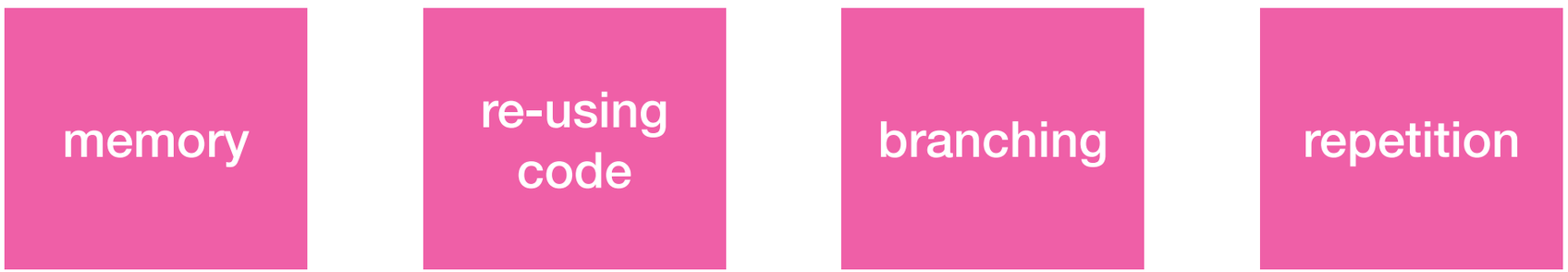
# The final class time!

Disclaimers:
- you should absolutely be talking to your academic and co-op advisors
- we all follow different paths! That's a-okay!

# Wow! we've done so much!

- Our programs have four main super powers:



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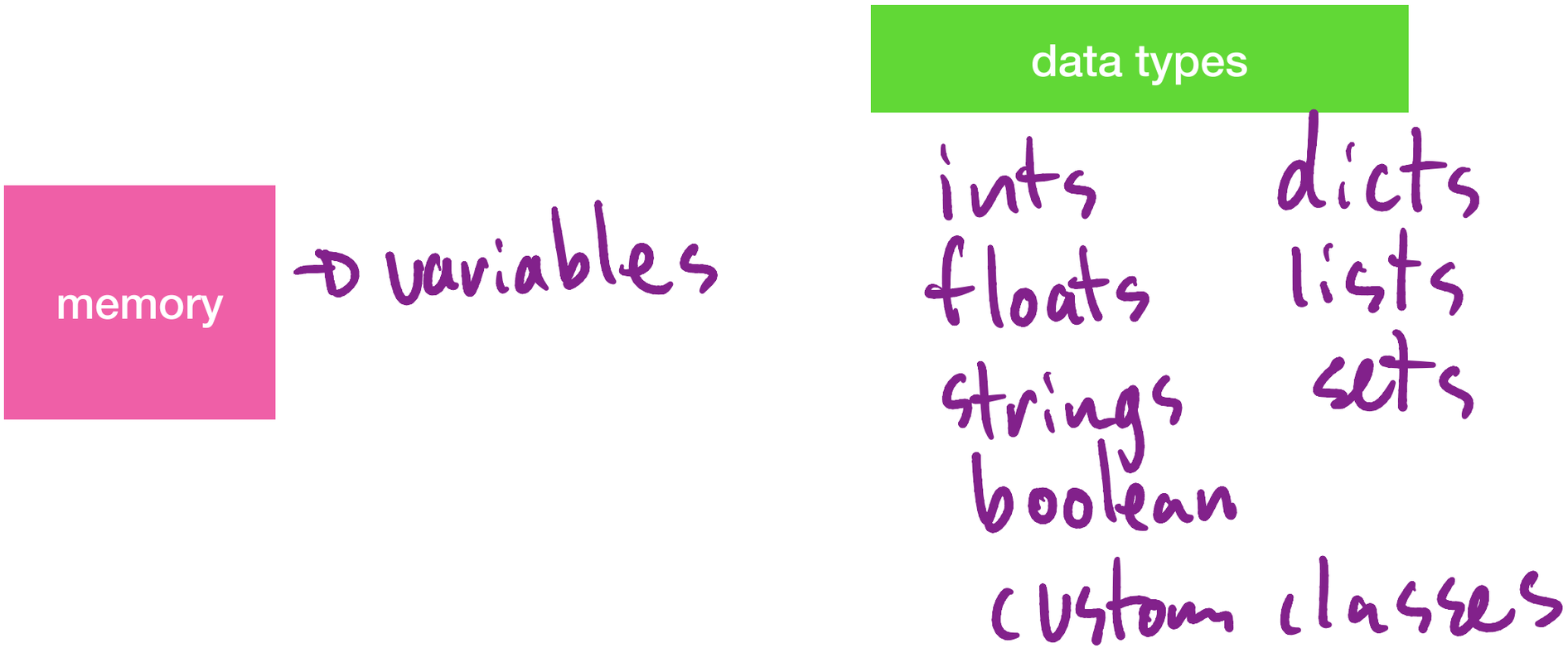


