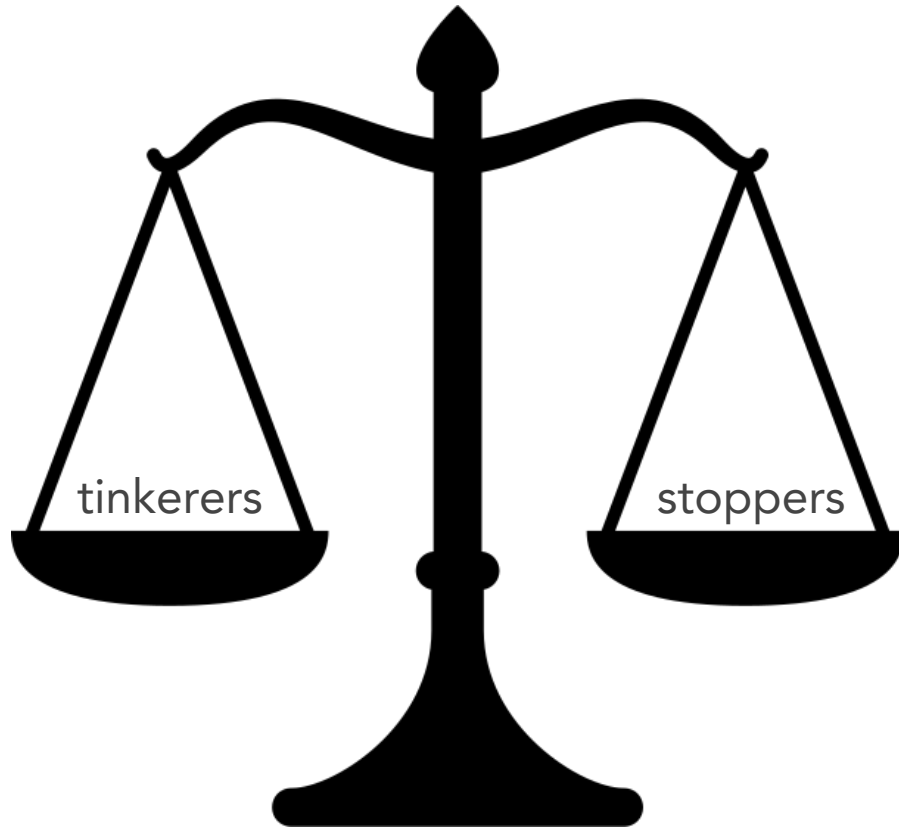
It's generally accepted that it takes people **10 years to move from novice to expert programmer**. But, there are lots of steps in between! We're working to move you further away from novice (& in the direction of expert) than you are right now.



Mixed Messages: We tell people learning to program will be tough and frustrating but that if you're not having fun, you're doing it wrong.



Building Blocks: Too often, we also tell people to “just try things out” without explaining basic concepts. Other courses aren’t taught this way...



Be a mover: Make forward progress. Strike a balance between just stopping and tinkering forever.

If you're not moving forward, consider the **2-hour rule**.

If you're trying to figure something out and struggling to move forward at all, consider the 2-hour rule. If you're stuck, **work on the problem for an hour**. If you're still stuck, walk away & **take a 30 min break**. Then, **try again for another 30 minutes** or so. If you're **still completely stuck, stop and contact us** (come to office hours, post on Piazza). If you're not even sure what your question is, include what information that you do have - what you're stuck on, what you've tried, error messages you've received, etc.

