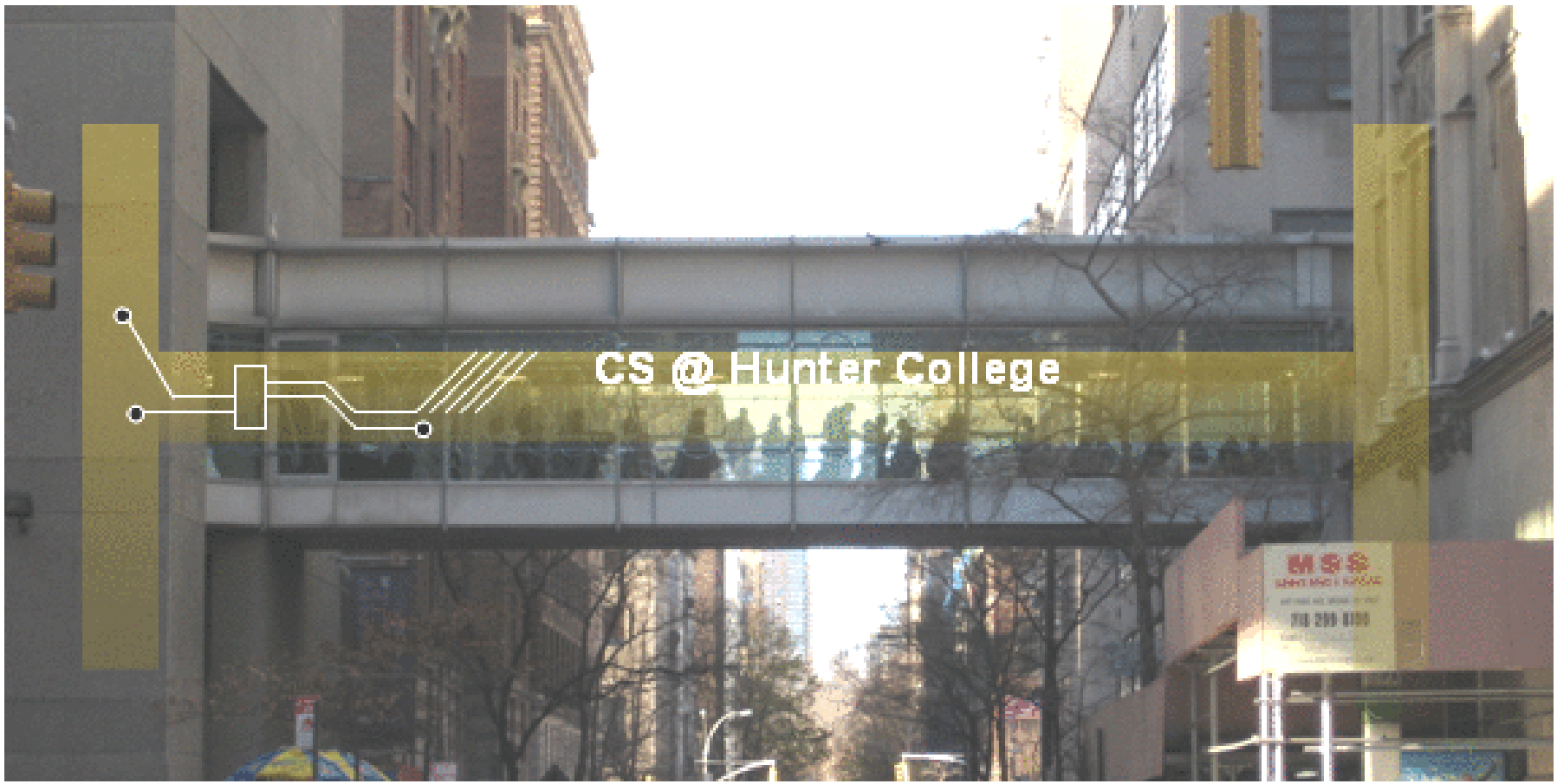
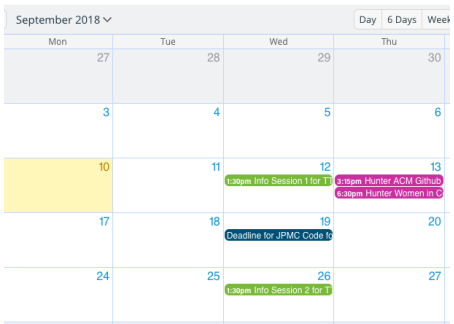
CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

Announcements

- A plea from those who scan/grade:



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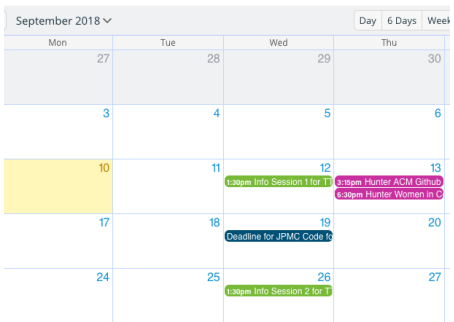

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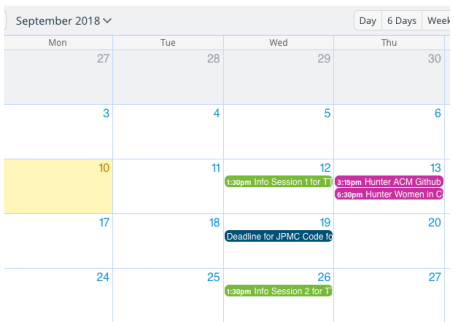

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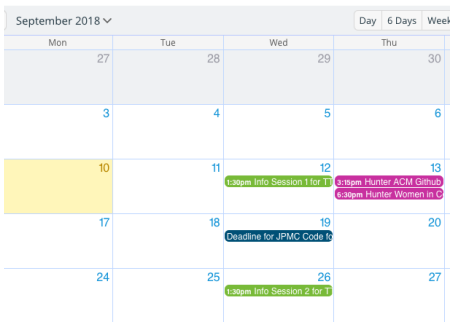

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- Guest Lecturer: Dr. Tiziana Ligorio

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From lecture slips & recitation sections.

