

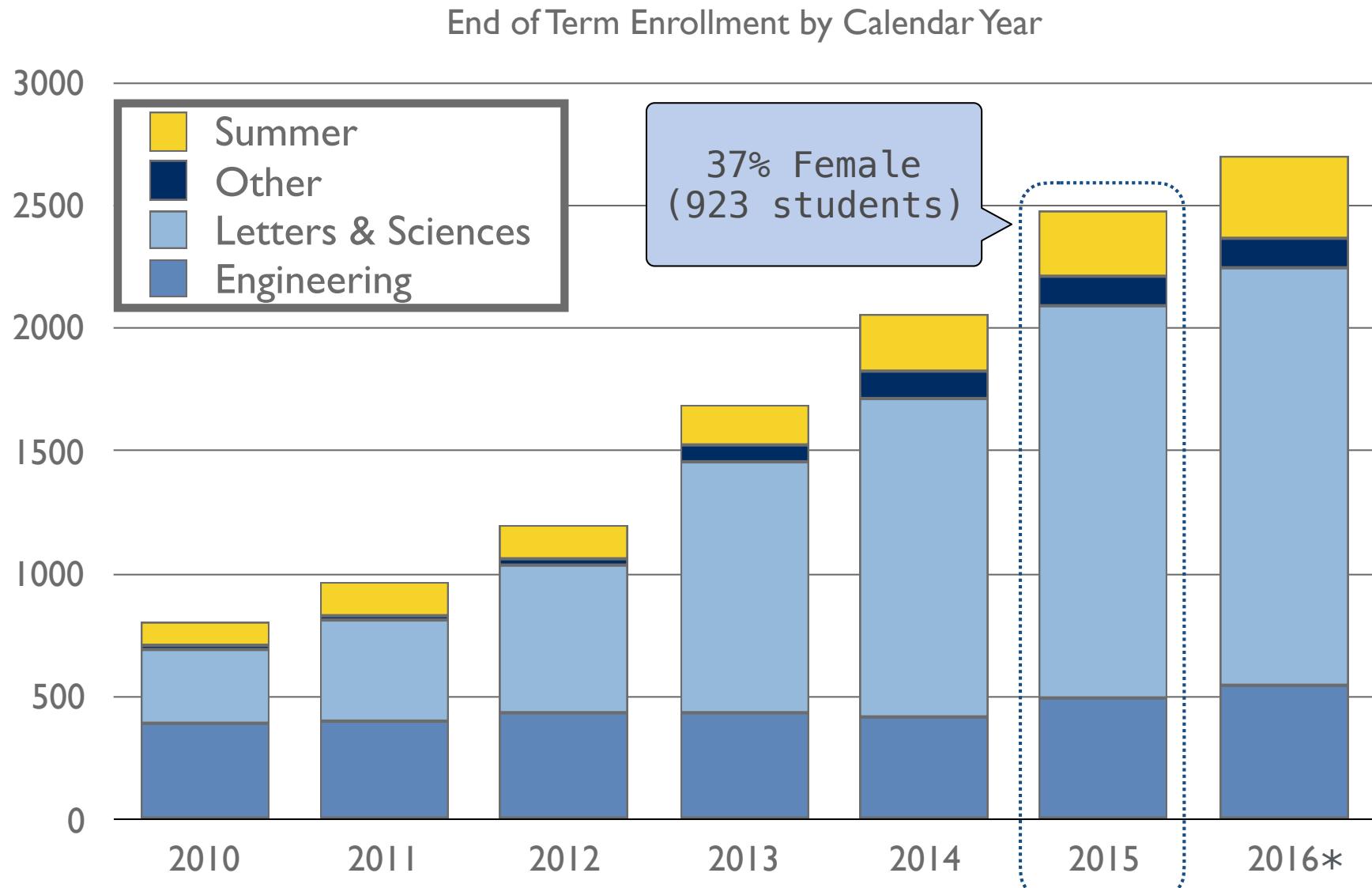
# Course Delivery as a Software Problem

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# CS 61A Historical Enrollment





2015



2016

Top photo by Sumukh Sridhara; Bottom photo by Josh Hug

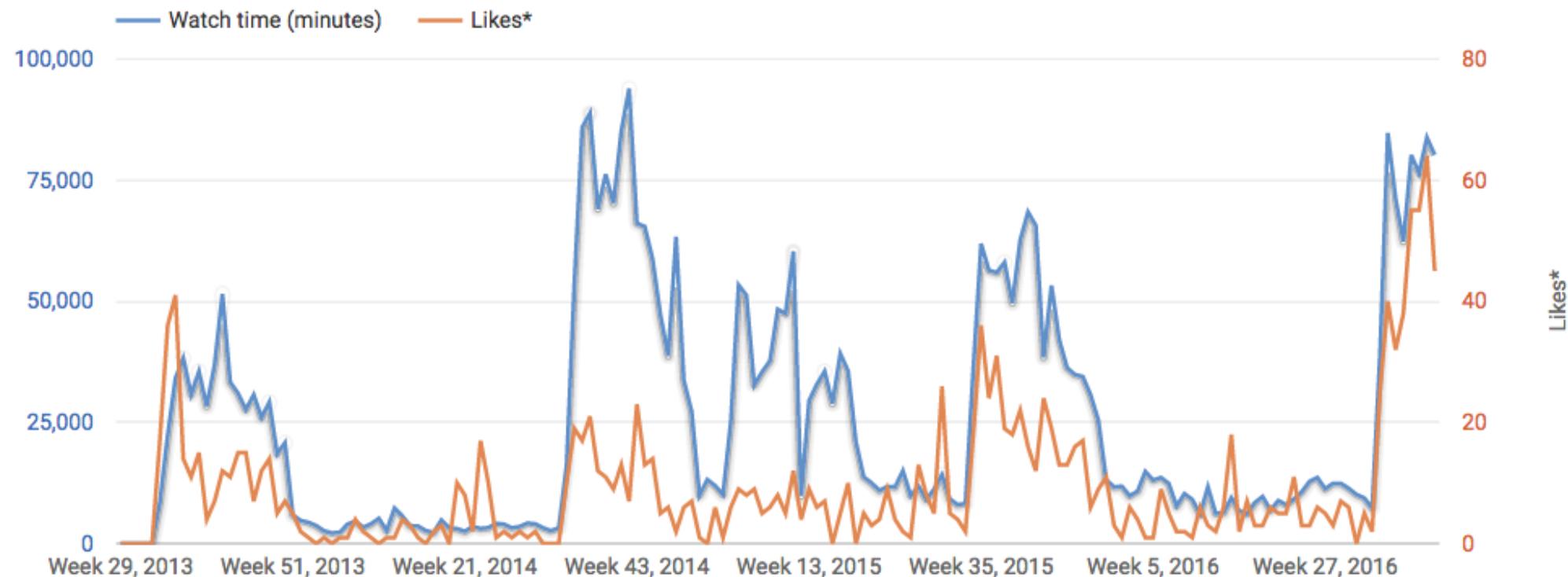
# Seats in the Auditorium?