**"variables store values"**

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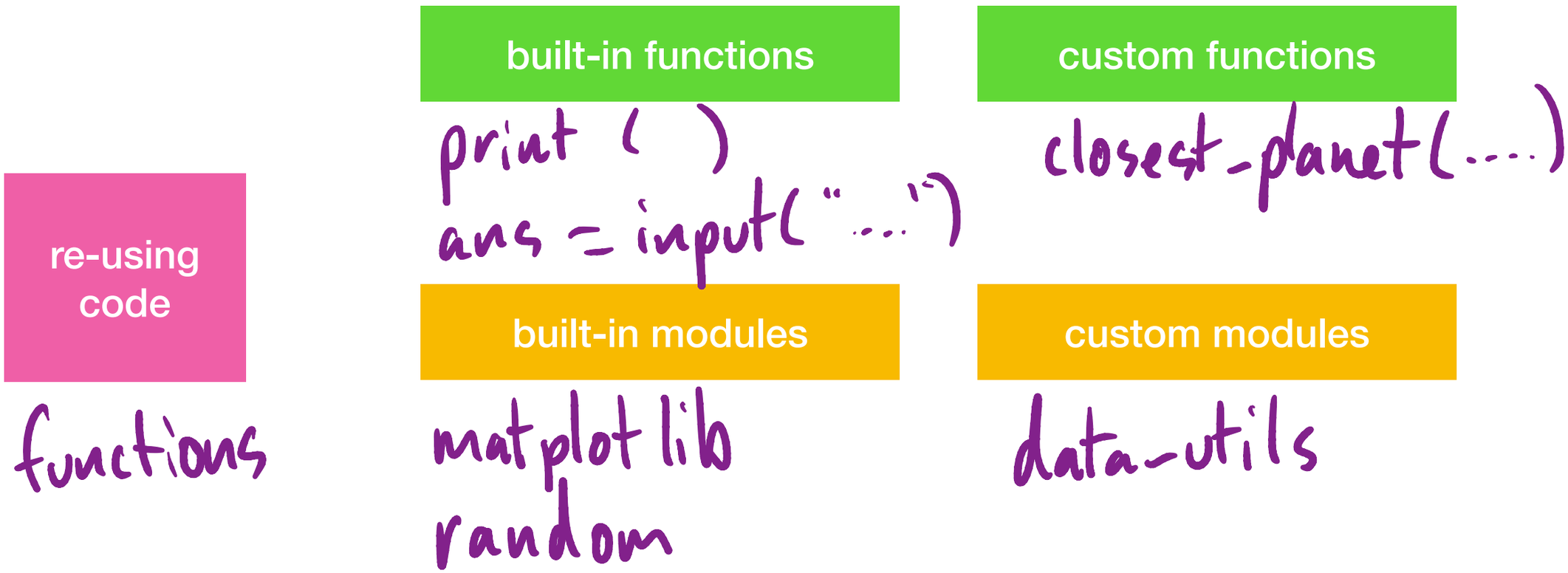