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  Strings are surrounded by quotes (either single or double).
  Variables names (identifiers) for memory locations are not. Ex: `'num'` *vs.* `num`.

Today's Topics

- Recap: Indexing, Slicing, & Decisions
- Logical Expressions
- Circuits
- CS Survey

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Recap: Linguistics Challenge

Linguistic experts!

Design a program that counts the number of plural nouns in a list of nouns. Think about:

- what the input is,
- what the output is, and
- how you can determine if a noun is plural.

Note: To simplify the problem, assume all plural nouns end in "s".

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Design a program that counts the number of plural nouns in a list of nouns. Think about:

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- **Input:** *A list of nouns*
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nouns = "hats coats glasses scarves"
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How you can determine if a noun is plural?

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- There's spaces in between.

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print(nouns.count(' ')+1)
```

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When a word end with an 's'?

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When a word end with an 's'?

- Have the pattern: 's '

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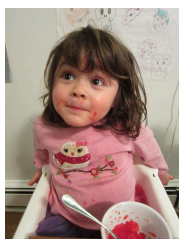


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When a word end with an 's' ?

- Have the pattern: 's '
- To count plural words:

```
print(nouns.count('s '))
```

- Not quite right– missing `scarves` since no space at the end.
- To fix this, let's add a space, then count:

```
nouns = nouns + " "
print(nouns.count('s '))
```

Lecture Slip: In Pairs or Triples...

Some review:

1.
```
motto = "Mihi cura futuri"
print(motto[2:4])
print(motto[2:4].upper())
```

2.
```
ER = "The future belongs to those who believe in the beauty of their dreams."
print(ER.upper()[2], ER[13], ER[2], "a", ER[15], ER[14], "r  R.")
```

Recap: Indexing & Slicing

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M	i	h	i		c	u	r	a		f	u	t	u	r	i

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Output:

```
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```

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HI
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Output:

E l e a n o r R.

Today's Topics

- Recap: Indexing, Slicing, & Decisions
- **Logical Expressions**
- Circuits
- CS Survey

In Pairs or Triples...

Some challenges with types & decisions:

```
#What are the types:
y1 = 2017
y2 = "2018"
print(type(y1))
print(type("y1"))
print(type(2017))
print(type("2017"))
print(type(y2))
print(type(y1/4.0))

x = int(y2) - y1
if x < 0:
    print(y2)
else:
    print(y1)
```

```
cents = 432
dollars = cents // 100
change = cents % 100
if dollars > 0:
    print('$'+str(dollars))
if change > 0:
    quarters = change // 25
    pennies = change % 25
    print(quarters, "quarters")
    print("and", pennies, "pennies")
```

Python Tutor

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(Demo with pythonTutor)