No problem... most students switch to video by lecture 3



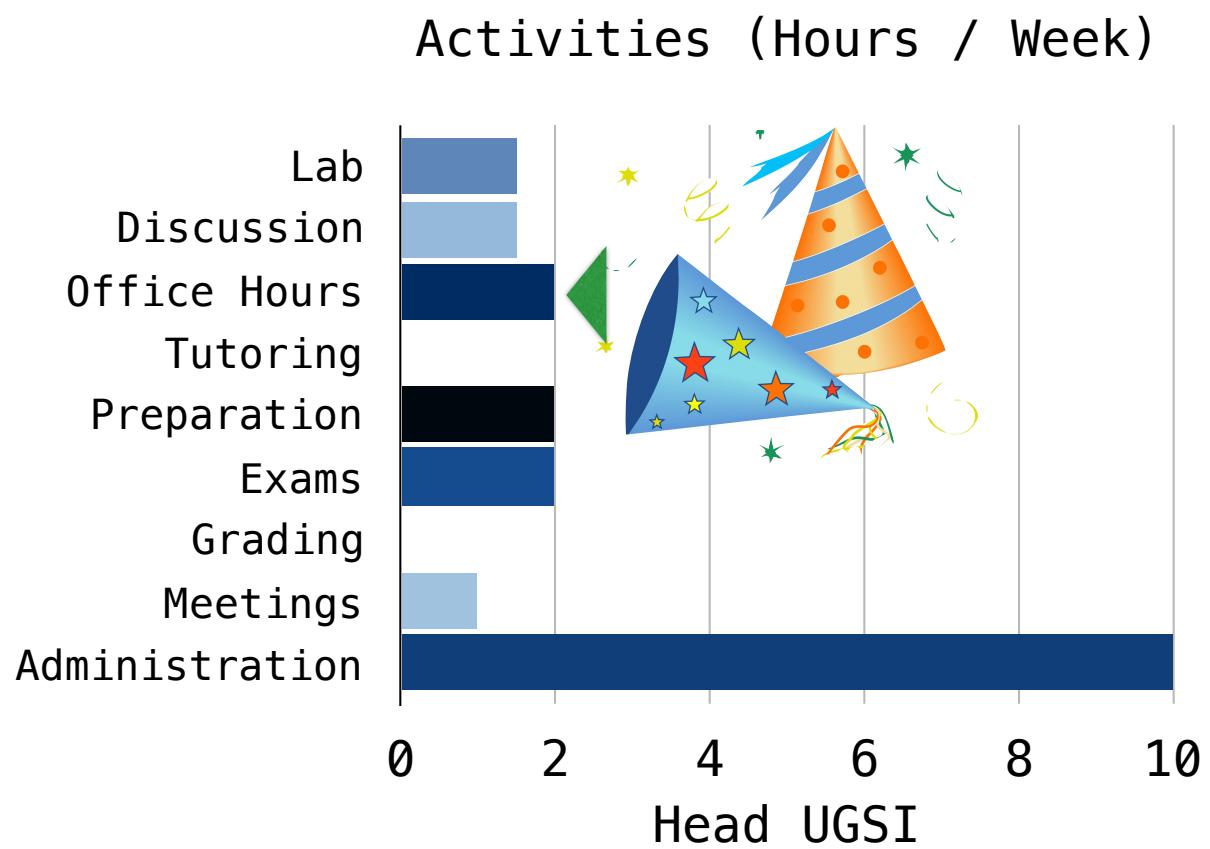
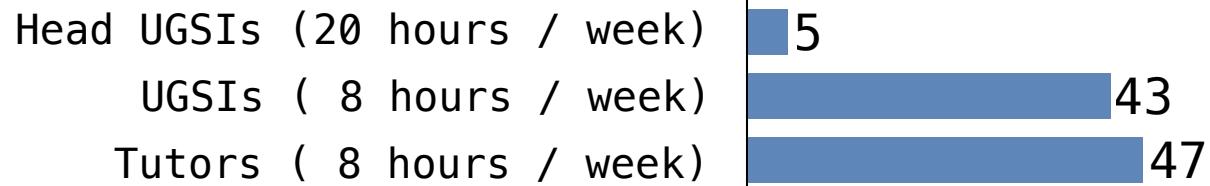
# Lecturing to a Laptop

## YouTube Analytics



(Demo)

# The Fall 2016 Course Staff



How manageable is your teaching requirement?

1 2 3 4 5

How positive are your interactions with other members of the staff?

1 2 3 4 5

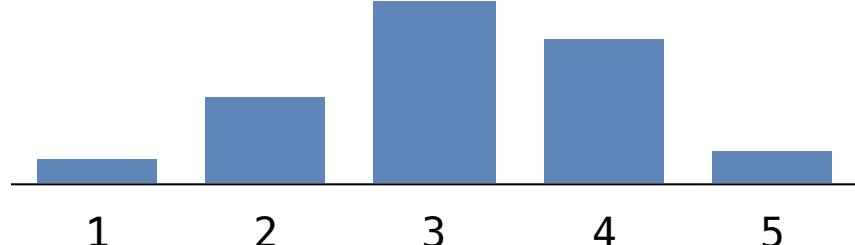
Overall, are you satisfied with your teaching position on the course staff?

1 2 3 4 5 6 7

# Drop-In Office Hours

When you attended office hours, did you receive the help you expected?

*Fall 2015 students who claimed to attend  
1+ office hours each week on average.*



What are your comments/suggestions about office hours?

A word cloud centered around the words "Office hours". The most prominent word is "Office" in large blue letters. Surrounding it are various other words in different colors, including "hours" (purple), "TAs" (yellow), "great" (orange), "time" (purple), "helpful" (green), "assistant" (blue), "assistants" (blue), "one" (orange), "questions" (blue), "long" (orange), "lab" (pink), "go" (pink), "really" (red), "need" (blue), "problem" (blue), "sometimes" (blue), "queue" (blue), "many" (blue), "room" (red), "lot" (blue), "question" (blue), "staff" (orange), "Scheme" (green), "students" (green), "wait" (orange), "think" (purple), "project" (purple), "crowded" (red), "just" (purple), and "hour" (orange).

"GREAT. Saved my life multiple times."

"The additional office hour staff and expanded hours during [the final project] was great! I remember having to wait 2-3 hours and not being able to receive help for projects and assignments at the beginning of the school year because office hours were so packed and there wasn't really an orderly way to identify students who needed help."

"I do not envy you the task  
of attempting to organize  
such pandemonium."

