Lecture 13:

LIFE SKILL: DOCUMENTATION

CSC111: Introduction to CS through Programming

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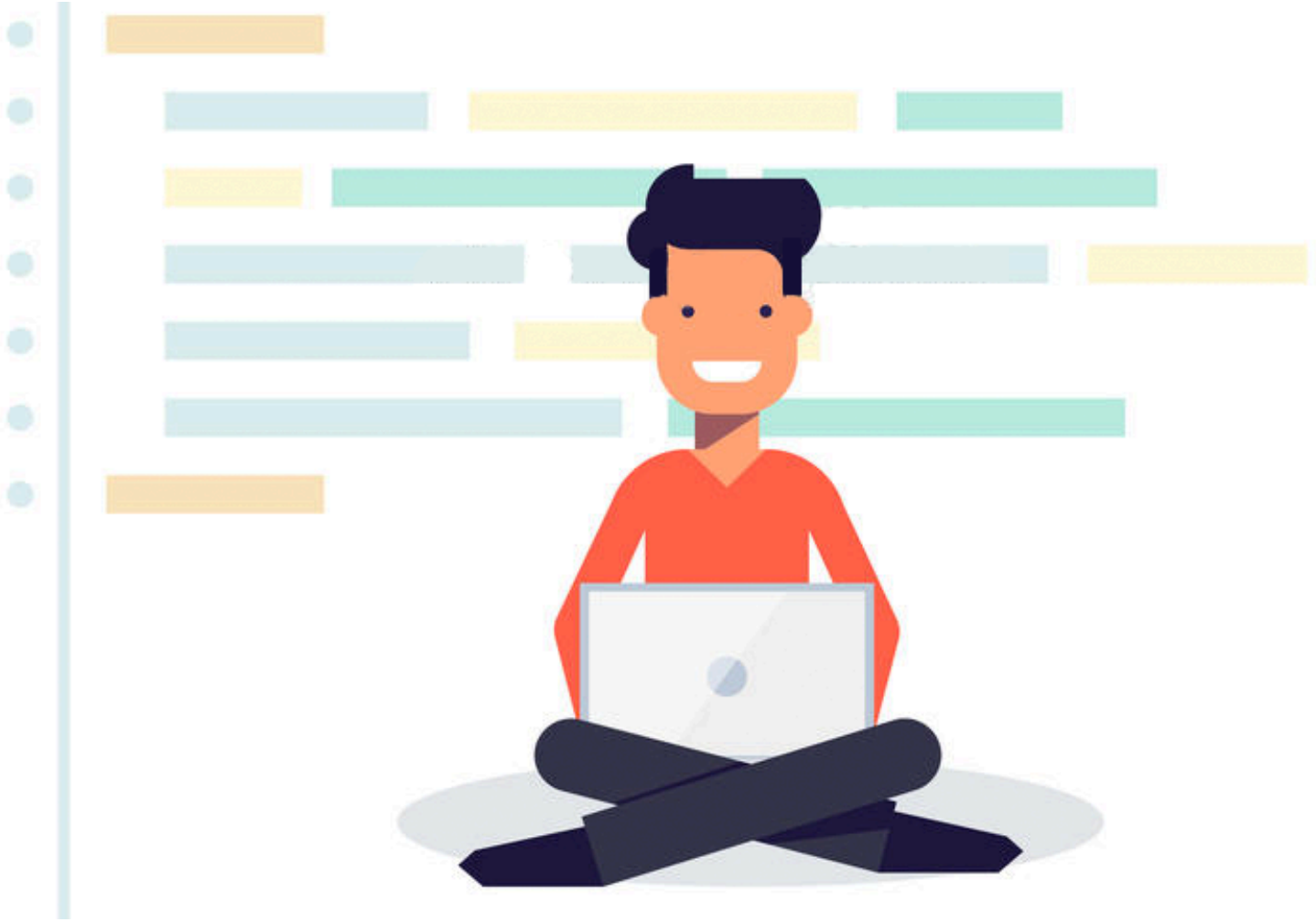
Overview