Decisions

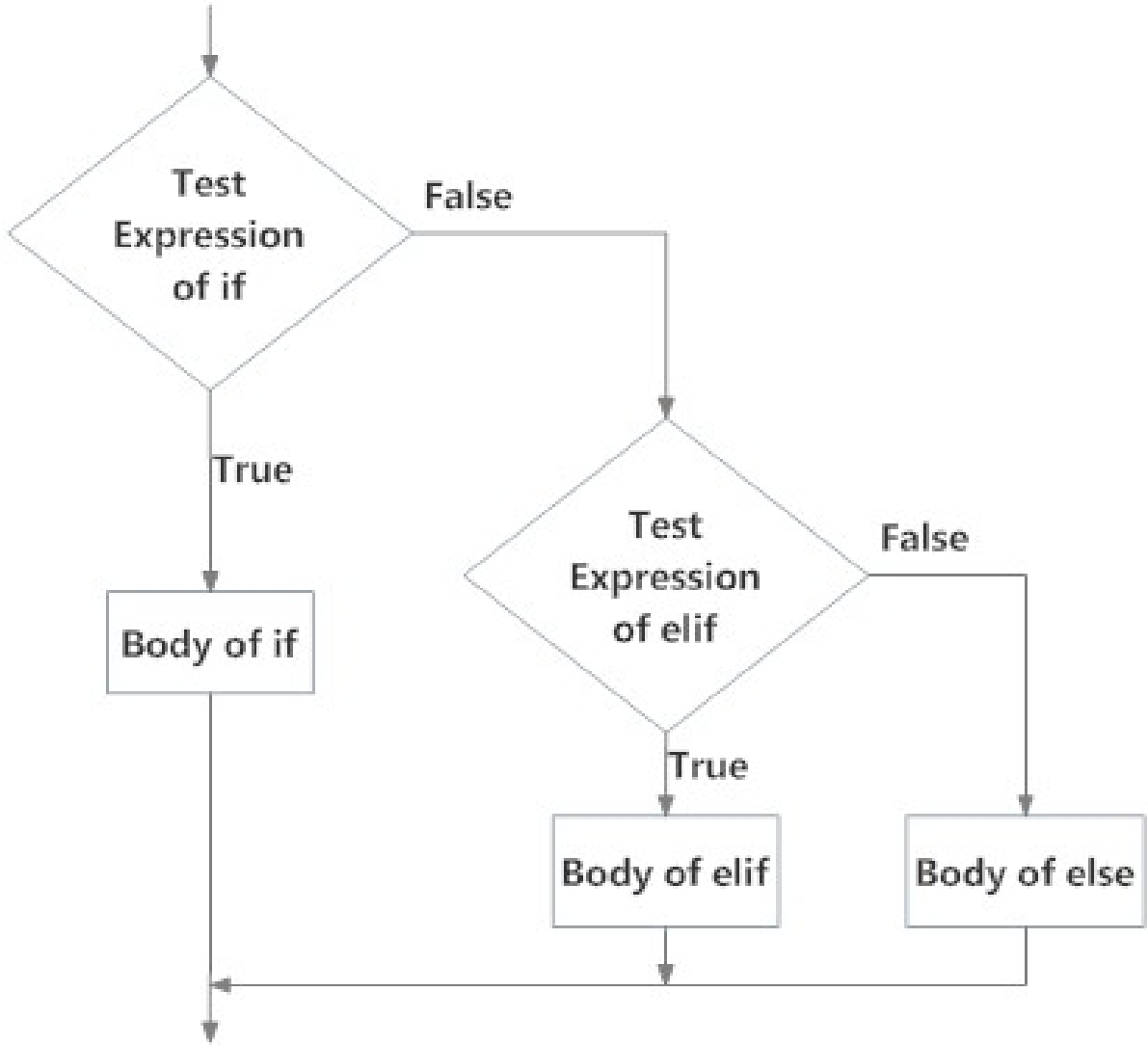
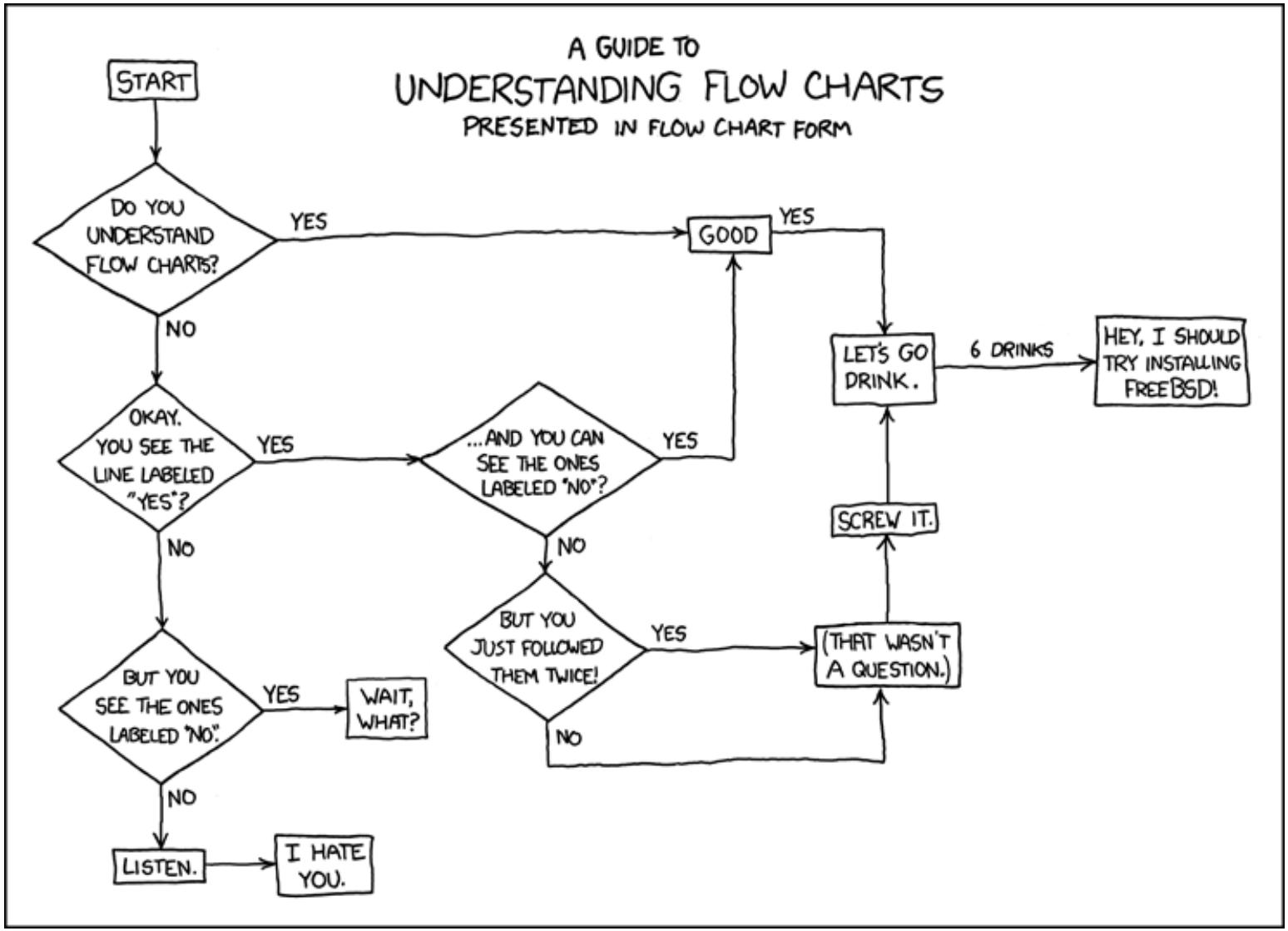