**"functions are hard but also magical"**

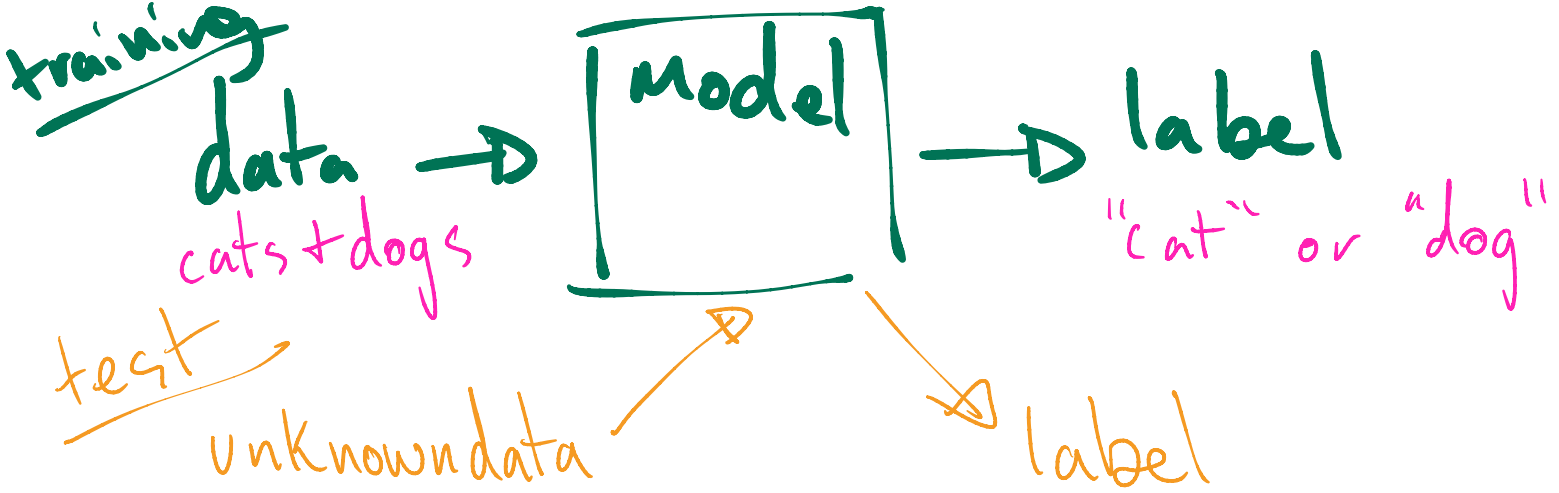
# How to add in ML/AI to a program)

↓

machine learning

1) there are modules (sklearn)

2) ML



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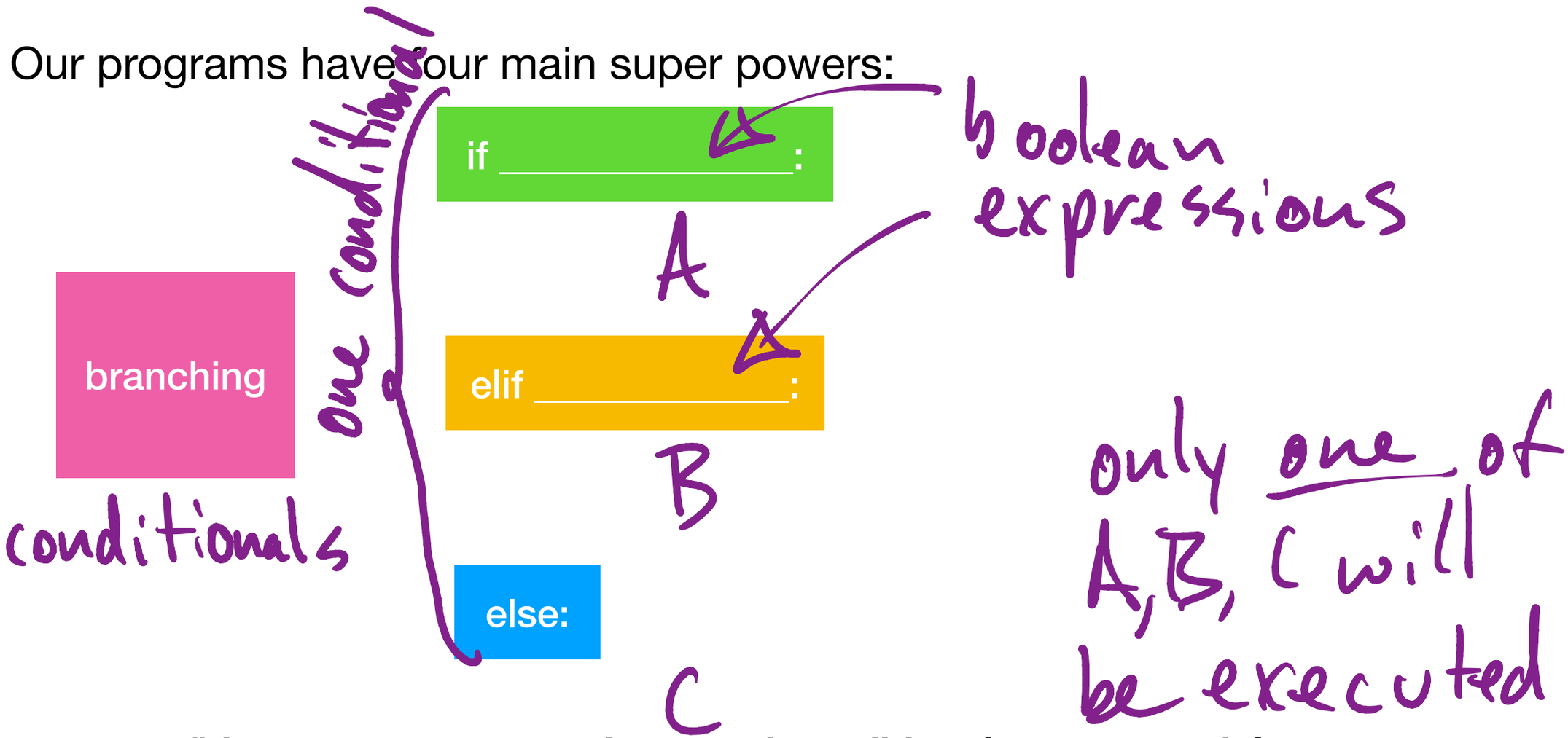