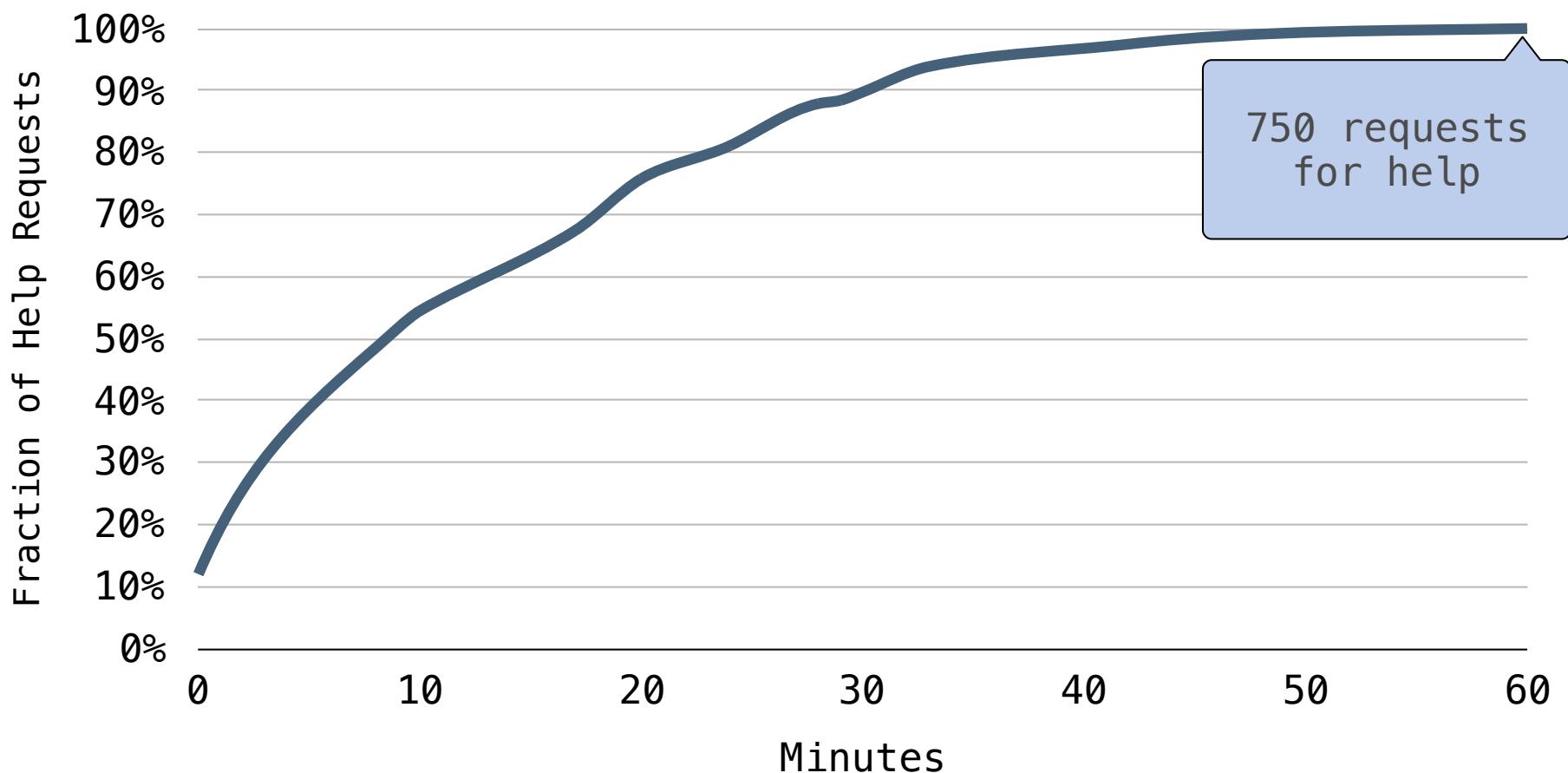
(Demo)

# Office Hours Wait Times

(Demo)

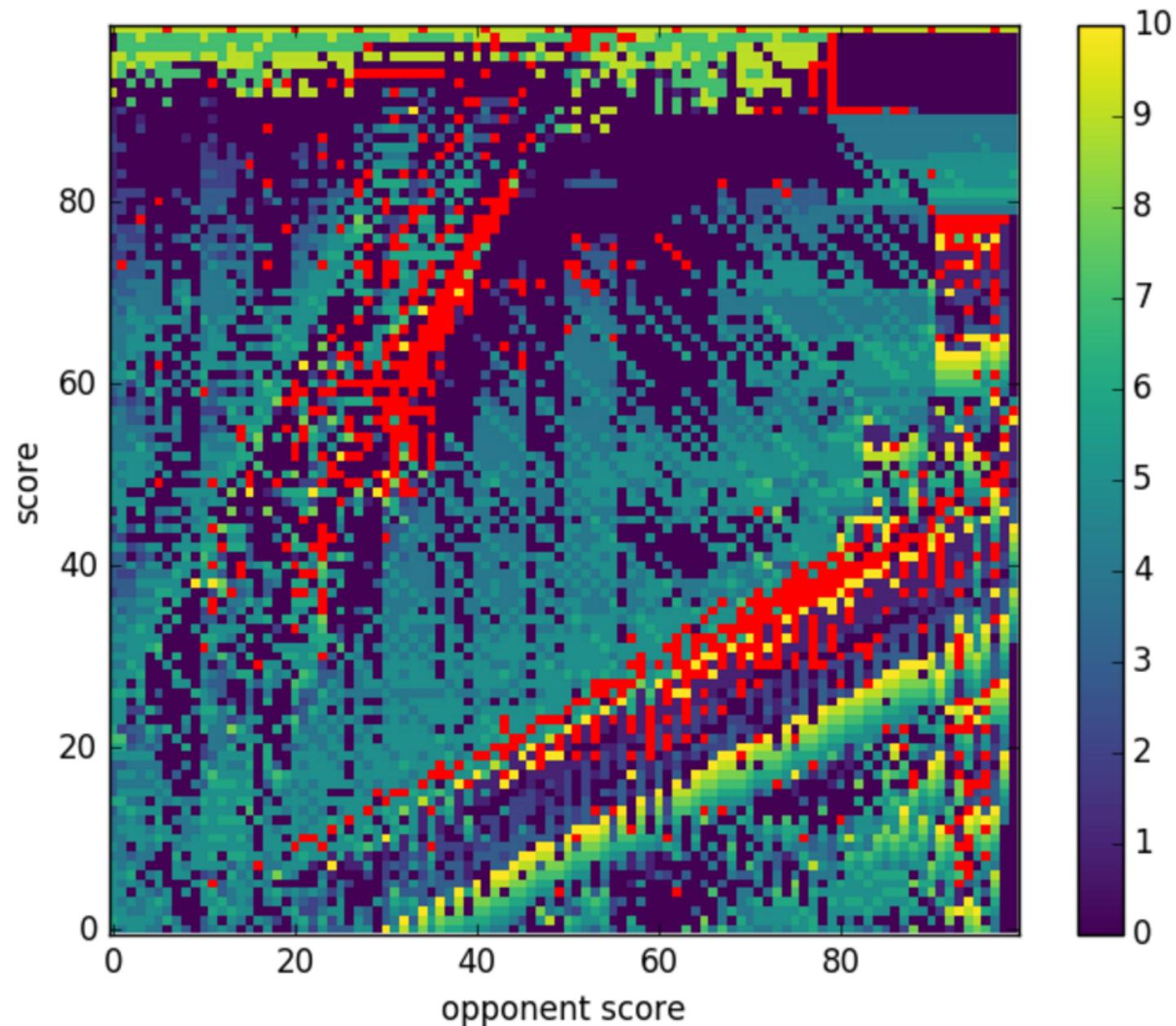
Fall 2016 week 8: Homework 7 due Tuesday & Project 3 due Friday