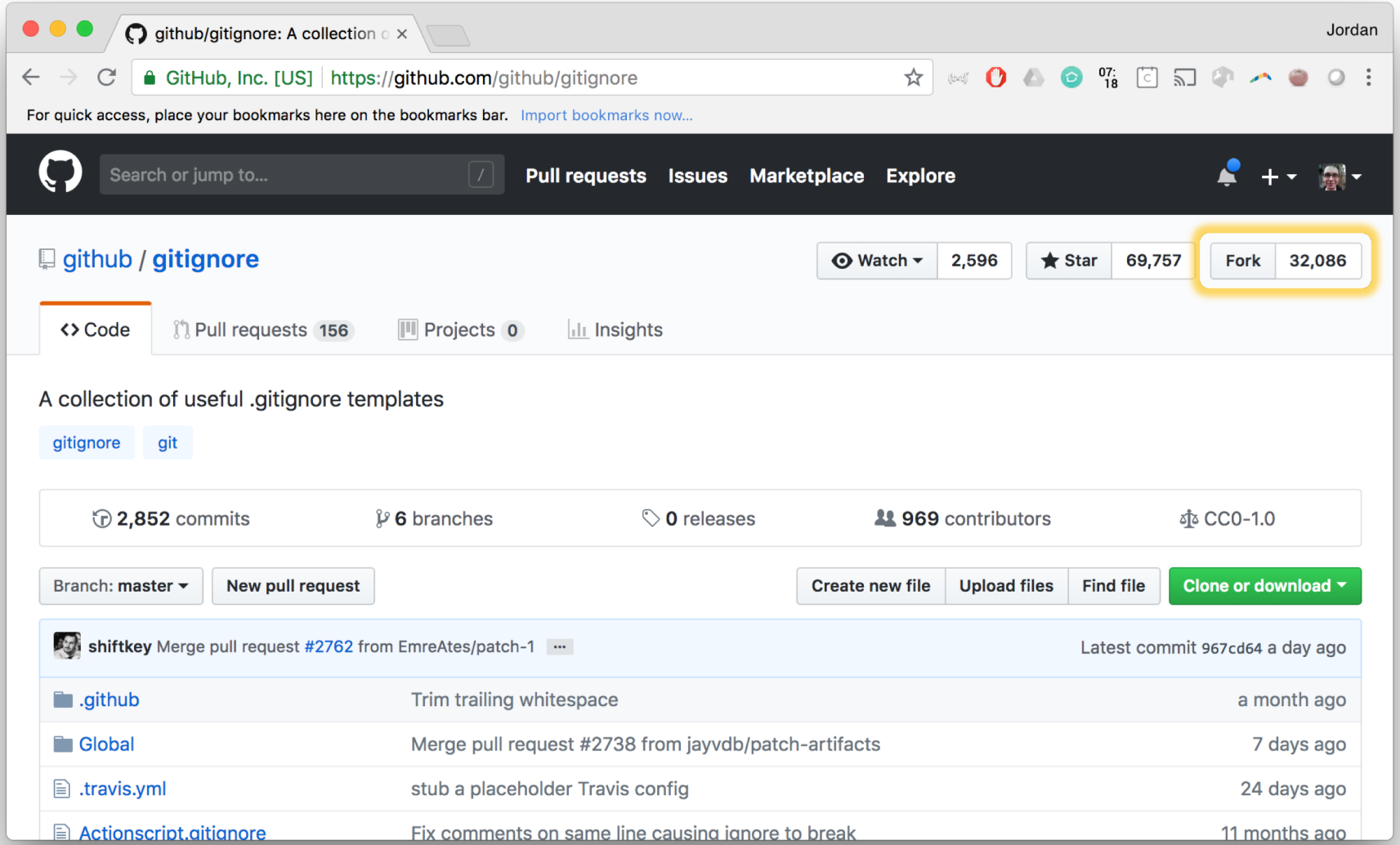
- ✓Announcements
- ✓Debrief of “Life Skill #2: Debugging”
- ✓Loops
  - ✓`for…in` (looping through items in a list)
  - ✓the `range()` function (getting a list of numbers)
  - ✓`while` (looping until something happens)
- ✓The `random` module
- Lab: Old MacDonald
- **Life Skill #3: Documentation**

In the beginning…



Now…

Eventually…


github/gitignore: A collection
Jordan
GitHub, Inc. [US] https://github.com/github/gitignore
For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...
Search or jump to...
Pull requests
Issues
Marketplace
Explore
github / gitignore
Watch 2,596
Star 69,757
Fork 32,086
Code
Pull requests 156
Projects 0
Insights
A collection of useful .gitignore templates
gitignore
git
2,852 commits
6 branches
0 releases
969 contributors
CC0-1.0
Branch: master
New pull request
Create new file
Upload files
Find file
Clone or download
shiftkey Merge pull request #2762 from EmreAtes/patch-1
Latest commit 967cd64 a day ago
.github
Trim trailing whitespace
a month ago
Global
Merge pull request #2738 from jayvdb/patch-artifacts
7 days ago
.travis.yml
stub a placeholder Travis config
24 days ago
Actionscript.gitignore
Fix comments on same line causing ignore to break
11 months ago

The point

- **Other people** need to be able to understand your code
- **Future you** needs to be able to understand your code
- **Document it**

… but how?