Fig: Operation of if...elif...else statement

(programiz)

Side Note: Reading Flow Charts



(xkcd/518)

In Pairs or Triples

Predict what the code will do:

```
origin = "Indian Ocean"
winds = 100
if (winds > 74):
    print("Major storm, called a ", end="")
    if origin == "Indian Ocean" or origin == "South Pacific":
        print("cyclone.")
    elif origin == "North Pacific":
        print("typhoon.")
    else:
        print("hurricane.")

visibility = 0.2
winds = 40
conditions = "blowing snow"
if (winds > 35) and (visibility < 0.25) and \
      (conditions == "blowing snow" or conditions == "heavy snow"):
    print("Blizzard!")
```

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(Demo with `pythonTutor`)

Logical Operators

and

in1		in2	*returns:*
`False`	`and`	`False`	`False`
`False`	`and`	`True`	`False`
`True`	`and`	`False`	`False`
`True`	`and`	`True`	`True`

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`False`	`and`	`True`	`False`
`True`	`and`	`False`	`False`
`True`	`and`	`True`	`True`

or

in1		in2	*returns:*
`False`	`or`	`False`	`False`
`False`	`or`	`True`	`True`
`True`	`or`	`False`	`True`
`True`	`or`	`True`	`True`

Logical Operators

and

in1		in2	*returns:*
`False`	`and`	`False`	`False`
`False`	`and`	`True`	`False`
`True`	`and`	`False`	`False`
`True`	`and`	`True`	`True`

or

in1		in2	*returns:*
`False`	`or`	`False`	`False`
`False`	`or`	`True`	`True`
`True`	`or`	`False`	`True`
`True`	`or`	`True`	`True`

not

	in1	*returns:*
`not`	`False`	`True`
`not`	`True`	`False`

In Pairs or Triples

Predict what the code will do:

```
semHours = 18
reqHours = 120
if semHours >= 12:
    print('Full Time')
else:
    print('Part Time')

pace = reqHours // semHours
if reqHours % semHours != 0:
    pace = pace + 1
print('At this pace, you will graduate in', pace, 'semesters,')
yrs = pace / 2
print('(or', yrs, 'years).')


for i in range(1,20):
    if (i > 10) and (i % 2 == 1):
        print('oddly large')
    else:
        print(i)
```

Python Tutor

```
semHours = 18
reqHours = 120
if semHours >= 12:
     print('Full Time')
else:
     print('Part Time')

pace = reqHours // semHours
if reqHours % semHours != 0:
     pace = pace + 1
print('At this pace, you will graduate in', pace, 'semesters,')
yrs = pace / 2
print('(or', yrs, 'years).')

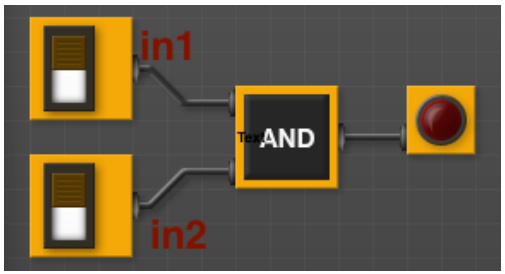

for i in range(1,20):
     if (i > 10) and (i % 2 == 1):
          print('oddly large')
     else:
          print(i)
```

(Demo with pythonTutor)

Today's Topics

- Recap: Indexing, Slicing, & Decisions
- Logical Expressions
- **Circuits**
- CS Survey

Circuit Demo

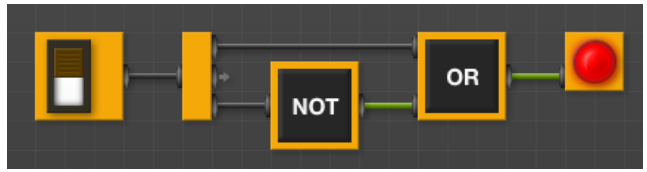


(Demo with `neuroproductions`)

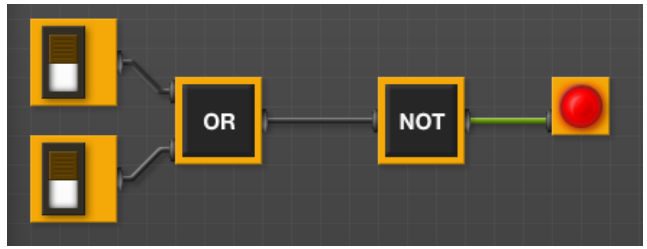
In Pairs or Triples

Predict when these expressions are true:

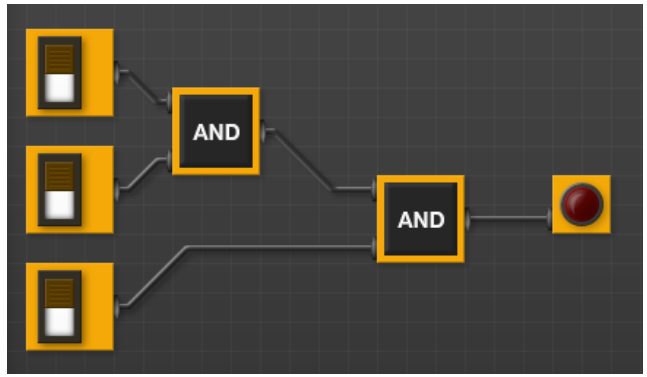
- `in1 or not in1`:



