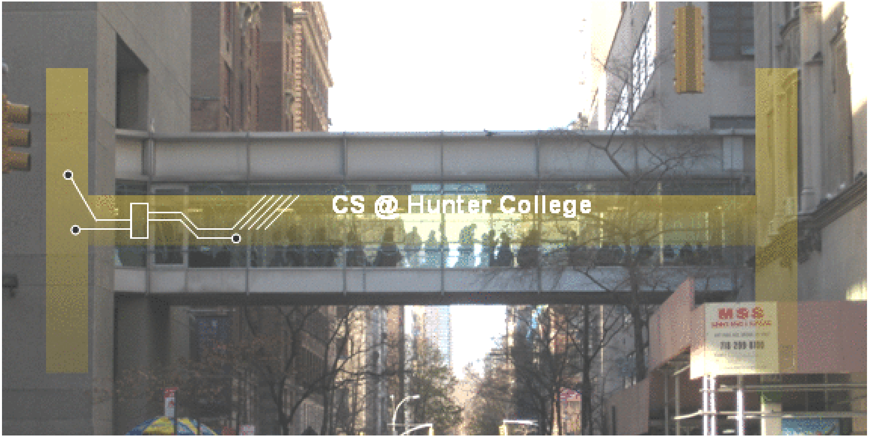
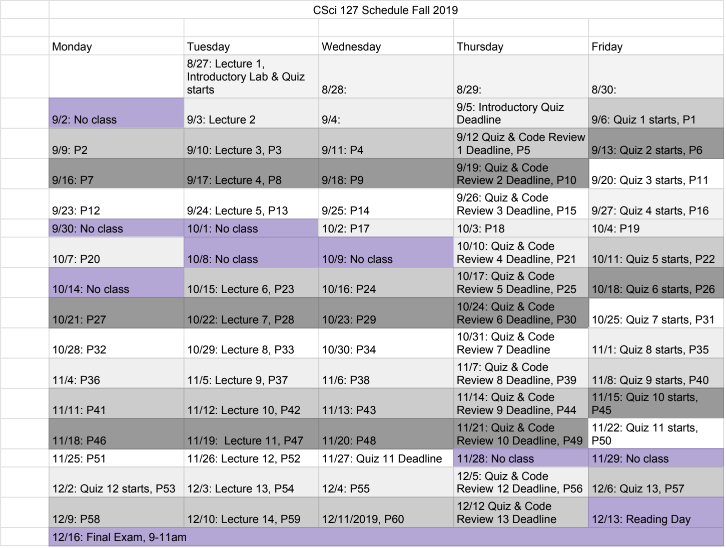
CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

Announcements



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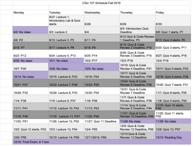

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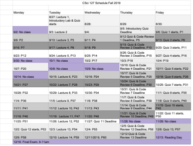

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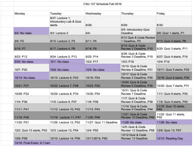

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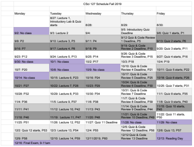

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- CS Survey:

  Today: Bernard Desert & Elise Harris,
  CUNY 2X & Tech Talent Pipeline

Frequently Asked Questions

From lecture slips & recitation sections.

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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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nouns = "hats coats glasses scarves"
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Linguistic experts!

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When a word end with an 's'?

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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 '
- To count plural words:

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

Recap: Linguistics Challenge

Linguistic experts!

```
nouns = "hats coats glasses scarves"
```

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.

Recap: Linguistics Challenge

Linguistic experts!

```
nouns = "hats coats glasses scarves"
```

When a word end with an 's'?

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

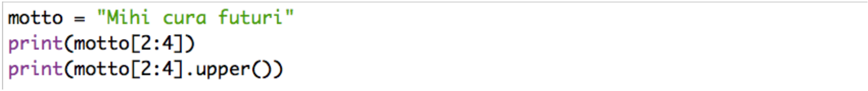
```
print(nouns.count('s '))
```

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

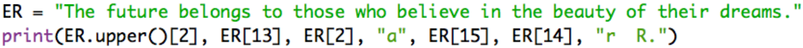
```
nouns = nouns + " "
print(nouns.count('s '))
```

Lecture Slip: In Pairs or Triples...