Cumulative Proportion of Wait Times Under 1 Hour

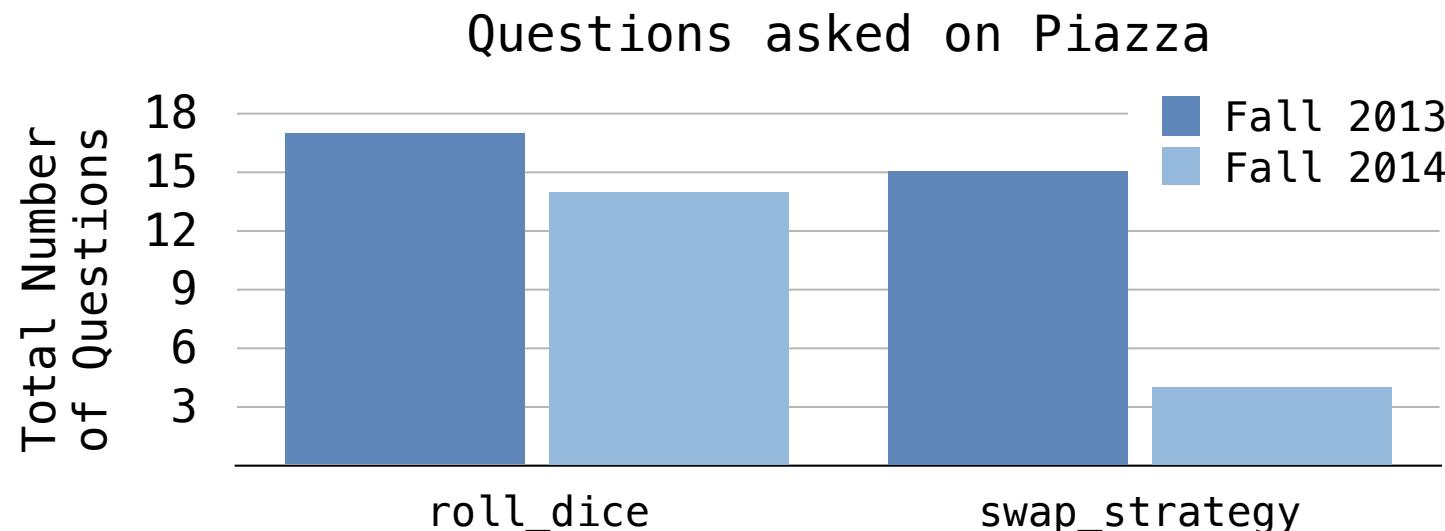
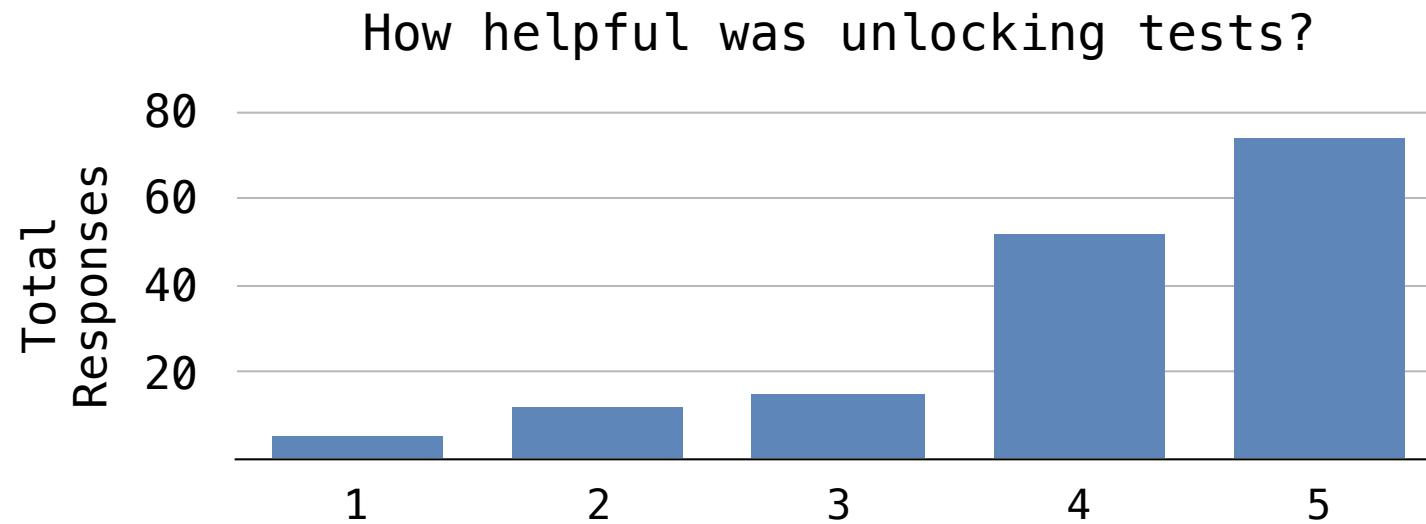


# Course Projects

(Demo)