Step 1: meaningful **nouns** for variables

Untitled

```
x = "Jordan Crouser"
y = "Professor"
z = "Smith College"
print(x, "-", y, "at", z)
```

Ln: 1 Col: 1

Untitled

```
name = "Jordan Crouser"
title = "Professor"
institution = "Smith College"
print(name, "-", title, "at", institution)
```

Ln: 4 Col: 41

Step 2: lots of comments

Untitled

```
def makeSong():
    # Get user input
    title = input("Title? ")
    artist = input("Artist? ")

    # Create Song instance and print info
    s = Song(title, artist)
    s.print()
```

Ln: 6 Col: 0

A useful technique: code tracing

- **Given**: a very short, poorly-documented program
- **Your goal**: try to figure out what it's doing
- **Recommendations**:
  - walk through the program step-by-step ("**trace its execution**") using the **whiteboard or paper** instead of typing it into IDLE
  - once you understand what's happening, then rewrite it using **informative variable names** and **comments**

Example

Untitled

```
x = int(input("Enter lower bound: "))
y = int(input("Enter upper bound: "))

for z in range(x, y+1):
    if z > 1:
        p = True
        for zz in range(2, z):
            if (z % zz) == 0:
                p = False
                break
    if p:
        print(z)
```

Ln: 12 Col: 16

Debrief

This is great, but what about when our programs get **more complicated**?

Step 3*: describe the **action** for functions

Untitled

```
def bloop(x):
    return x.title().replace("'S", "'s")
```

Ln: 1 Col: 9

Untitled

```
def capitalizeWords(x):
    return x.title().replace("'S", "'s")
```

Ln: 2 Col: 40

Step 3*: describe the **action** for functions

Untitled

```
def myFunction(number):
    remainder = this.value % number
    if (remainder == 0): return True
    else: return False
```

Ln: 3 Col: 17

Untitled

```
def isDivisibleBy(number):
    remainder = this.value % number
    if (remainder == 0): return True
    else: return False
```