Fill in the following on your lecture slip:

1. 

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

2. 

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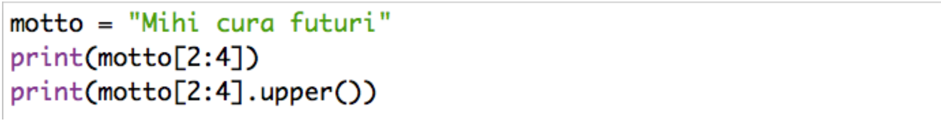
print(ER.upper()[2], ER[13], ER[2], "a", ER[15], ER[14], "r  R.")
```

Recap: Indexing & Slicing



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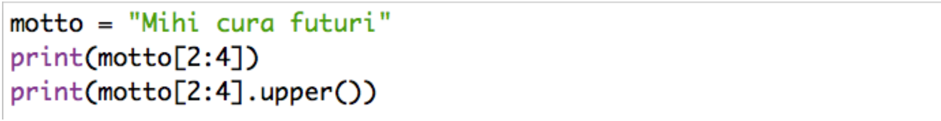
print(motto[2:4])
print(motto[2:4].upper())
```

Recap: Indexing & Slicing



```
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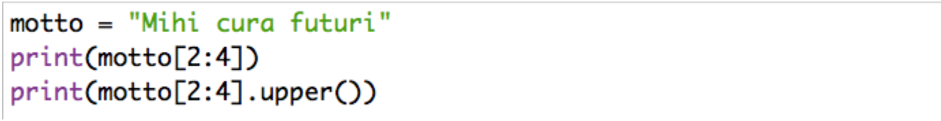
```

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

Recap: Indexing & Slicing



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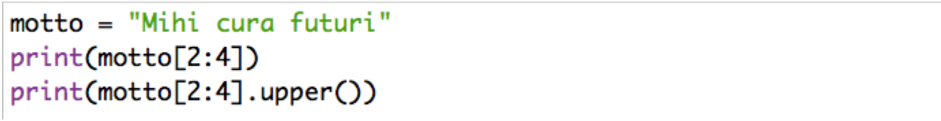
M	i	h	i		c	u	r	a		f	u	t	u	r	i
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Recap: Indexing & Slicing



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0	1	**2**	**3**	4	5	6	7	8	9	10	11	12	13	14	15

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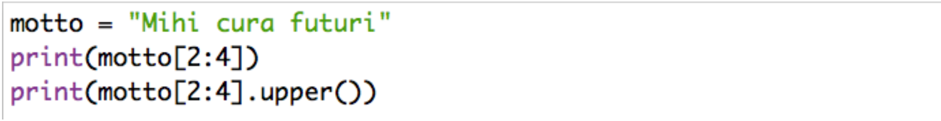

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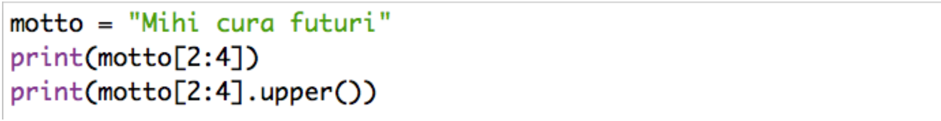
0	1	**2**	**3**	4	5	6	7	8	9	10	11	12	13	14	15

Output:

```
hi
```

Recap: Indexing & Slicing



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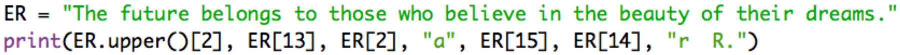
M	i	**h**	**i**		c	u	r	a		f	u	t	u	r	i
0	1	**2**	**3**	4	5	6	7	8	9	10	11	12	13	14	15

Output:

```
hi
HI
```

Recap: Indexing & Slicing



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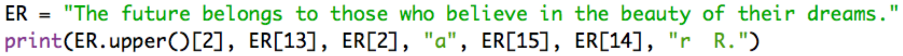
Recap: Indexing & Slicing



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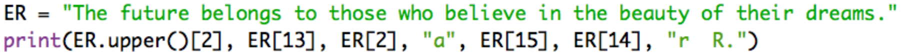
T	h	e		f	u	t	u	r	e		b	e	l	o	n	g	s
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Recap: Indexing & Slicing



