

CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

Announcements

September 2018 ▾					Day	5 Days	Week
Mon	Tue	Wed	Thu	Fri	Sat	Sun	
27	28	29	30				
3	4	5	6				
10	11	12	13				
		Classes info Session 1 for T	Classes Session 2 for T				
17	18	19	20				
		Guiding for JPMCC Code					
24	25	26	27				
		Classes info Session 2 for T					

- 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, we'll focus on decisions, and logical expressions & circuits.

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Different kinds of information takes different amounts of space.
Types we have seen so far: int, float, str and objects (e.g. turtles).

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Types we have seen so far: int, float, str and objects (e.g. turtles).
- How can I tell strings from variables?
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”.

Recap: Linguistics Challenge



Linguistic experts!



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

- **Input:**
- **Output:**
- how you can determine if a noun is plural.

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

Recap: Linguistics Challenge

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

- **Input:** *A list of nouns*
- **Output:**
- 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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Recap: Linguistics Challenge



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

- **Input:** *A list of nouns*
- **Output:** *The number of plural nouns*
- how you can determine if a noun is plural.

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

Recap: Linguistics Challenge

nouns = "hats coats glasses scarves"



Linguistic experts!



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How you can determine if a noun is plural?



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How you can determine if a noun is plural?

- Ends in a 's'.



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How you can determine if a noun is plural?

- Ends in a 's'.
- If you count 's', you will get too many:

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Linguistic experts!

How you can determine if a noun is plural?

- Ends in a 's'.
- If you count 's', you will get too many:

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

Recap: Linguistics Challenge

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nouns = "hats coats glasses scarves "
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Linguistic experts!

How you can determine if a noun is plural?

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How you can determine when a word ends?



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Linguistic experts!

How you can determine when a word ends?

- There's spaces in between.

Recap: Linguistics Challenge

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Linguistic experts!

How you can determine when a word ends?

- There's spaces in between.
- To count words:

Recap: Linguistics Challenge



Linguistic experts!



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

How you can determine when a word ends?

- There's spaces in between.
- To count words:

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

Recap: Linguistics Challenge



Linguistic experts!



```
nouns = "hats_coats_glasses_scarves"
```

How you can determine when a word ends?

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```
print(nouns.count(' ')+1)
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Recap: Linguistics Challenge

nouns = "hats coats glasses scarves"



Linguistic experts!



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nouns = "hats coats glasses scarves"

When a word end with an 's'?



Linguistic experts!



Recap: Linguistics Challenge

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Linguistic experts!

When a word end with an 's'?

- Have the pattern: 's '

Recap: Linguistics Challenge

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- Not quite right– missing scarves since no space at the end.



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Recap: Linguistics Challenge

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nouns = "hats_coats_glasses_scarves"
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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 '))
```



Linguistic experts!



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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motto = "Mihi cura futuri"  
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M	i	h	i		c	u	r	a		f	u	t	u	r	i
---	---	---	---	--	---	---	---	---	--	---	---	---	---	---	---

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Output:

hi

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Output:

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Output:

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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

```
#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)
```

(Demo with pythonTutor)

Decisions

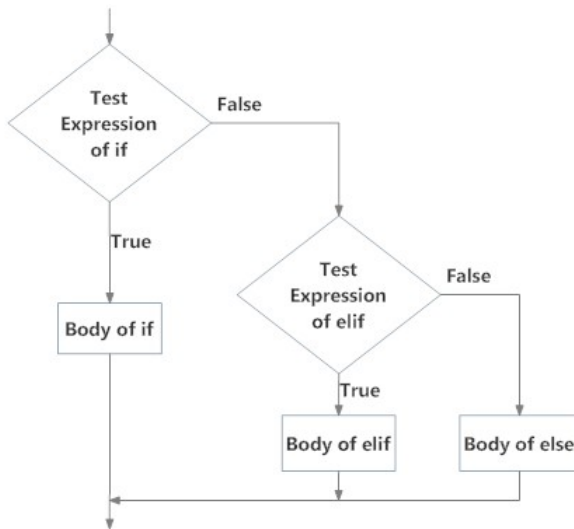
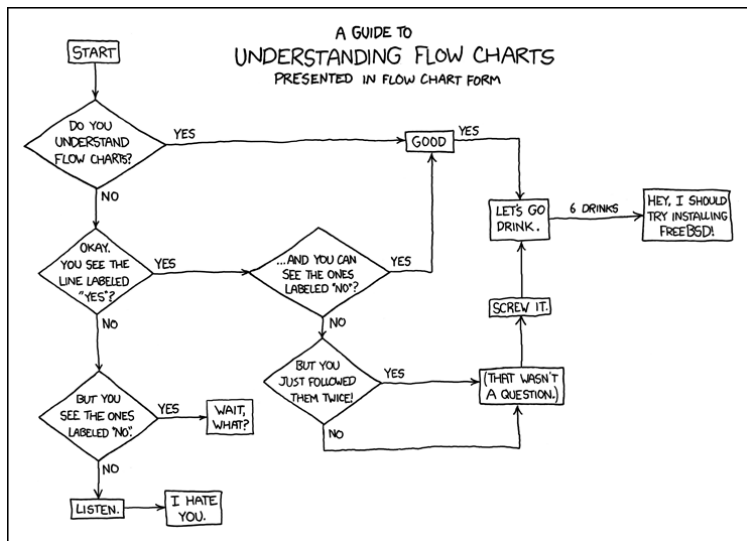


Fig: Operation of if...elif...else statement

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!")
```

Python Tutor

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(Demo with pythonTutor)

Logical Operators

and

in1		in2	<i>returns:</i>
False	and	False	False
False	and	True	False
True	and	False	False
True	and	True	True

Logical Operators

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Logical Operators

and

in1		in2	returns:
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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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reqHours = 120
if semHours >= 12:
    print('Full Time')
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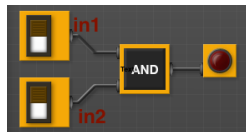
(Demo with pythonTutor)

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Circuit Demo

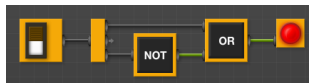


(Demo with neuroproductions)

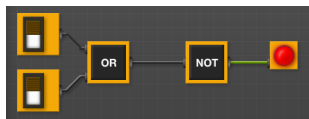
In Pairs or Triples

Predict when these expressions are true:

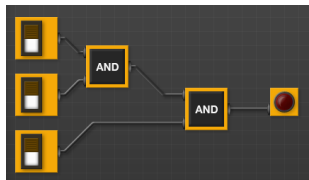
- `in1 or not in1:`



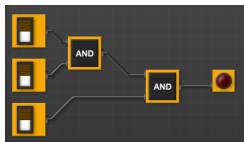
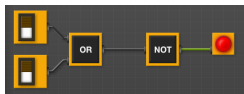
- `not(in1 or in2):`



- `(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

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.

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

September 2018 ▾				Day	6 Days	Week
Mon	Tue	Wed	Thu			
27	28	29	30			
3	4	5	6			
10	11	12	13			
		1:30pm Info Session 1 for T	3:15pm Hunter ACM Github 6:30pm Hunter Women in C			
17	18	19	20			
		Deadline for JPMC Code fo				
24	25	26	27			
		1:30pm Info Session 2 for T				

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”.
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1

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1

2

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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”.
- Write down the output to see the pattern:

1

2

Fizz

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1

2

Fizz

4

Tech Interview Classic

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1

2

Fizz

4

Buzz

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1

2

Fizz

4

Buzz

5

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1

2

Fizz

4

Buzz

5

Fizz

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- Write down the output to see the pattern:

1

2

Fizz

4

Buzz

5

Fizz

7

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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”.
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2

Fizz

4

Buzz

5

Fizz

7

...

14

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

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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”.
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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!

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”.
- To Do List (**Reordered**):

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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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 - ▶ Also should print a new line (so each entry is on its own line).

Tech Interview Classic

- To Do List:

- ▶ Create a loop that goes from 1 to 100.
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- One solution (uses `print(,end="")` that prints all on the same line):

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for i in range(1,101):
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- One solution (uses `print(,end="")` that prints all on the same line):

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

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- To Do List:
 - ▶ Create a loop that goes from 1 to 100.
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for i in range(1,101):  
    if i%3 != 0 and i%5 != 0:  
        print(i, end="")  
    if i%3 == 0:
```

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    if i%5 == 0:
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    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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Recap



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Recap



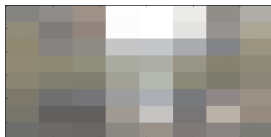
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- Pass your lecture slips to the aisles for the UTAs to collect.

Recap



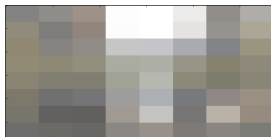
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Practice Quiz & Final Questions



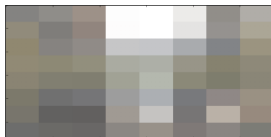
- Since you must pass the final exam to pass the course, we end every lecture with final exam review.

Practice Quiz & Final Questions



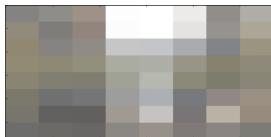
- Since you must pass the final exam to pass the course, we end every lecture with final exam review.
- Pull out something to write on (not to be turned in).

Practice Quiz & Final Questions



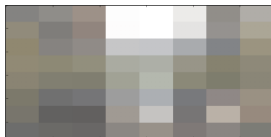
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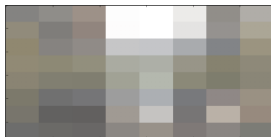
- Since you must pass the final exam to pass the course, we end every lecture with final exam review.
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- Lightning rounds:
 - ▶ write as much you can for 60 seconds;

Practice Quiz & Final Questions



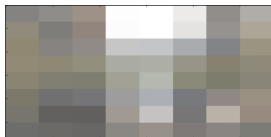
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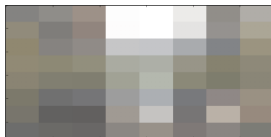
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- We're starting with Fall 2017, Version 1.

Writing Boards



- Return writing boards as you leave...