Why Python?

simple(r) syntax


widely-used

Jupyter Notebooks

*"It's not the best language for anything, but
it's the second best for everything"*

-Brad Voytek





COGS 18: How this course is going to work

To avoid the common pitfalls of intro programming courses, we're going to take the following approach:

1. First half of course: basic concepts
2. In-class practice
 - a. Zoom polls for comprehension
 - b. time to apply what was just explained
3. Coding Labs
 - a. Notebooks provided
 - b. Staff/classmates there to help
 - c. Checked for completion, not correctness
4. Assignments
 - a. Completed individually (*can* work together)
 - b. Programmatically graded

COGS 18: How You'll Be Evaluated

	% of Grade	Requirement
Coding Labs	14%	Participate In 5 Coding Labs
Assignments	40%	Complete 5 assignments
Midterms	25%	2 midterms (1-2 h)
Final Project	21%	Complete final project

CodingLabs:
apply concepts
discussed in
lecture using
coding labs
(14%). Practice
makes progress.

Attempt for full credit (2% each)

- Have to make a concerted effort to complete labs
- Coding Labs will be submitted on datahub
- Answers will be sent out the following week
- Can work with others

You should attend the section to which you're assigned. You can attend a different section. However, if one section becomes too crowded each week, we'll revisit this policy.

There will be a single zoom link for all coding labs, regardless of day of week or time.
Coding Labs start Wednesday.

(5) Assignments
(40%) : Jupyter
notebooks that are
completed
individually &
graded
programmatically.

Assignments always be due Mon @ 11:59 PM.

Assignment	Due Date (11:59 PM)	Week	Median Time Spent (hours
A1	10/12	wk2	2
A2	10/19	wk3	4
A3	11/2	wk5	4
A4	11/16	wk7	5
A5	12/7	wk10	5

Assignment Submission @ Datahub: <https://datahub.ucsd.edu>

DATA SCIENCE / MACHINE LEARNING PLATFORM

UC San Diego

Information Technology Services - Educational Technology Services

Help Options ▾



Log In

Registered Users
"username@ucsd.edu"

UC San Diego Jupyterhub (Data Science) Platform

In technical
classes, **Piazza** is
a particularly
helpful resource

There are **rules**:

1. No duplicates.
2. Include Assignment & Question in Summary line.
3. Public posts are best.
4. Helping one another is encouraged.
5. No assignment code in public posts.
6. We're not robots.

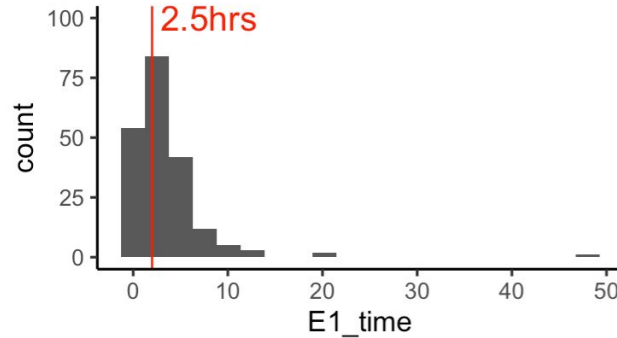
Sign up: <https://piazza.com/ucsd/fall2020/cogs18>

(2) Midterms (25%):
will be open-book
and completed on
10/23 and 11/20.

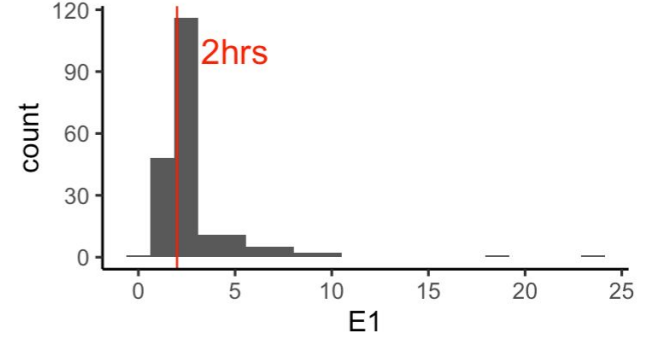
Exams are open-book/open Google but completed on your own. These will be taken on datahub. Each will include a combination of types of questions. There will be a flexible time window when these exams can be taken/submitted. You can expect this exam to take you 1-2 hours to complete.