# Test Unlocking Evaluation



# Project Analytics

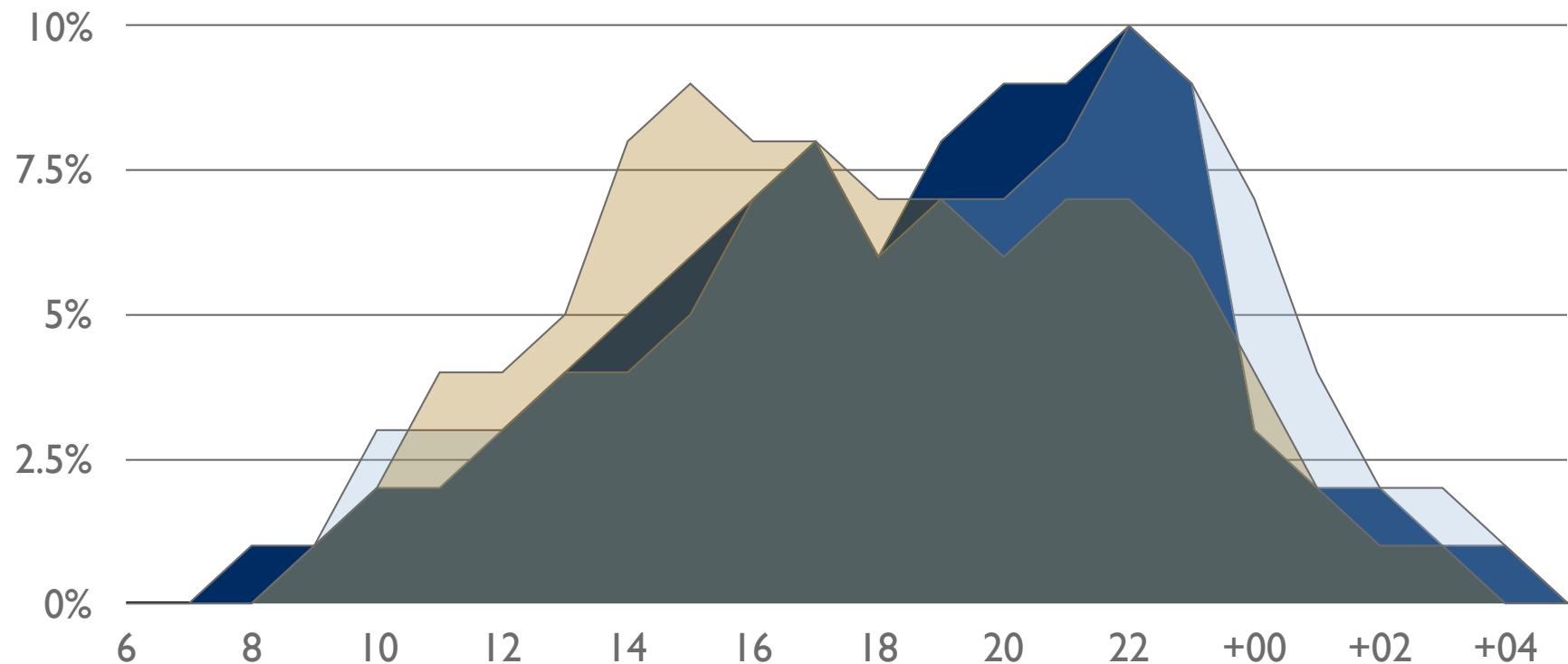
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8.3M backups across all semesters

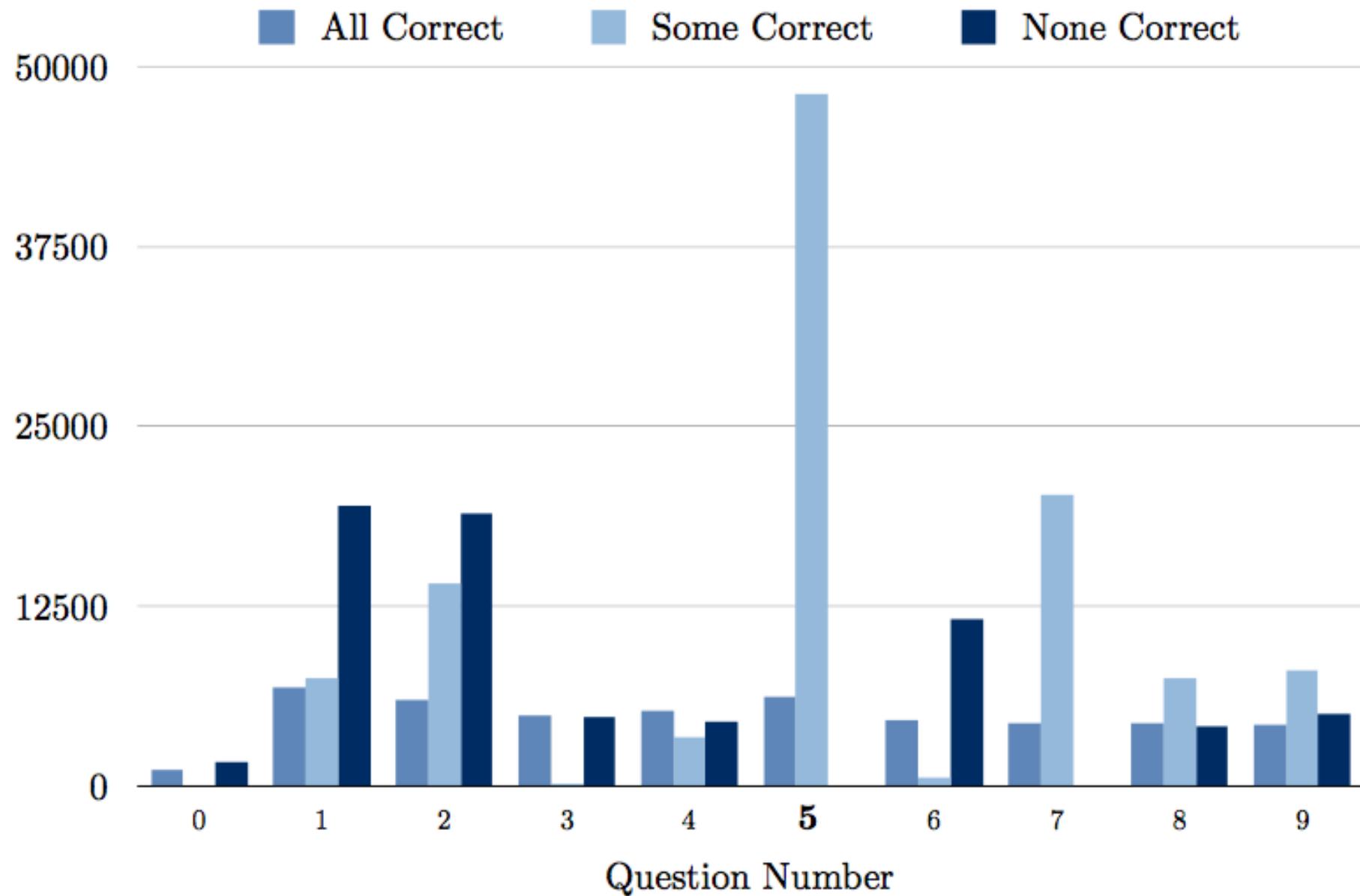
([Github](#))

([OK](#))

([Metabase](#))



# The Notorious Play Function



# Test Suite Design

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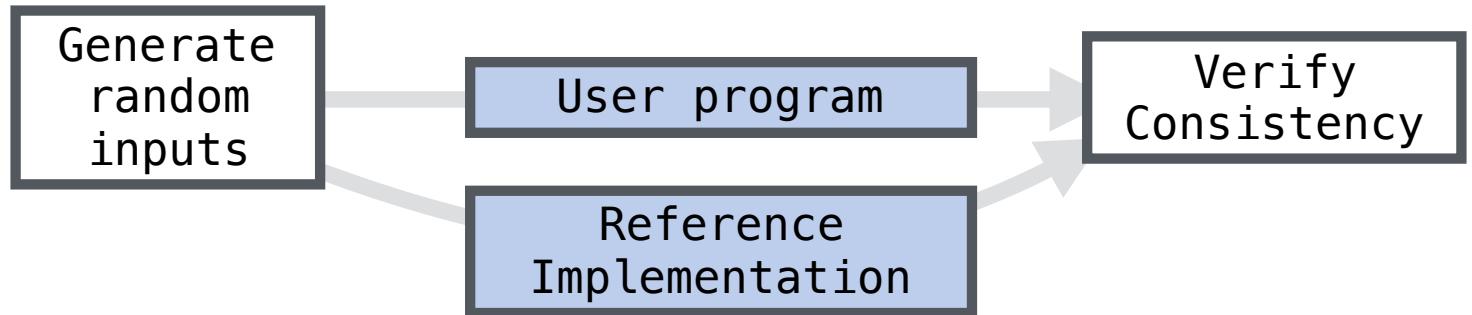
	Targeted test	Comprehensive test
Purpose	Isolate one issue	Test whole input space
Effect	Guide student attention	Encourage revision