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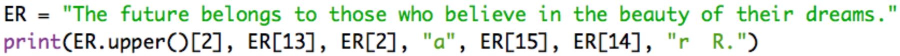
T	h	**e**		f	u	t	u	r	e		b	e	l	o	n	g	s
0	1	**2**	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Recap: Indexing & Slicing



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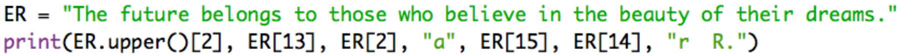
T	h	**e**		f	u	t	u	r	e		b	e	**l**	o	n	g	s
0	1	**2**	3	4	5	6	7	8	9	10	11	12	**13**	14	15	16	17

Recap: Indexing & Slicing



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T	h	**e**		f	u	t	u	r	e		b	e	**l**	o	**n**	g	s
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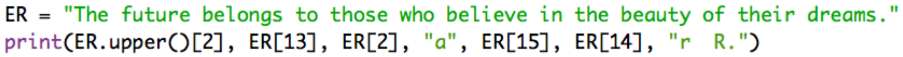
Recap: Indexing & Slicing



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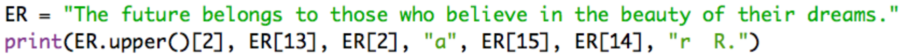
T	h	**e**		f	u	t	u	r	e		b	e	**l**	**o**	**n**	g	s
0	1	**2**	3	4	5	6	7	8	9	10	11	12	**13**	**14**	**15**	16	17

Recap: Indexing & Slicing



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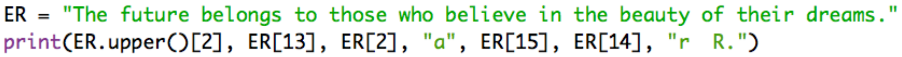
```

T	h	**e**		f	u	t	u	r	e		b	e	**l**	**o**	**n**	g	s
0	1	**2**	3	4	5	6	7	8	9	10	11	12	**13**	**14**	**15**	16	17

Output:

Recap: Indexing & Slicing



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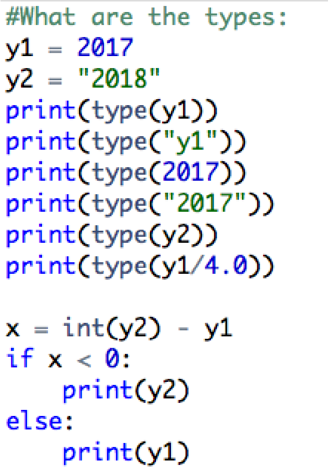
T	h	**e**		f	u	t	u	r	e		b	e	**l**	**o**	**n**	g	s
0	1	**2**	3	4	5	6	7	8	9	10	11	12	**13**	**14**	**15**	16	17

Output:

```
E l e a n o r R.
```

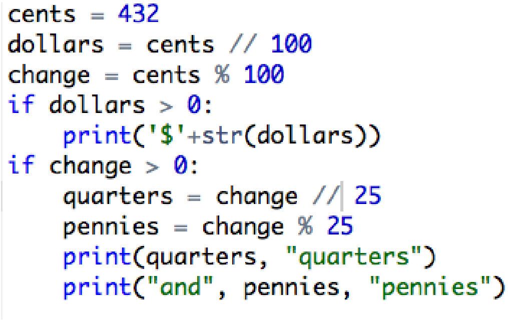
In Pairs or Triples...

Some challenges with types & decisions:



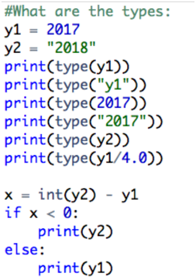
```
#What are the types:
y1 = 2017
y2 = "2018"
print(type(y1))
print(type("y1"))
print(type(2017))
print(type("2017"))
print(type(y2))
print(type(y1/4.0))

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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if x < 0:
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```

(Demo with `pythonTutor`)

Decisions

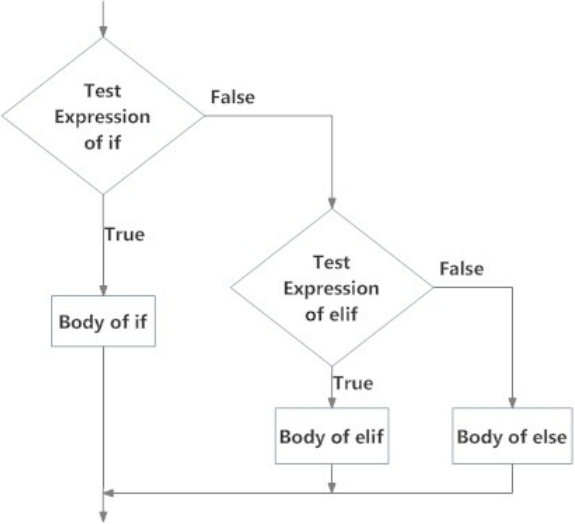
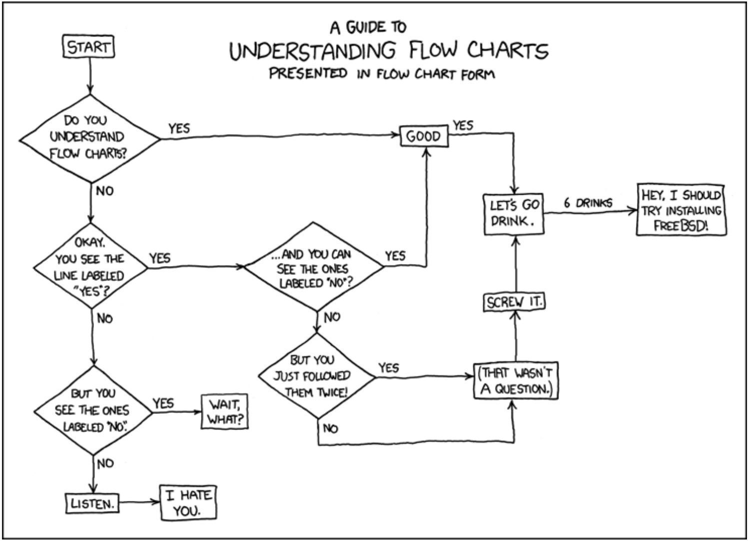


Fig: Operation of if...elif...else statement

(programiz)

Side Note: Reading Flow Charts


A GUIDE TO
UNDERSTANDING FLOW CHARTS
PRESENTED IN FLOW CHART FORM
START
DO YOU UNDERSTAND FLOW CHARTS?
YES
NO
GOOD
YES
LET'S GO DRINK.
6 DRINKS
HEY, I SHOULD TRY INSTALLING FREEBSD!
OKAY. YOU SEE THE LINE LABELED "YES"?
YES
...AND YOU CAN SEE THE ONES LABELED "NO"?
YES
NO
NO
SCREW IT.
BUT YOU JUST FOLLOWED THEM TWICE!
YES
(THAT WASN'T A QUESTION.)
NO
BUT YOU SEE THE ONES LABELED "NO".
YES
WAIT, WHAT?
NO
LISTEN.
I HATE YOU.

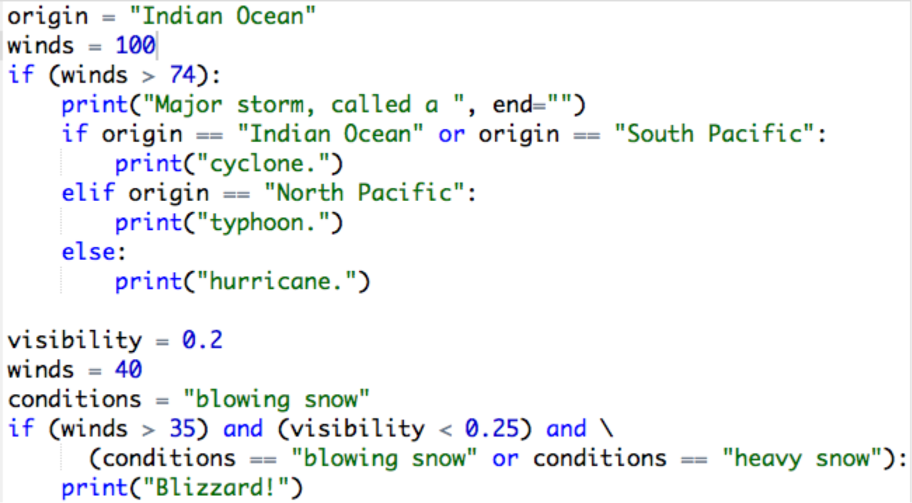
(xkcd/518)

Today's Topics

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

In Pairs or Triples

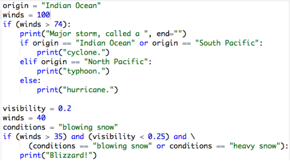
Predict what the code will do:



```
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!")
```

Python Tutor



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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`

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

Logical Operators

and

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

or

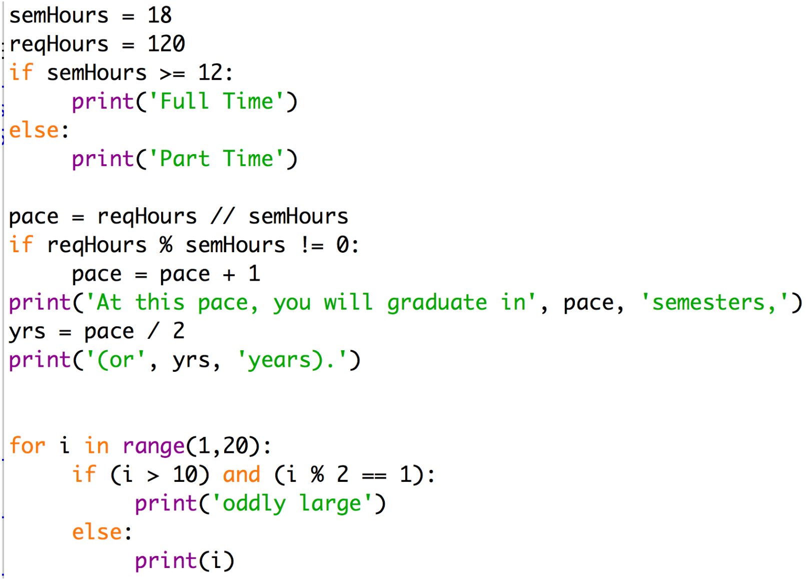
in1		in2	*returns:*
False	or	False	False
False	or	True	True
True	or	False	True
True	or	True	True

not

	in1	*returns:*
not	False	True
not	True	False

In Pairs or Triples

Predict what the code will do:

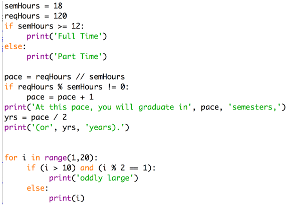


```
semHours = 18
reqHours = 120
if semHours >= 12:
     print('Full Time')
else:
     print('Part Time')

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



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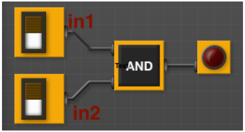
(Demo with `pythonTutor`)

Today's Topics

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

Circuit Demo

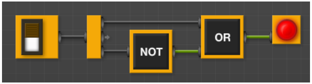


(Demo with `neuroproductions`)

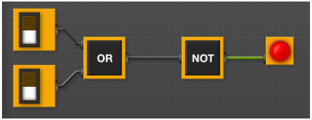
In Pairs or Triples

Predict when these expressions are true:

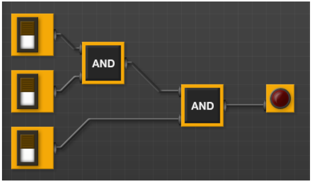
- `in1 or not in1`:



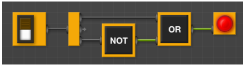
- `not(in1 or in2)`:

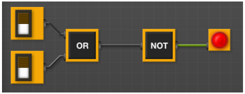


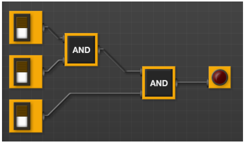
- `(in1 and in2) and in3`:



Circuit Demo

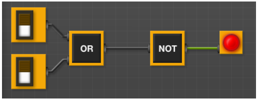






(Demo with `neuroproductions`)

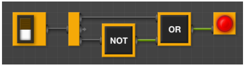
In Pairs or Triples

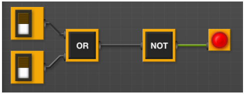


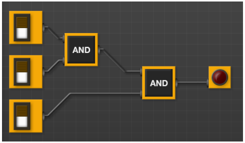
Draw a circuit that corresponds to each logical expression:

- `in1 or in2`
- `(in1 or in2) and (in1 or in3)`
- `(not(in1 and not in2)) or (in1 and (in2 and in3))`

Circuit Demo







(Demo with `neuroproductions`)

Today's Topics

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- Logical Expressions
- Circuits
- **CS Survey**

CS Survey Talk: CUNY2X & TTP @Hunter

TTP Residency @ Hunter College

A three month program designed to deliver qualified tech talent to local employers and short-term professional experiences to competitive Hunter College undergraduates.

HUNTER
The City University of New York
CUNY
The City University of New York
NYC Tech Talent Pipeline

Bernard Desert & Elise Harris

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CU NY The City University of New York
NYC Tech Talent Pipeline

Bernard Desert & Elise Harris

- Brief overview of CUNY 2X & Tech Talent Pipeline

CS Survey Talk: CUNY2X & TTP @Hunter

TTP Residency @ Hunter College

A three month program designed to deliver qualified tech talent to local employers and short-term professional experiences to competitive Hunter College undergraduates.

HUNTER
The City University of New York
CU NY
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NYC Tech Talent Pipeline

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- What Bernard & Elise love about their jobs.

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NYC Tech Talent Pipeline

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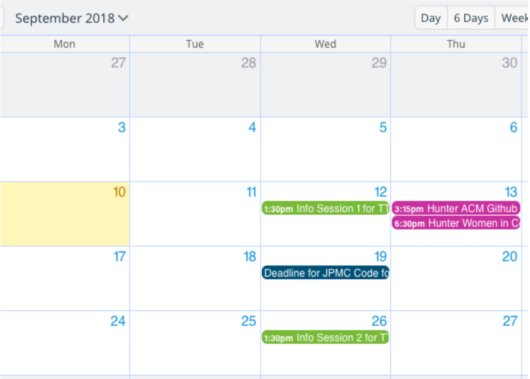
- Brief overview of CUNY 2X & Tech Talent Pipeline
- What Bernard & Elise love about their jobs.
- Design challenge: classic tech interview question.

CS Survey Talk: Hunter Tech Calendar



Mon	Tue	Wed	Thu
27	28	29	30
3	4	5	6
10	11	12 1:30pm Info Session 1 for TT	13 3:15pm Hunter ACM Github 6:30pm Hunter Women in C
17	18	19 Deadline for JPMC Code fo	20
24	25	26 1:30pm Info Session 2 for T	27

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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  1

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  1
  2

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

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- Write down the output to see the pattern:

```
1
2
Fizz
4
```

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- Write down the output to see the pattern:

```
1
2
Fizz
4
Buzz
```

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  ```
  1
  2
  Fizz
  4
  Buzz
  5
  ```

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2
Fizz
4
Buzz
5
Fizz
```

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  ```
  1
  2
  Fizz
  4
  Buzz
  5
  Fizz
  7
  ```

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  1
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  5
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  7
  ...
  14
  ```

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5
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...
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```

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

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- To Do List:
  - Create a loop that goes from 1 to 100.
  - If the number is divisible by 3, print “Fizz”.

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  - **Otherwise print the number.**

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    - **Otherwise print the number.**
      We should do this one first!

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- To Do List (**Reordered**):

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- 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:
```

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    if i%3 == 0:
```

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    if i%3 == 0:
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    if i%5 == 0:
```

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        print("Buzz", end="")
    print()
```

Recap

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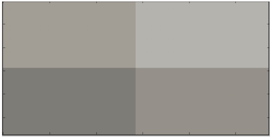
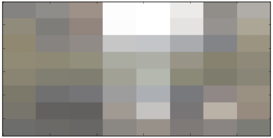
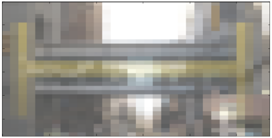
Practice Quiz & Final Questions

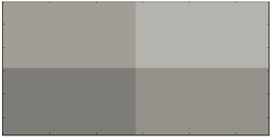


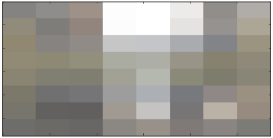


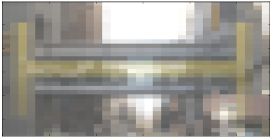


- Since you must pass the final exam to pass the course, we end every lecture with final exam review.

Practice Quiz & Final Questions







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- Pull out something to write on (not to be turned in).

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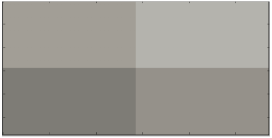

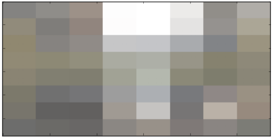

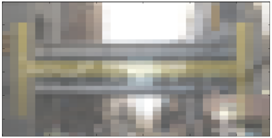

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- Lightning rounds:

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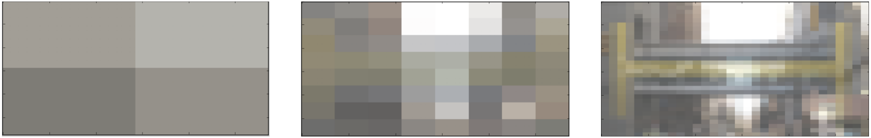

- Since you must pass the final exam to pass the course, we end every lecture with final exam review.
- Pull out something to write on (not to be turned in).
- Lightning rounds:
  - write as much you can for 60 seconds;

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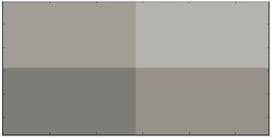

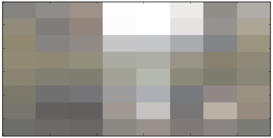

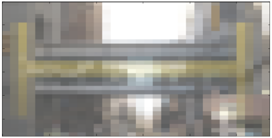

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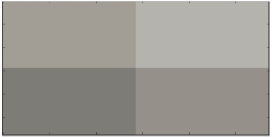
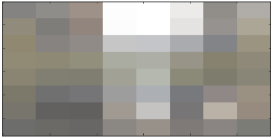
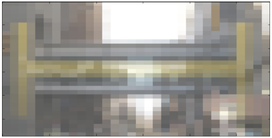
Practice Quiz & Final Questions

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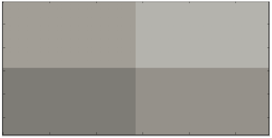
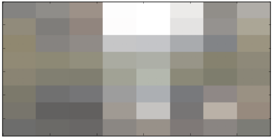
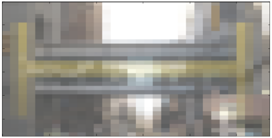

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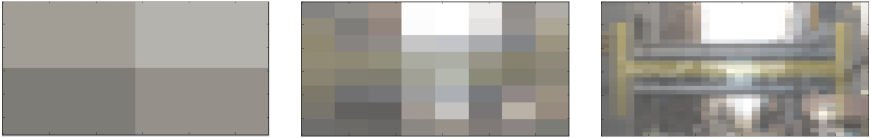

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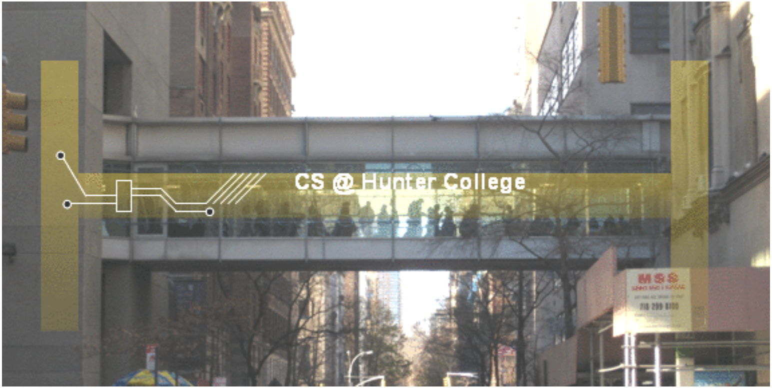
- We're starting with Spring 2018, Version 1.

Writing Boards



- Return writing boards as you leave...