Exams are
designed to be
completed in
1hr...but many
students took 2hr
to complete their
exams

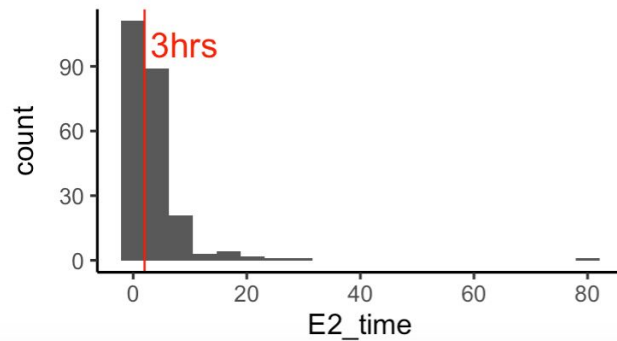
E1: Time Studying



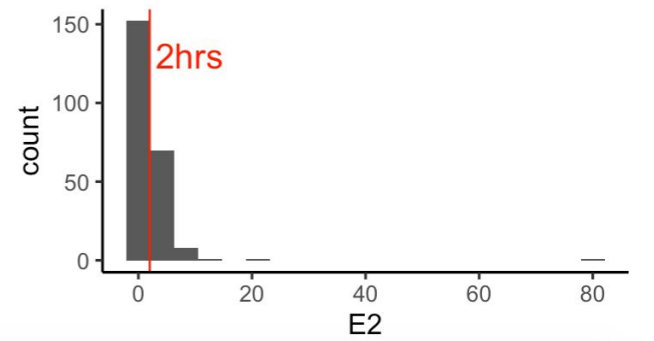
E1: Time Completing



E2: Time Studying



E1: Time Completing



(1) Final Project (15%):
will be completed
individually and
submitted
electronically on the
day of the final (12/11)
by 11:59 PM.

Your final project can build on an assignment from the course to provide it with additional functionality or it can be on a completely new topic of your choosing. However, it **must include original code that you've written** for this project. You do not have to show up anywhere on the day of the actual final.

All exam
and due
dates are
all listed
on the
course
syllabus

COURSE SCHEDULE

Date	Week	Lecture	Day	Topic	Assignment (due 11:59 PM)	CodingLab (due 11:59 PM)
10/2	0	1	F	Why Program?		
10/5	1	2	M	Tooling		
10/7	1	3	W	Variables		CL1: Tooling
10/9	1	4	F	Operators		
10/12	2	5	M	Conditionals	A1: Getting Started	
10/14	2	6	W	Collections		CL2: Programming I
10/16	2	7	F	Loops		
10/19	3	8	M	Dictionaries [*]	A2: Ciphers	
10/21	3	-	W	Review		CL3: Programming II
10/23	3	-	F	Exam I		



Your point of contact for COGS 18
will be the course website:

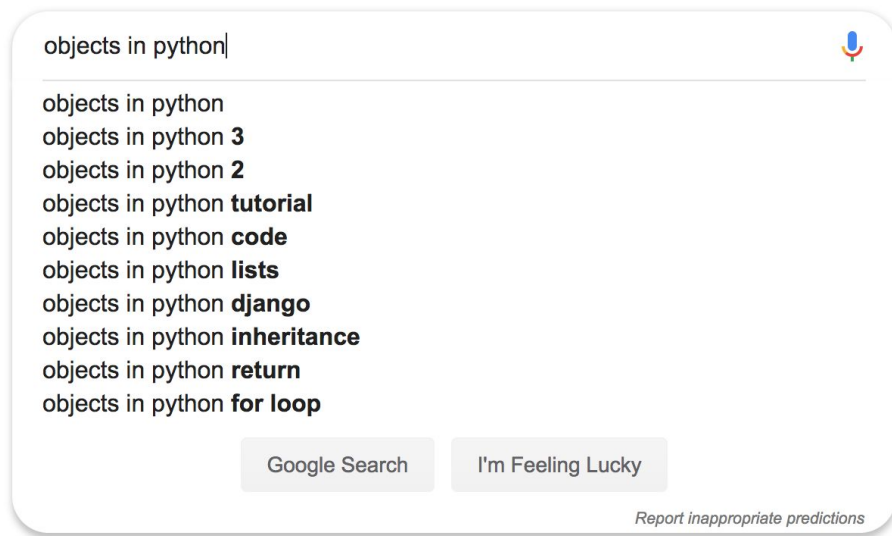
<https://cogs18.github.io>

Course Website	https://cogs18.github.io	syllabus, Coding Lab Answers (& lecture notes)
Piazza	https://piazza.com/ucsd/summer2020/cogs18	questions, discussion, regrades
Canvas	https://canvas.ucsd.edu/courses/18771	grades, lecture videos, zoom links
Datahub	https://datahub.ucsd.edu/	coding labs, assignments, exams, (& lecture notes)
Anonymous Feedback	Submit via Google Form	if I ever offend you, use an example you hate, or to provide general feedback

Any questions about
course logistics?

Where to turn for **help**
and practice when
learning to program?

Including “in python” in your
Google search can be magic

A mockup of a Google search interface. At the top, a search bar contains the text "objects in python|". To the right of the search bar is a microphone icon. Below the search bar, a list of search suggestions is displayed: "objects in python", "objects in python 3", "objects in python 2", "objects in python **tutorial**", "objects in python **code**", "objects in python **lists**", "objects in python **django**", "objects in python **inheritance**", "objects in python **return**", and "objects in python **for loop**". At the bottom of the suggestions list are two buttons: "Google Search" and "I'm Feeling Lucky". Below these buttons is a link that says "Report inappropriate predictions".

objects in python|

objects in python
objects in python 3
objects in python 2
objects in python **tutorial**
objects in python **code**
objects in python **lists**
objects in python **django**
objects in python **inheritance**
objects in python **return**
objects in python **for loop**

Google Search I'm Feeling Lucky

[Report inappropriate predictions](#)

StackOverflow probably has the answer to your question

[Home](#)[PUBLIC](#)[Stack Overflow](#)[Tags](#)[Users](#)[Jobs](#)

Teams
Q&A for work

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Tags

A tag is a keyword or label that categorizes your question with other, similar questions. Using the right tags makes it easier for others to find and answer your question.

[Popular](#) [Name](#) [New](#)[python](#) × 1137913

a multi-paradigm, dynamically typed, multipurpose programming language, designed to be quick (to learn, to use, and to

1085 asked today, 6241 this week

[python-3.x](#) × 151128

For questions about Python programming that are specific to version 3+ of the language. Use the more generic [python] tag

273 asked today, 1641 this week

[python-2.7](#) × 89413

the last major version in the 2.x series. Do not use this tag simply to convey the version of Python you're using, unless the question

40 asked today, 219 this week

[python-requests](#) × 9229

a full-featured Python HTTP library with an easy-to-use, logical API.

8 asked today, 81 this week

[wxpython](#) × 6191

a Python wrapper for the cross-platform C++ GUI API wxWidgets.

20 asked this week, 52 this month

[ipython](#) × 6036

a feature-rich interactive shell for Python, and provides a kernel for frontends such as IPython Notebook and Jupyter Notebook.

15 asked this week, 65 this month

[python-imaging-library](#) × 4495

The Python Imaging Library (PIL) provides the Python language with a de-facto standard foundation for image work. PIL's

23 asked this week, 113 this month

[python-3.6](#) × 3882

Version of the Python programming language released in December 2016. For issues specific to Python 3.6. Use more

10 asked today, 43 this week

[python-3.5](#) × 3260

The version of the Python programming language released on September 13, 2015. For issues that are specific to Python 3.5.

9 asked this week, 34 this month

[python-import](#) × 3150

For questions about importing modules in Python

18 asked this week, 58 this month

[python-3.4](#) × 2594

The version of the Python programming language released on March 16, 2014. For issues that are specific to Python 3.4. Use

6 asked this month, 126 this year

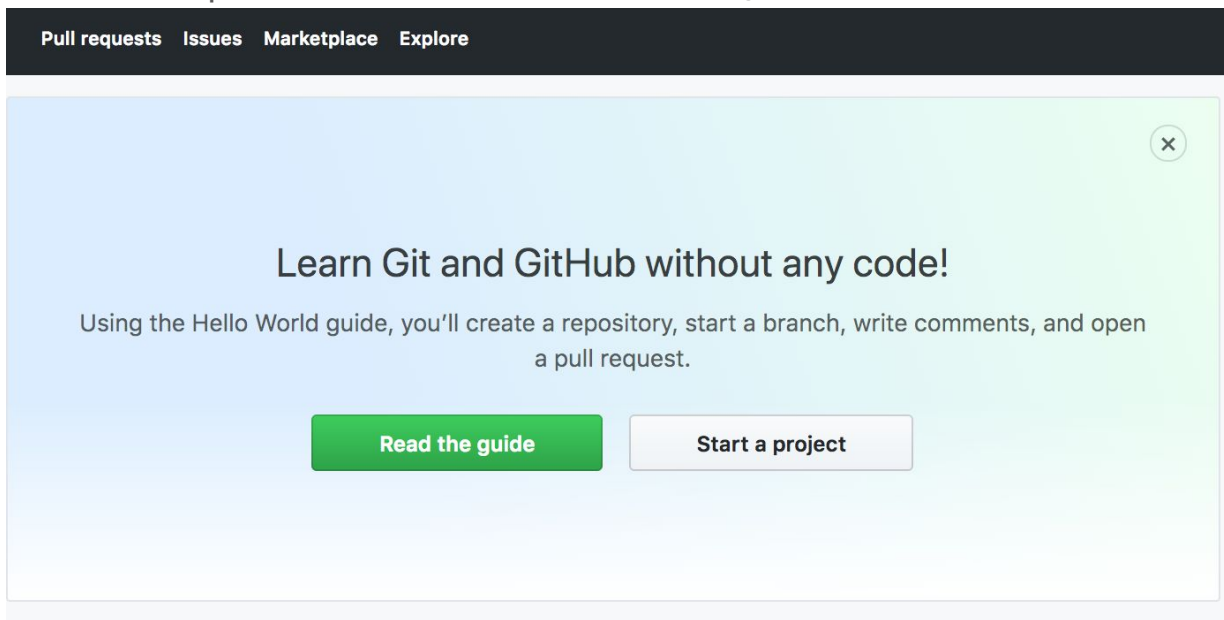
[python-sphinx](#) × 2365

a tool that makes it easy to create intelligent and beautiful documentation. Sphinx is especially suitable for Python

9 asked this week, 34 this month

GitHub: programmers' social media platform

Code is shared on GitHub. In the beginning, it may be intimidating, but I encourage you to familiarize yourself with the platform and share code you write on GitHub.



There are also
**COGS18-specific
avenues** when
looking for help

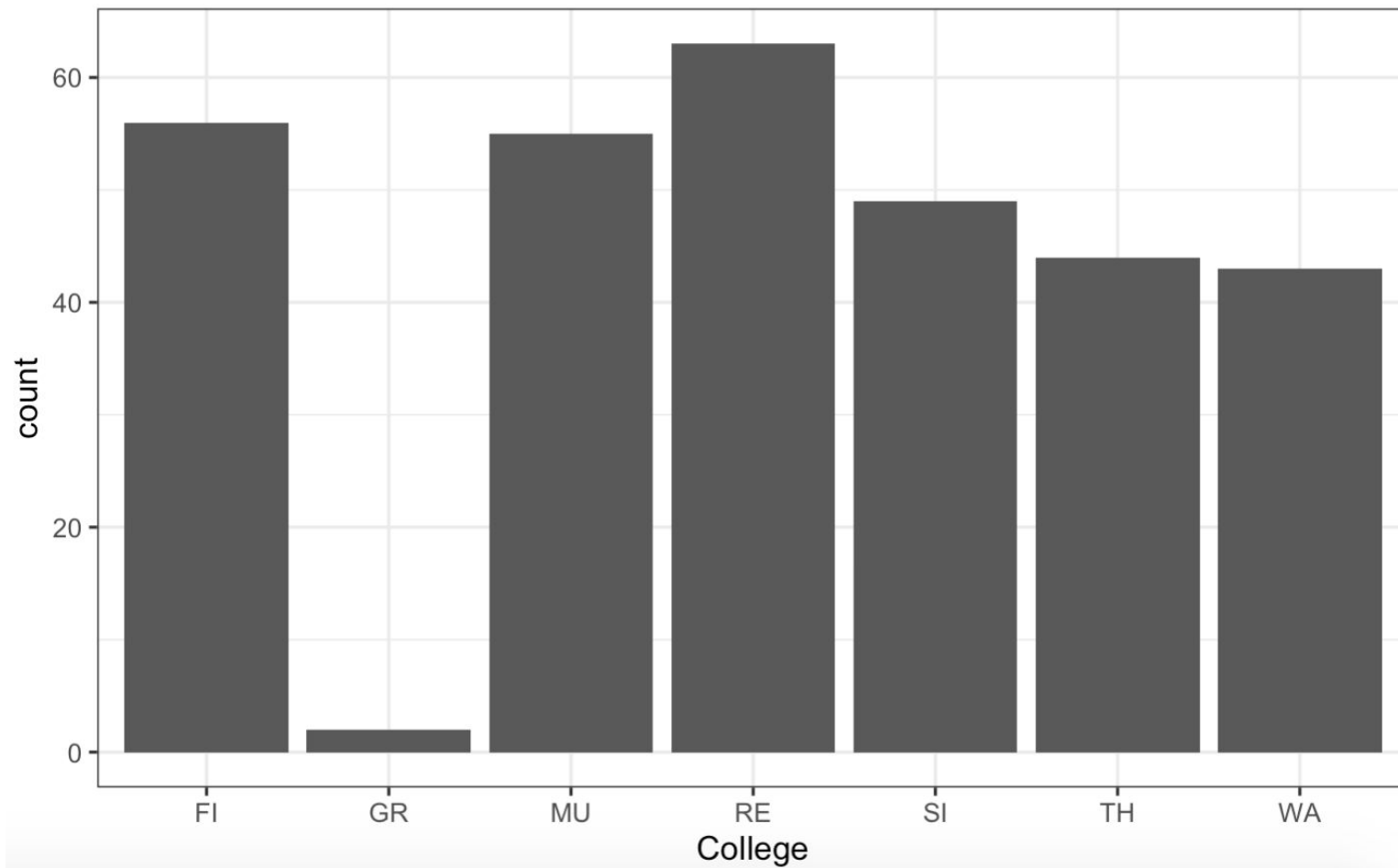
Questions in **CodingLabs**, coming to
office hours, talking to your **classmates**,
or reaching out for help on **Piazza** are
all options for you. You're encouraged
to help one another on Piazza!