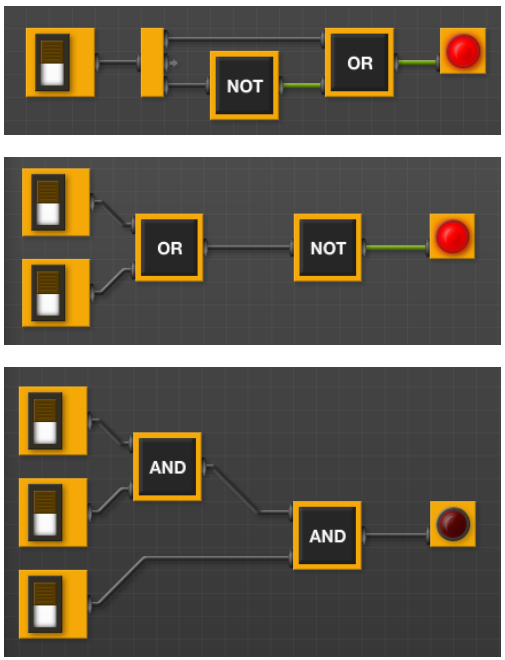
- `not(in1 or in2)`:



- `(in1 and in2) and in3`:



Circuit Demo



(Demo with `neuroproductions`)

Today's Topics

- Recap: Indexing, Slicing, & Decisions
- Logical Expressions
- Circuits
- **CS Survey**

CS Survey Talk: CUNY2X & TTP @Hunter

Bernard Desert & Elise Harris

CS Survey Talk: CUNY2X & TTP @Hunter

Bernard Desert & Elise Harris

- Brief overview of CUNY 2X & Tech Talent Pipeline

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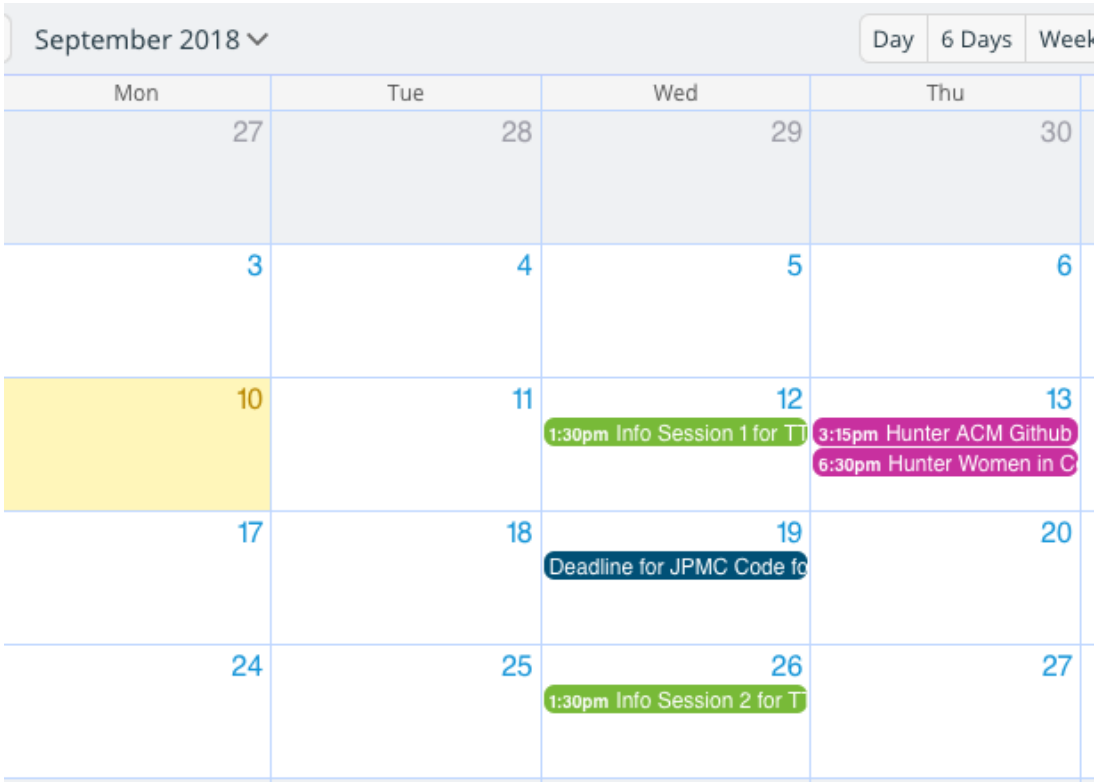
- Brief overview of CUNY 2X & Tech Talent Pipeline
- What Bernard & Elise love about their jobs.

CS Survey Talk: CUNY2X & TTP @Hunter

Bernard Desert & Elise Harris

- Brief overview of CUNY 2X & Tech Talent Pipeline
- What Bernard & Elise love about their jobs.
- Design challenge: classic tech interview question.

CS Survey Talk: Hunter Tech Calendar



To sign up:

- `http://bit.ly/cuny2xcontactinfo`
- Does not have to be a Hunter email– prefer one that you access most.

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.
- Write down the output to see the pattern:

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- Write down the output to see the pattern:
  1

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.
- Write down the output to see the pattern:
  1
  2

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.
- Write down the output to see the pattern:
  1
  2
  Fizz

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.
- Write down the output to see the pattern:
  1
  2
  Fizz
  4

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.
- Write down the output to see the pattern:
  1
  2
  Fizz
  4
  Buzz

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.
- Write down the output to see the pattern:
  1
  2
  Fizz
  4
  Buzz
  5

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- Write down the output to see the pattern:
  1
  2
  Fizz
  4
  Buzz
  5
  Fizz

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  1
  2
  Fizz
  4
  Buzz
  5
  Fizz
  7

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".
- Write down the output to see the pattern:
  1
  2
  Fizz
  4
  Buzz
  5
  Fizz
  7
  ...
  14

Tech Interview Classic

- Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".
- Write down the output to see the pattern:
  1
  2
  Fizz
  4
  Buzz
  5
  Fizz
  7
  ...
  14
  FizzBuzz

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- To Do List:

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- To Do List:
  - Create a loop that goes from 1 to 100.

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- To Do List:
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  - If the number is divisible by 3, print “Fizz”.

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  - **Otherwise print the number.**

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  - If divisible by both, print “FizzBuzz”.
  - **Otherwise print the number.**
    We should do this one first!

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- Write a program that prints the numbers from 1 to 100. But for multiples of three print “Fizz” instead of the number and for the multiples of five print “Buzz”. For numbers which are multiples of both three and five print “FizzBuzz”.
- To Do List (**Reordered**):
  - Create a loop that goes from 1 to 100.
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```
for i in range(1,101):
```

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```
for i in range(1,101):
    if i%3 != 0 and i%5 != 0:
```

Tech Interview Classic

- To Do List:
  - Create a loop that goes from 1 to 100.
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    if i%3 == 0:
```

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  - Create a loop that goes from 1 to 100.
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        print(i, end="")
    if i%3 == 0:
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    if i%5 == 0:
```

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```

Tech Interview Classic

- To Do List:
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    if i%3 != 0 and i%5 != 0:
        print(i, end="")
    if i%3 == 0:
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    if i%5 == 0:
        print("Buzz", end="")
    print()
```

Recap

- On lecture slip, write down a topic you wish we had spent more time (and why).

Recap

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- In Python, we introduced:

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- Pass your lecture slips to the aisles for the UTAs to collect.

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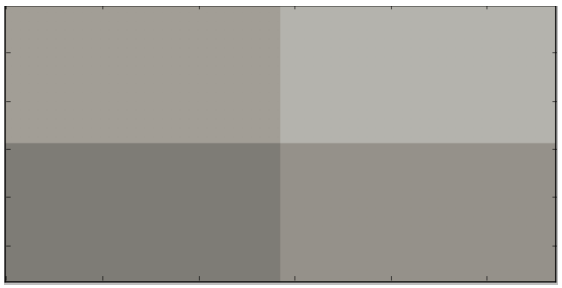
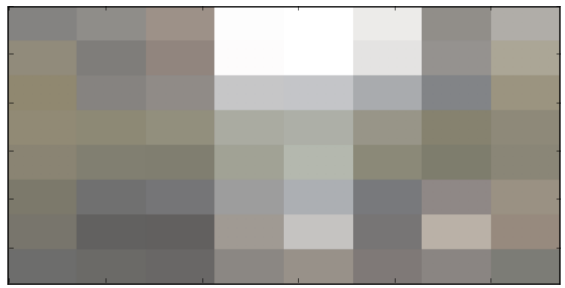
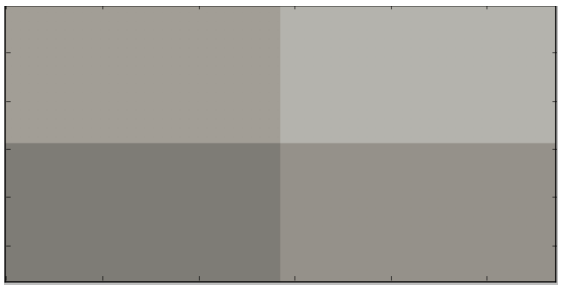
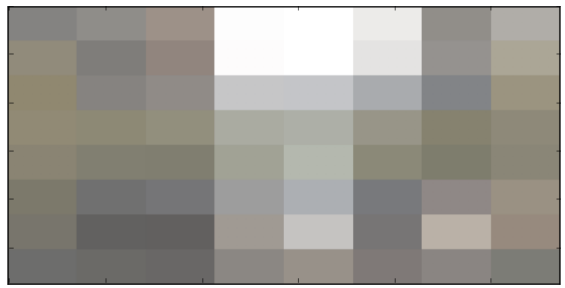
Practice Quiz & Final Questions

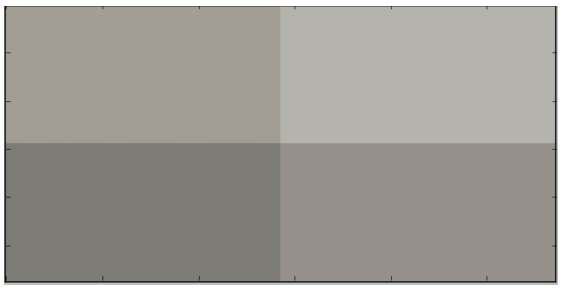
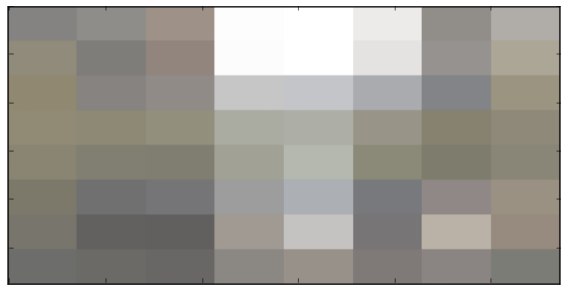

- Since you must pass the final exam to pass the course, we end every lecture with final exam review.

Practice Quiz & Final Questions


- Since you must pass the final exam to pass the course, we end every lecture with final exam review.
- Pull out something to write on (not to be turned in).

Practice Quiz & Final Questions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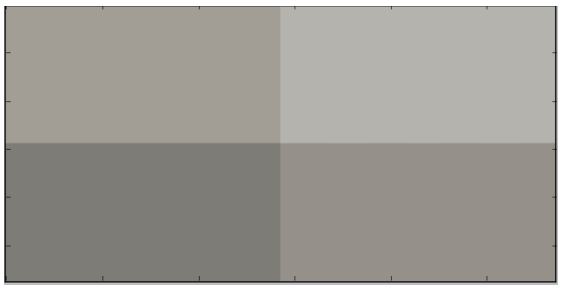
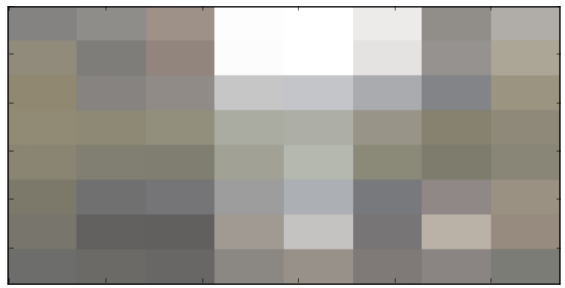
- Lightning rounds:

Practice Quiz & Final Questions


- Since you must pass the final exam to pass the course, we end every lecture with final exam review.
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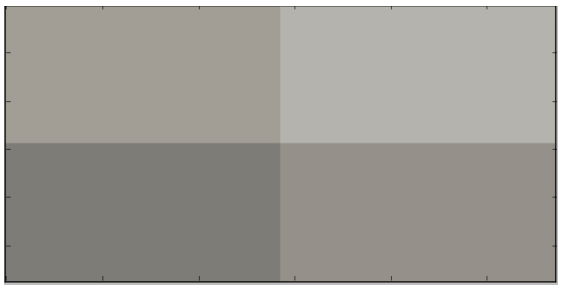
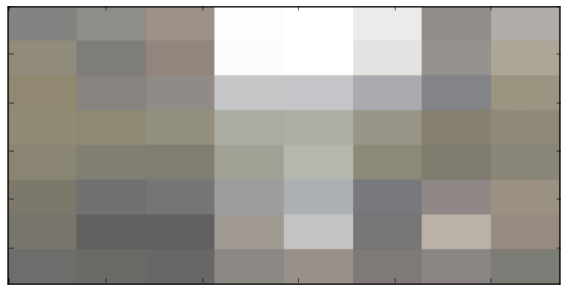
- Lightning rounds:
  - write as much you can for 60 seconds;

Practice Quiz & Final Questions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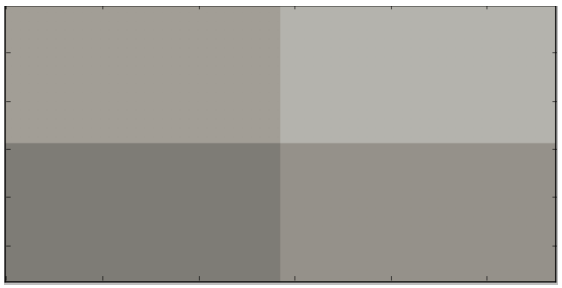
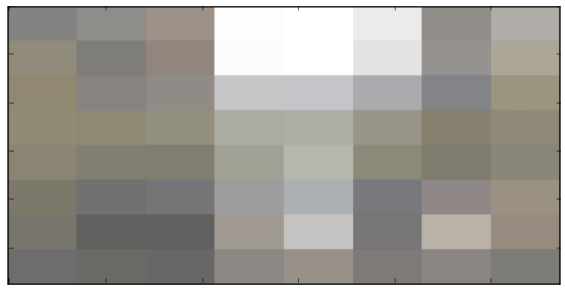
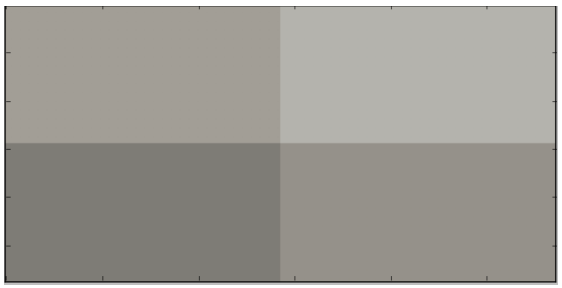
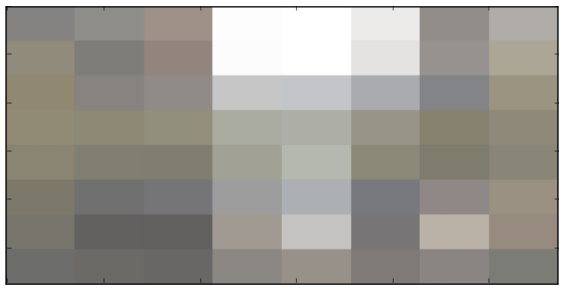
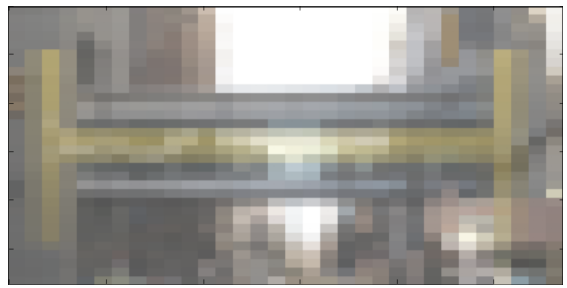
  - write as much you can for 60 seconds;
  - followed by answer; and

Practice Quiz & Final Questions


- Since you must pass the final exam to pass the course, we end every lecture with final exam review.
- Pull out something to write on (not to be turned in).
- Lightning rounds:
  - write as much you can for 60 seconds;
  - followed by answer; and
  - repeat.

Practice Quiz & Final Questions

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- Past exams are on the webpage (under Final Exam Information).

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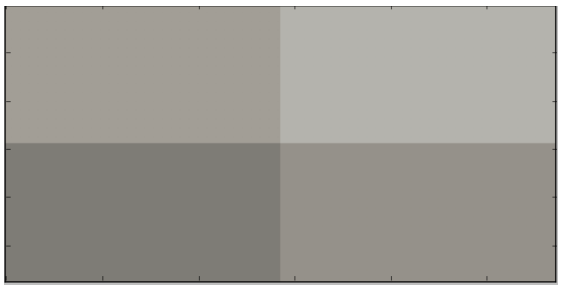
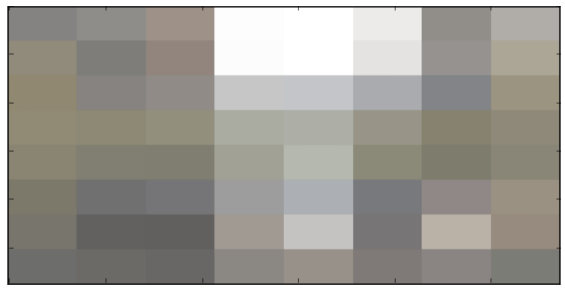


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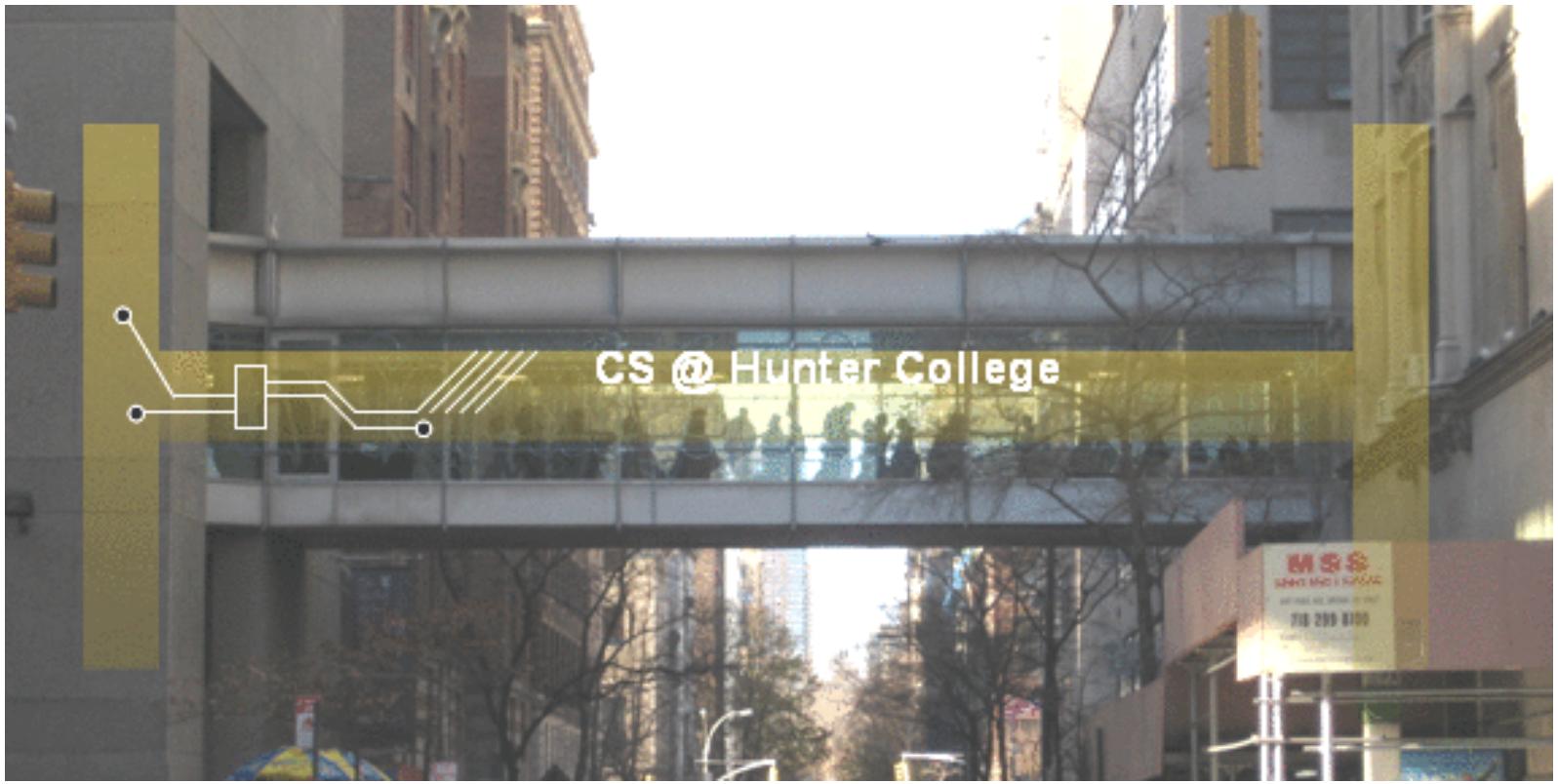
- We're starting with Spring 2018, Version 1.

Writing Boards



- Return writing boards as you leave...