# Fuzz Testing

Security:



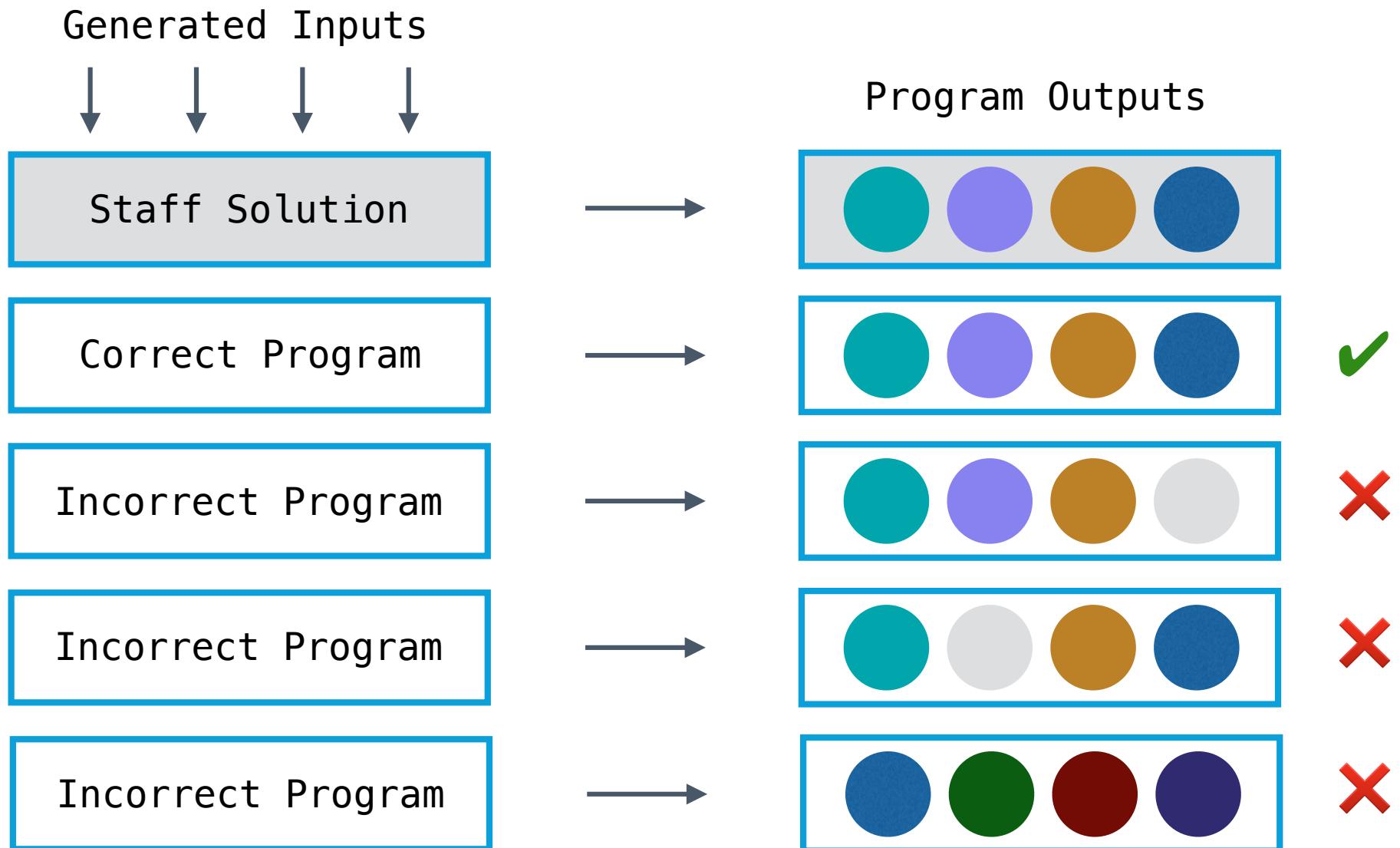
Autograders:



48% of students passed all targeted tests, but failed the fuzz test

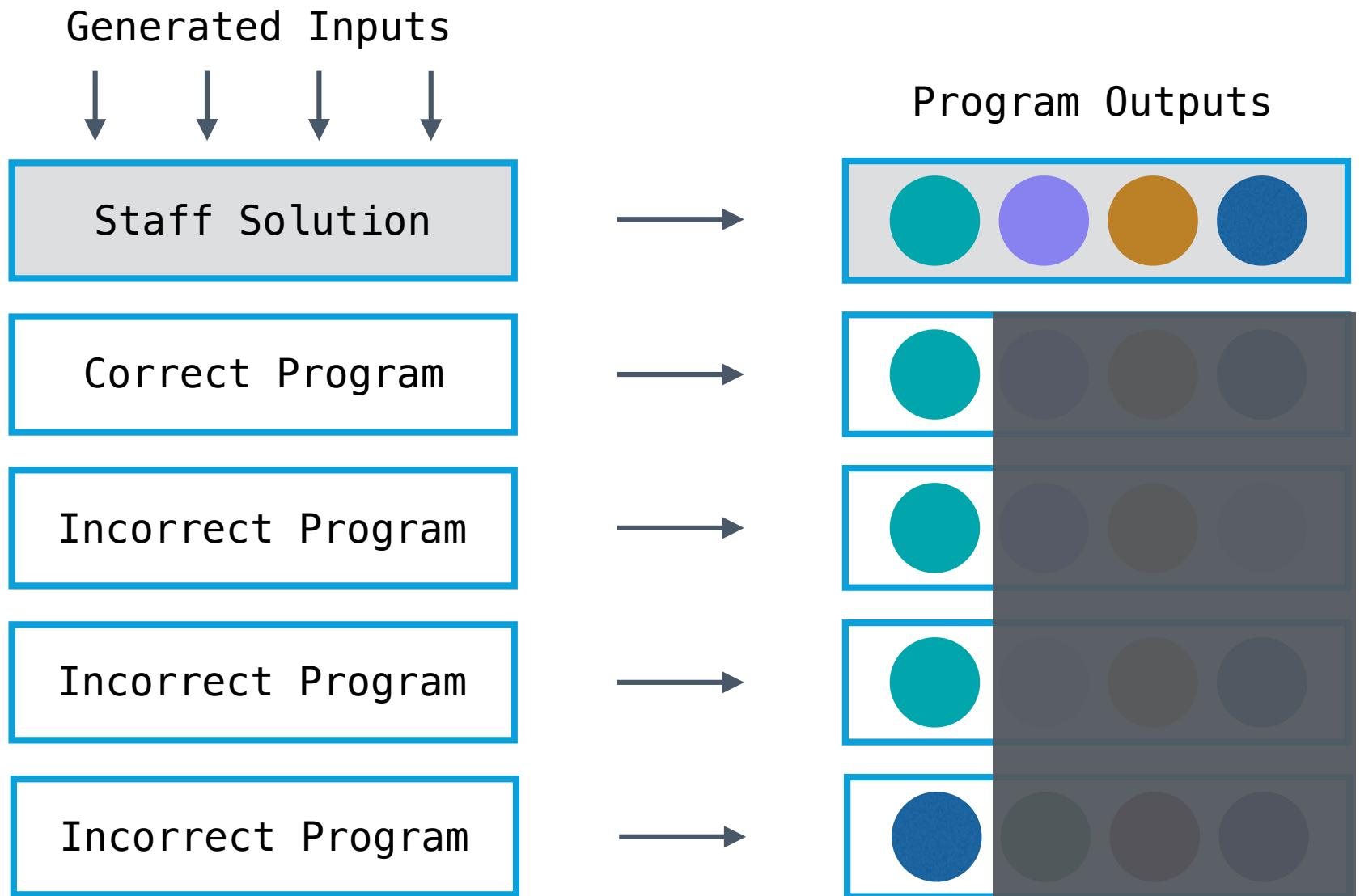
# Fuzz Test Sequence

Each student receives the same sequence of random inputs



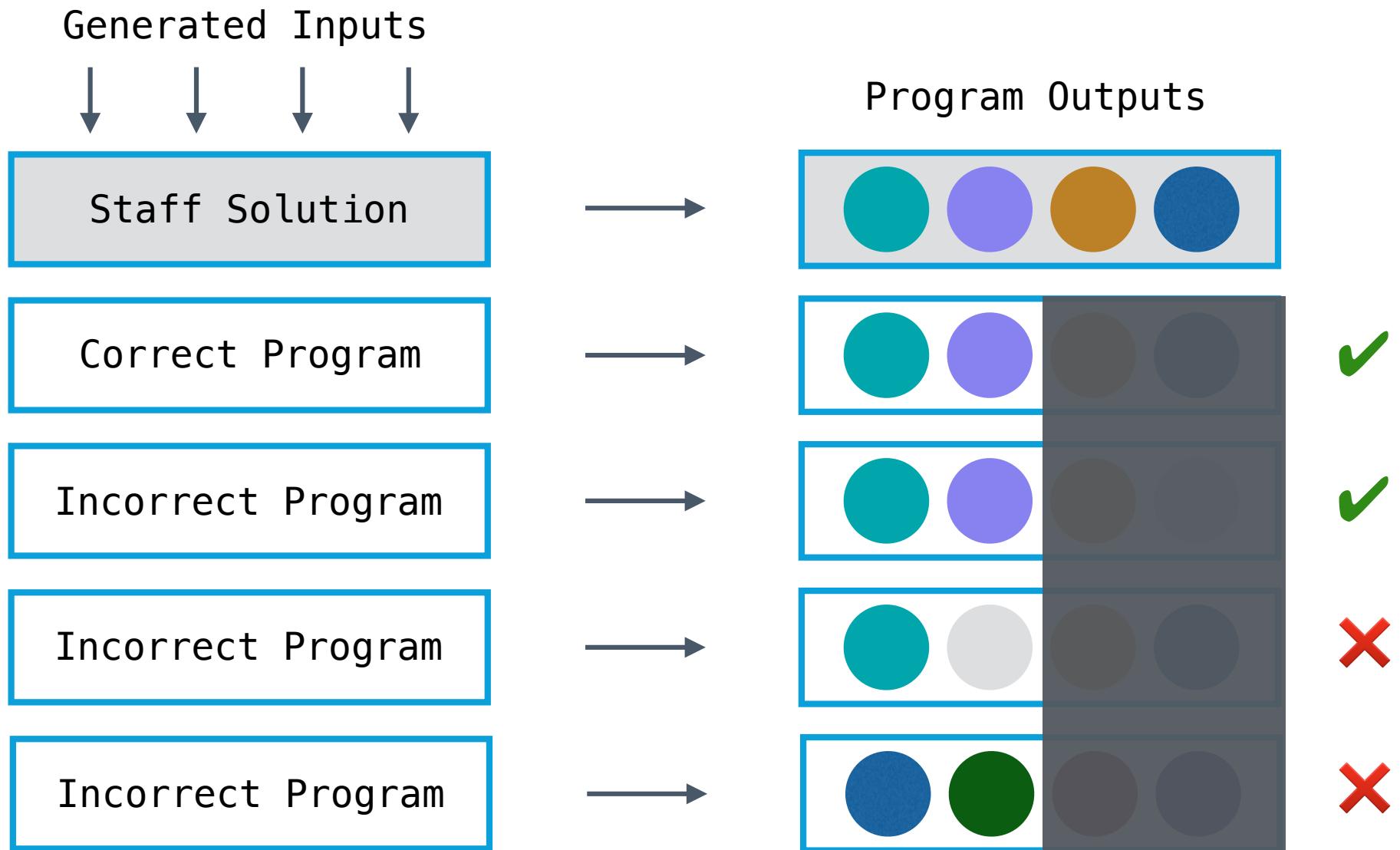
# Fuzz Test Sequence

Each student receives the same sequence of random inputs



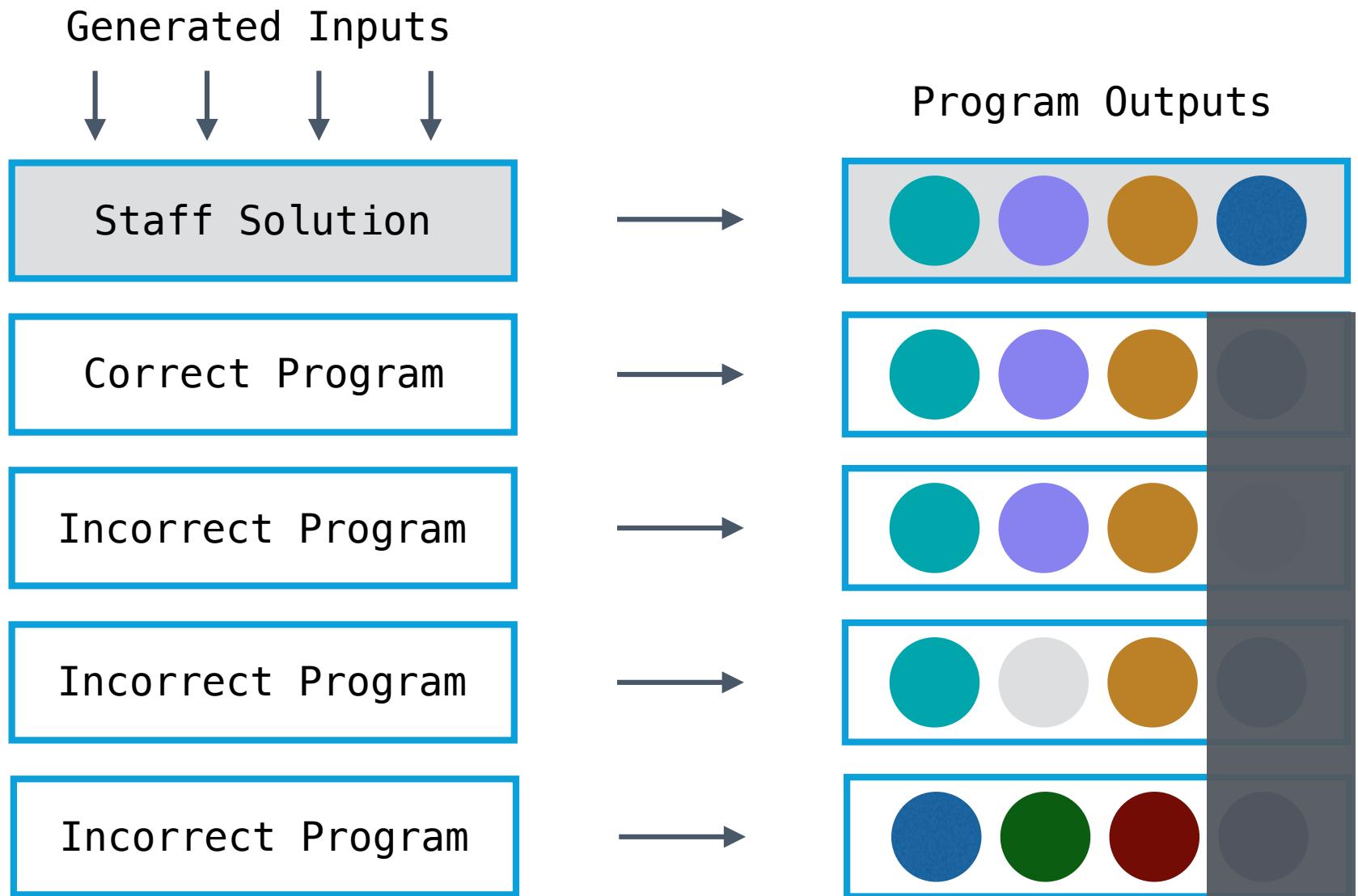
# Fuzz Test Sequence

Each student receives the same sequence of random inputs



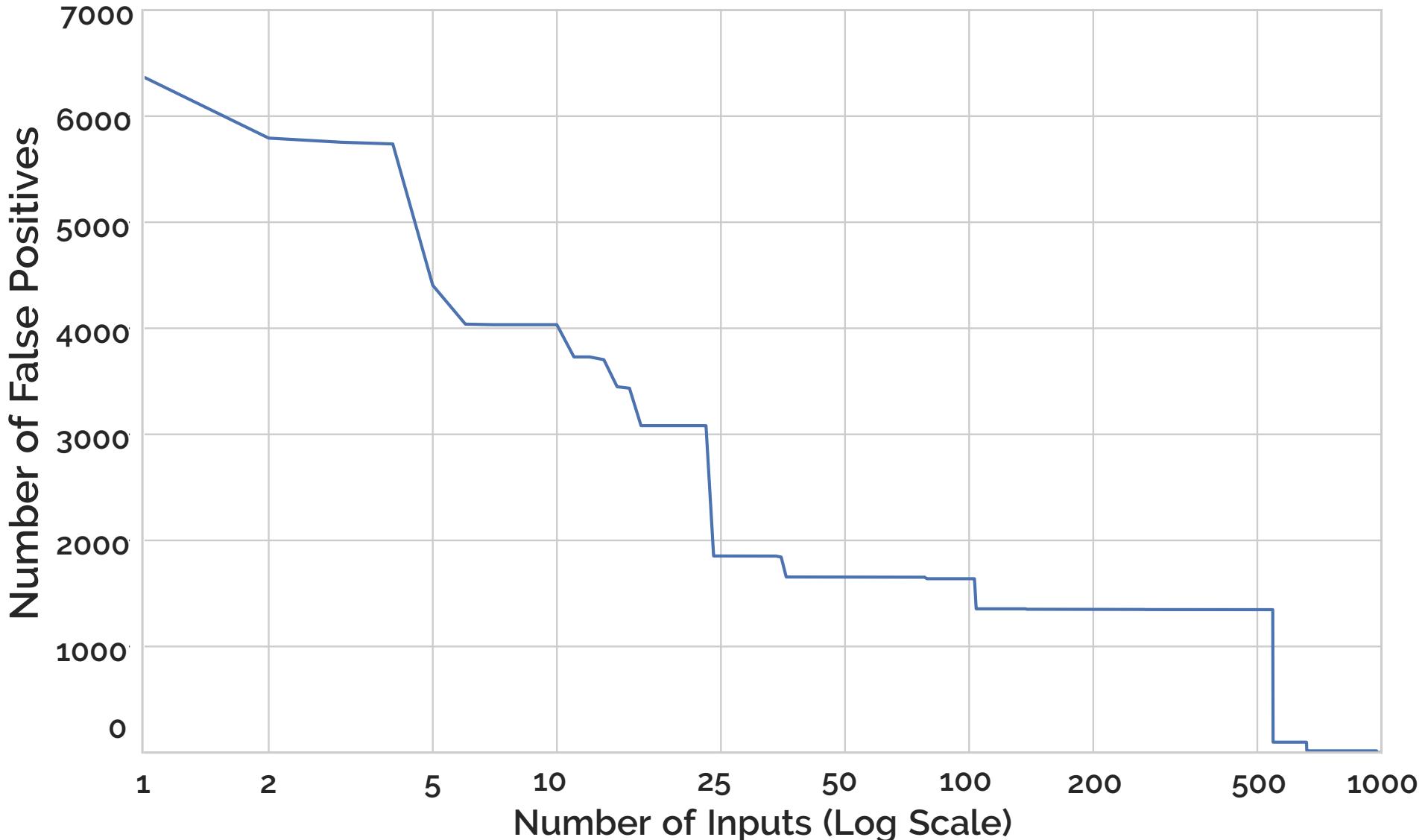
# Fuzz Test Sequence

Each student receives the same sequence of random inputs



## Test Accuracy Increases with More Inputs

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## 61A Online

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UCOP is funding development of online versions of CS 61A & 61B

- Students from other UC campuses can enroll starting in 2017–18
- Course credit, as well as possible major/requirement credit
- Materials & infrastructure can be used for public MOOCs

Components of an online course:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Lecture videos          | <input checked="" type="checkbox"/> Online discussions    |
| <input checked="" type="checkbox"/> Assignment distribution | <input checked="" type="checkbox"/> Online lab sections   |
| <input checked="" type="checkbox"/> Reading materials       | <input checked="" type="checkbox"/> Online office hours   |
| <input checked="" type="checkbox"/> Course forum            | <input checked="" type="checkbox"/> Working with remotely |

(Demo)