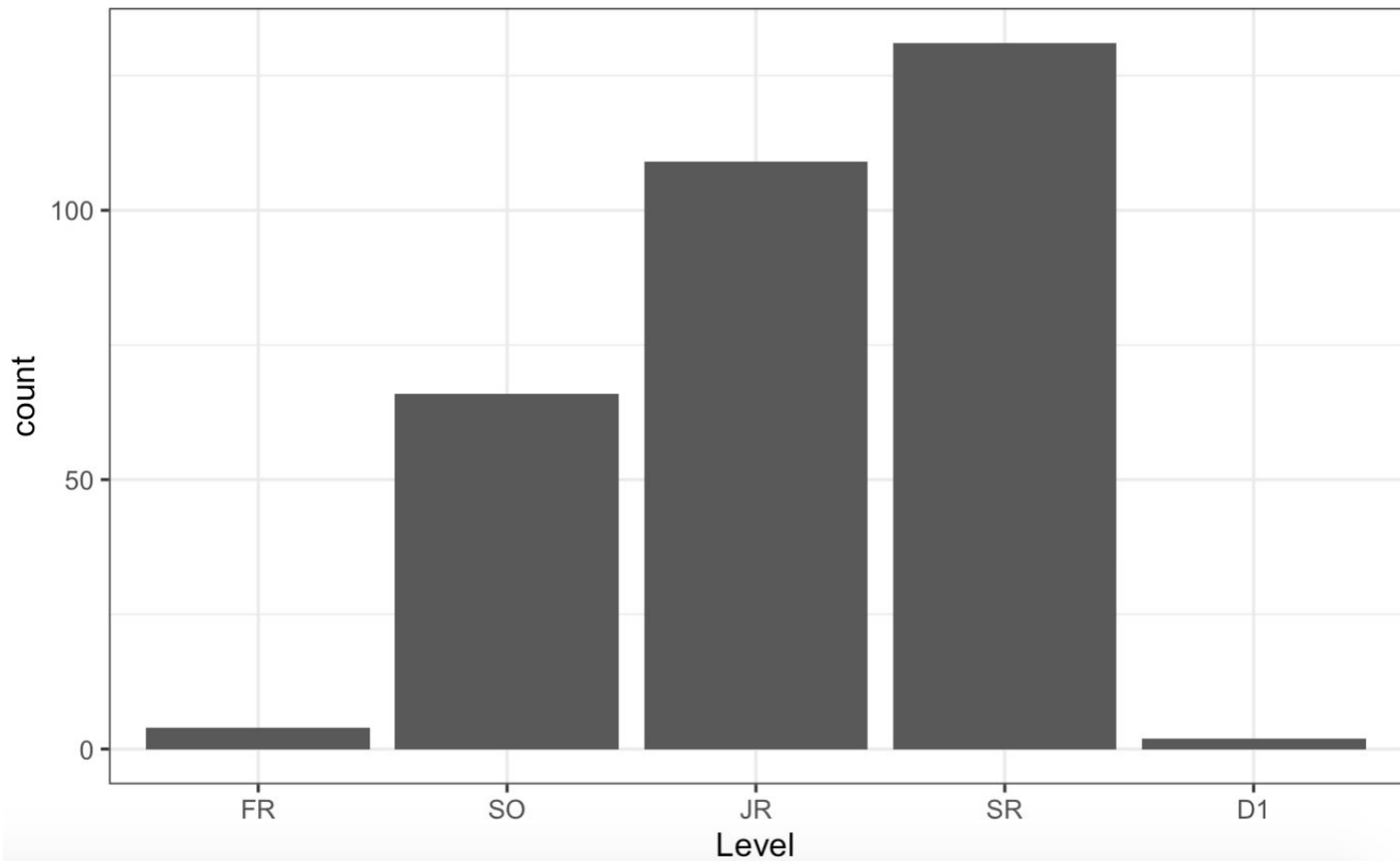
Today I used a PDF slideshow,
but every other day of class,
lecture notes will be presented
in a **Jupyter notebook**