**"these quotes are made up and conditionals are essential, even when we're not simulating gambling"**

# Wow! we've done so much!

- Use an if/elif/else when:
  - options need to be exclusive
- Use an if/elif when:
  - exclusive options (but can be "skipped")
- Use an if followed by another if when:
  - possible to run both branches

# Wow! we've done so much!

- Our programs have four main super powers:

repetition

for loops
while loops

for var in [....]:

by value

for i in range(...):

by index

while boolean exp:

**"Felix loves while loops but we hate them"**

**"time to discover infinity!"**

# Wow! we've done so much!

- Use a while loop if:
  - you don't know how many repetitions
  - a while can do anything
- Use a for i in range(....) loop if:
  - you need position information
    ls[i]
- Use a for value in .... loop if:
  - you don't need pos. info
  - you like easy

# Wow! we've done so much!

- Our programs can harness the use of many **data structures**:

lists - ordered values w/ indices

dicts - key, value pairs (keys are unique)

sets - unordered unique value collections

tuples - immutable list

**"Everything made sense and then we put lists inside of lists"**

# Wow! we've done so much!

- Our programs can harness the use of many **data structures**:

ls = [ [ [ [ "hi", "there"], 75], True, False, [3, -7] ], "bandana" ]

- When indexing into complex data structures, you go from the outside in.

ls [0][2] → False

ls [0][3][1] → -7

**"Everything made sense and then we put lists inside of lists"**

# Wow! we've done so much!

- Also, there were some key programming concepts & vocabulary:
  - parameters/arguments
  - return values
  - scope
  - program flow
  - control structures
  - data structures

# Wow! we've done so much!

- We also learned the many moods of turtle

# Spicy questions that we could have put on a final exam

- Explain what makes a loop different than a function.
- Identify which of these problems **must** use a "for i in range(...)" loop (as opposed to "for value in .....")
- Identify which of these problems **must** use a while loop (as opposed to a for loop)
- Write a function that...
- Write example function calls for the given functions...

**"why in the world would you have programming students write a test on paper"**

# Life After DS 2000

- DS 2500
  - Focus on continuing to practice coding skills in the context of data manipulation and data analysis techniques
  - Including an introduction to machine learning
  - https://course.ccs.neu.edu/ds2500/
- Data Science for Social Progress (ARTG 5000, Section 5, Prof. Gillani)
  - syllabus: https://docs.google.com/document/d/1v43_3GF5i9ja--wKn2vajdHzAhs7ovk9yV9iz9uTB1M/edit?usp=sharing

# Life After DS 2000

# Coding for Digital Storytelling

1001001000111011100101001111101110110000000011111010111110010100100101001111100001011001011011001110011110001100010100111111000011100100100110001011111101110110100000100100011001010011100110001001001000010010001000100000101101000

**Offers students an opportunity to learn essential skills in coding across a wide range of technologies commonly used today in data-driven, multi-modal, web-based storytelling. Focuses on building skills in basic web development, as well as exploring additional topics and technologies that fit into the broader landscape of data storytelling practice (JavaScript visualization library D3.js, basic Python, working with APIs, and working with databases). Course work consists primarily of team-based projects that focus on reverse-engineering real-world examples of data storytelling to demystify the question, "How did they do that?" Reveals the ways fluency in code can transform storytelling.**

**JRNL.5500 / CRN38595**

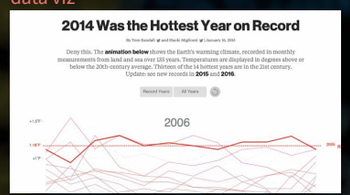
**Tue / Fri 9:50-11:30**

**Spring 2023**

**Prof. Rahul Bhargava**

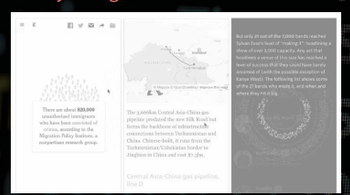
r.bhargava@northeastern.edu

data viz

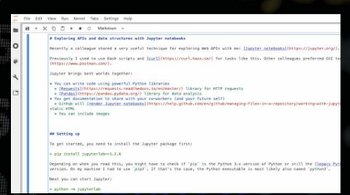



databases & investigations


scrollytelling



APIs



# How to keep python skills up/practiced

- If possible, take a coding class next semester or a class that you can use your skills for one or more projects on.