Ln: 4 Col: 22

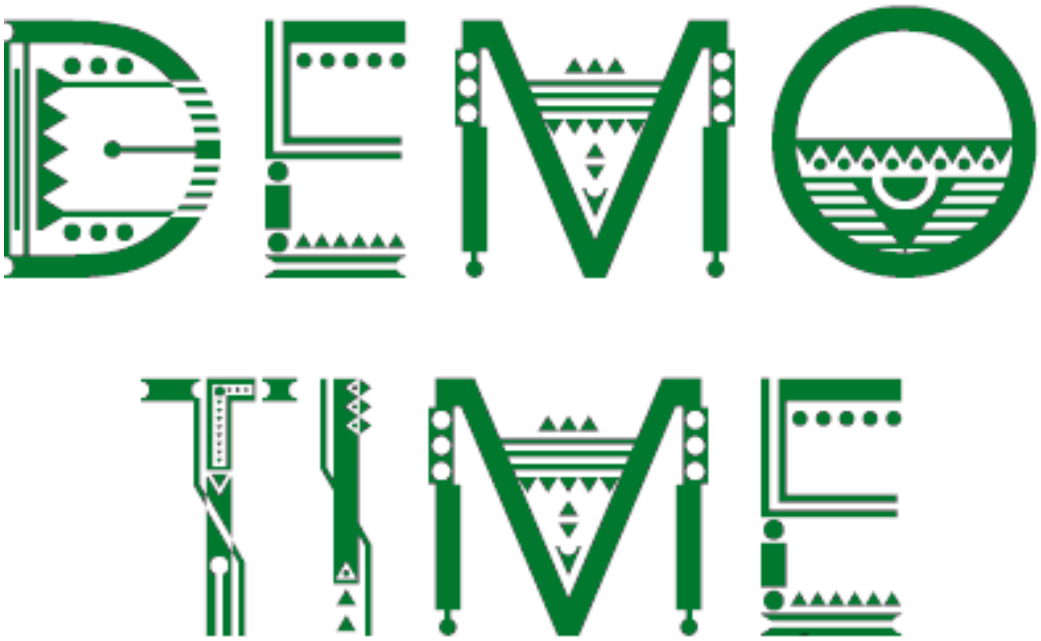
Step 4*: docstrings

Untitled

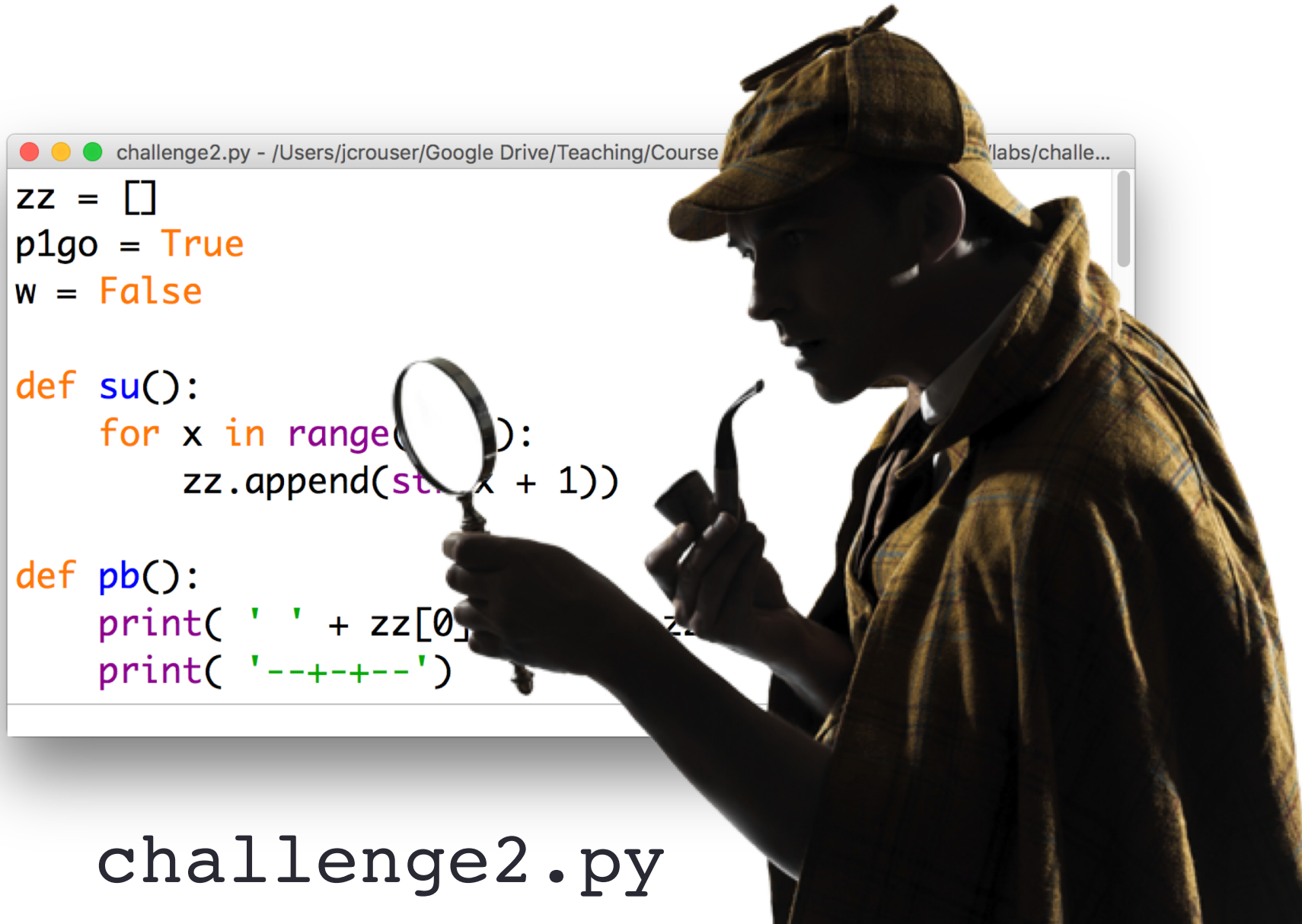
```
def makeSong():
    """ Creates and prints a Song instance
        from user input"""
    # Get user input
    title = input("Title? ")
    artist = input("Artist? ")

    # Create Song instance and print info
    s = Song(title, artist)
    s.print()
```

Ln: 5 Col: 0


DEMO
TIME

Activity: “code detective”



challenge2.py

Debrief

What was that experience like?

What **strategies** did you use?

Coming up next

- *A4: Magic 8 Ball* is due **Sunday 11:55pm**
- **Mon 10/8: NO CLASS (FALL BREAK)**
- **Weds 10/10**: Writing functions
- **Lab**: MadLibs
- **Fri 10/5**: Working with Files