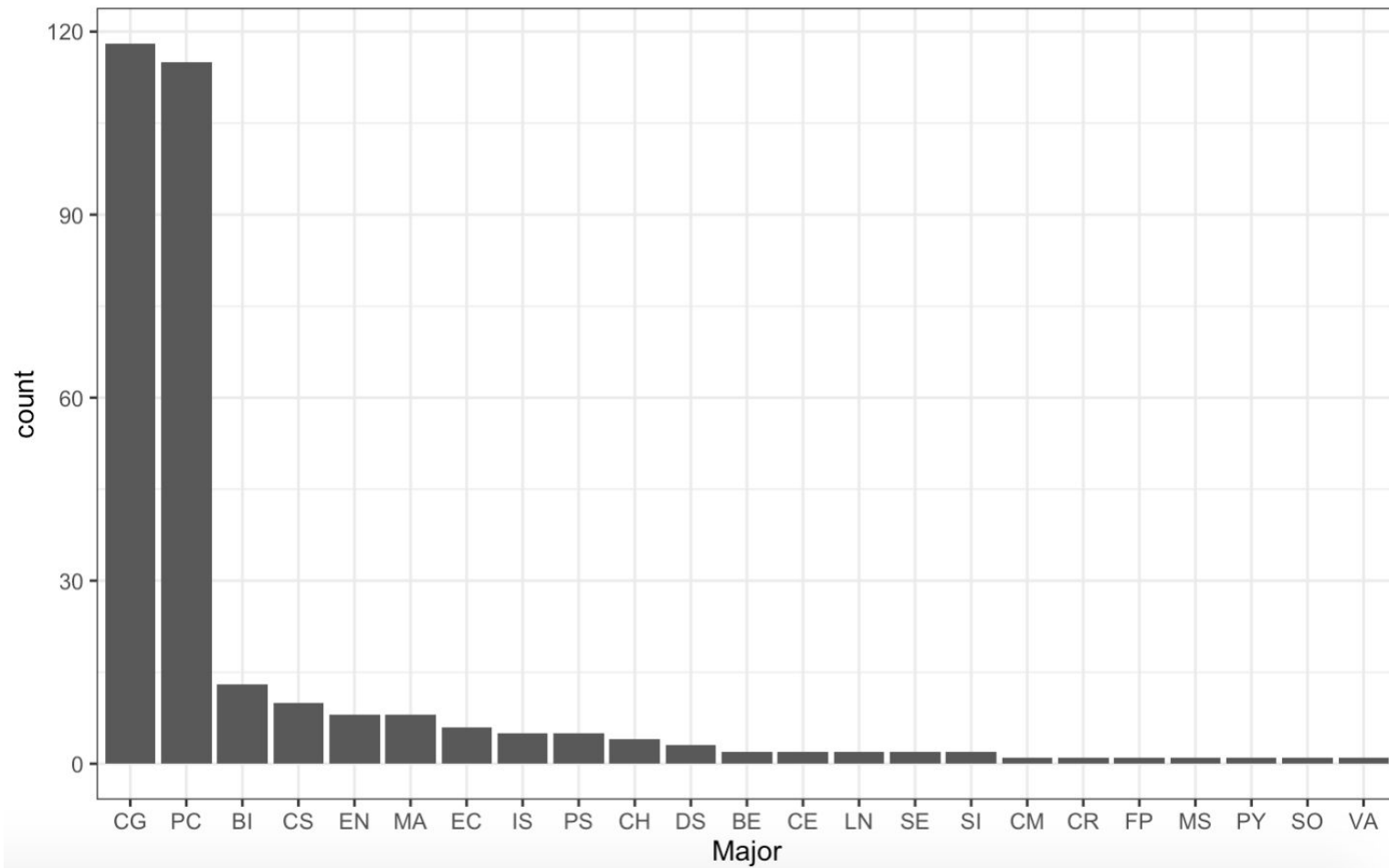
COGS 18



COGS 18



COGS 18





I'm excited to have you all in
COGS 18 this quarter & I'd love
to learn more about you:

http://bit.ly/cogs18_survey_fa20