- As new programmers, now is a great time to *not* take a break (if you have that option) because learning works through practice and repetition, and this is a skill that you've just added to your toolbelt!

- Apply to TA for DS 2000!

  - Email me if this is something that you are interested in—I'm always happy to talk to students about what TAing entails.

  - (but you might also just ask your TAs :D)

# How to keep python skills up/practiced

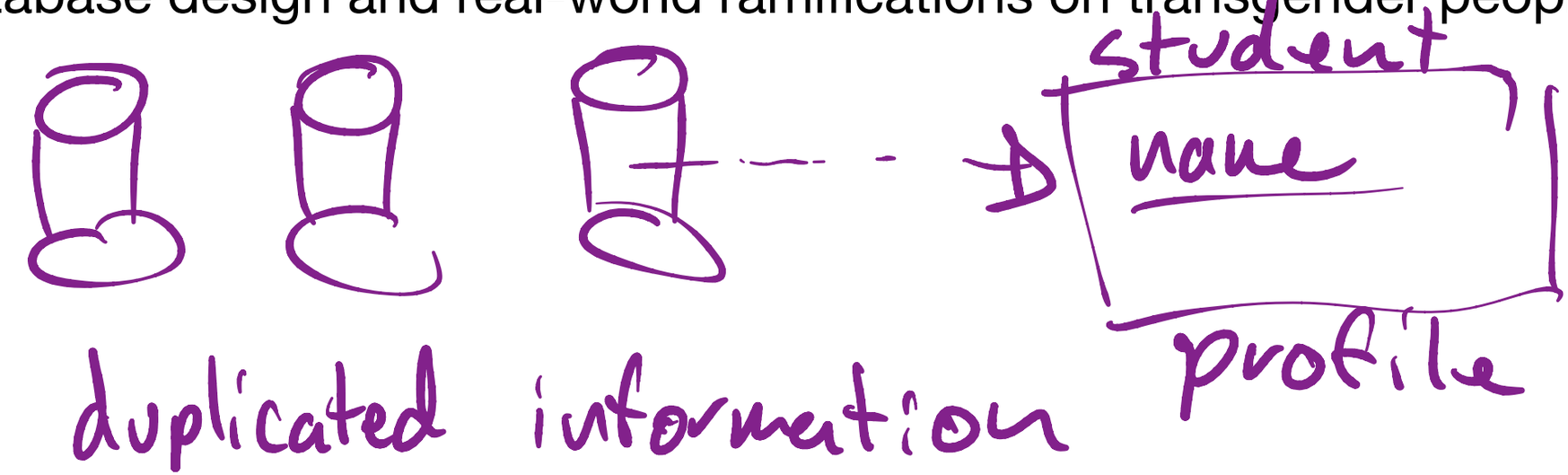
- If you do need to take a break before your next programming class—
  - re-do one or two ds 2000 homeworks ***without*** looking at your current solution (or finish some DS 2001 labs that you didn't quite finish)
  - don't panic, give yourself some extra time to attend office hours in the first weeks of the semester—you will remember, you might just find yourself with more questions in the beginning of the semester!

# Other topics/research that Prof. Felix has worked on?

- broadening participation in computing & TAs in computing classrooms
  - massive increase in CS/DS enrollment → increase in TAs
  - how do TAs affect & change classroom environments
- incorporating ethics in computing classes
  - in both NLP/advanced classes
  - and intro classes
- natural language processing & digital humanities
  - "reading" books from 18c - 20c + modeling the evolution of dialogue
- crisis informatics
  - information + crowd dynamics when crises

# What other data science topics do you spend a lot of time thinking about?

- legacy database design and real-world ramifications on transgender people




- data. data all the time. data behind everything.

legacy data base design – prevent social change now

# What other data science topics do you spend a lot of time thinking about?

- teaching topics rooted in complex math to folks with humanities backgrounds

- teaching critical reasoning skills and practices in advanced DS/CS courses to folks with "STEM" backgrounds

# Wait you did what?

- What we know about Prof. Felix: