CSci 127: Introduction to Computer Science
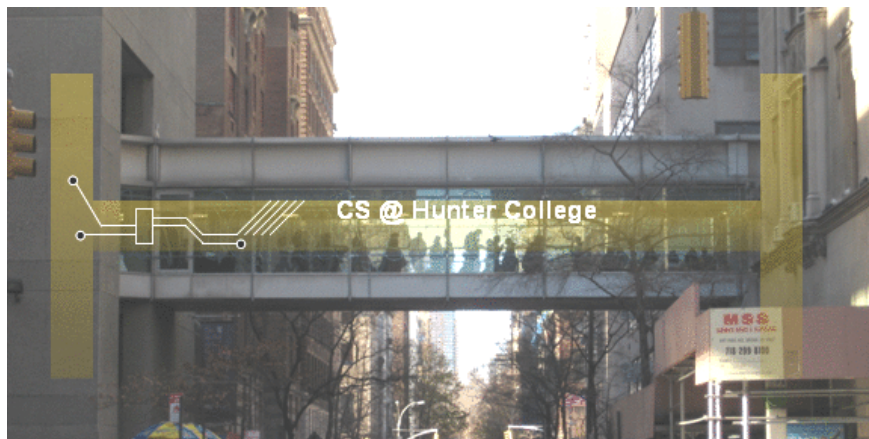

CS @ Hunter College

Announcements

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- Special Event: OpenData@Hunter Wednesday, 7 March, 4:30-6pm, Cafe West. Free, but reservations required (http://www.open-data.nyc).

Frequently Asked Questions

From lecture slips & recitation sections.

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  Types we have seen so far: `int`, `float`, `str` *and objects (e.g. turtles).*

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  Strings are surrounded by quotes (either single or double).
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Today's Topics

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

Lecture Slip: In Pairs or Triples...

Some review:

1

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

2

```python
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.")
```

3

```python
import turtle

tess = turtle.Turtle()
myWin = turtle.Screen()        #The graphics window
commands = input("Please enter a command string: ")

for ch in commands:
    #perform action indicated by the character
    if ch == 'F':              #move forward
        tess.forward(50)
    elif ch == 'L':            #turn left
        tess.left(90)
    elif ch == 'R':            #turn right
        tess.right(90)
    elif ch == '^':            #lift pen
        tess.penup()
    elif ch == 'v':            #lower pen
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        tess.backward(50)
    elif ch == 'r':            #turn red
        tess.color("red")
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    else:                      #for any other character
        print("Error: do not know the command:", c)
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Output:

E l e a n o r R.

Python Tutor

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    else:                  #for any other character
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(Demo with `pythonTutor`)

In Pairs or Triples...

Some challenges with types & decisions:

```python
#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)
```

```python
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")
```

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(Demo with pythonTutor)

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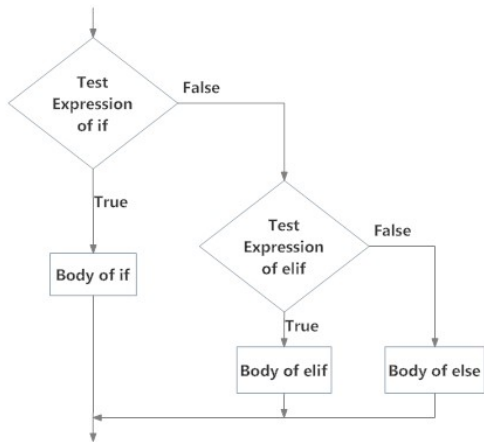
Fig: Operation of if...elif...else statement

(programiz)

Side Note: Reading Flow Charts
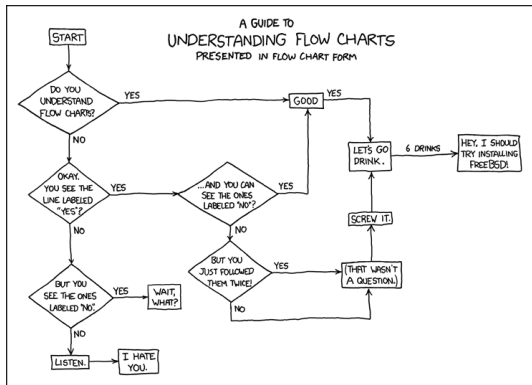
(xkcd/518)

In Pairs or Triples

Predict what the code will do:

```python
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

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

Logical Operators

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

Logical Operators

and

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

not

	in1	returns:
not	False	True
not	True	False

or

in1		in2	returns:
False	or	False	False
False	or	True	True
True	or	False	True
True	or	True	True
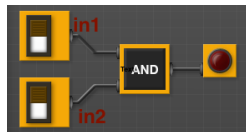
Circuit Demo

(Demo with `neuroproductions`)

In Pairs or Triples

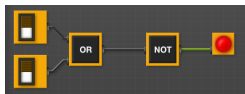*Predict when these expressions are true:*

- `in1 or not in1`:

- `not(in1 or in2)`:
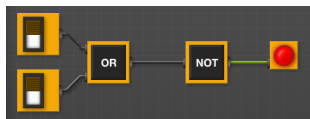
- `(in1 and in2) and in3`:
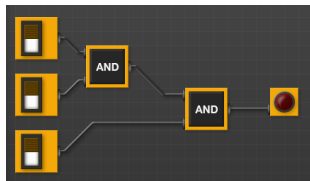
Circuit Demo
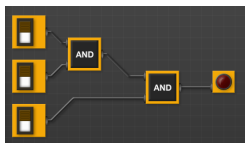
(Demo with `neuroproductions`)

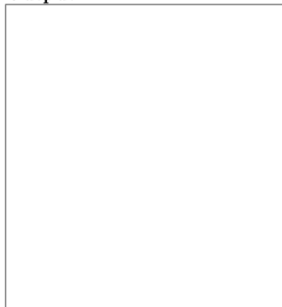# Lecture Slip: In Pairs or Triples

From Final Exam, Fall 2017, Version 3:

Name: **EmpID:**   CSci 127 Final, V3, F17

1. (a) What will the following Python code print:

```python
flist = "speech,worship,want,fear,fdr"
freedoms = flist.split(",")
pres = freedoms[-1]
print(pres.upper())
num = flist.count(",")
print(num, "Freedoms")
for i in range(0,4):
    if i < 2:
        print("\tof", end=" ")
    else:
        print("\tfrom", end=" ")
    print(freedoms[i])
```

Output:

Recap

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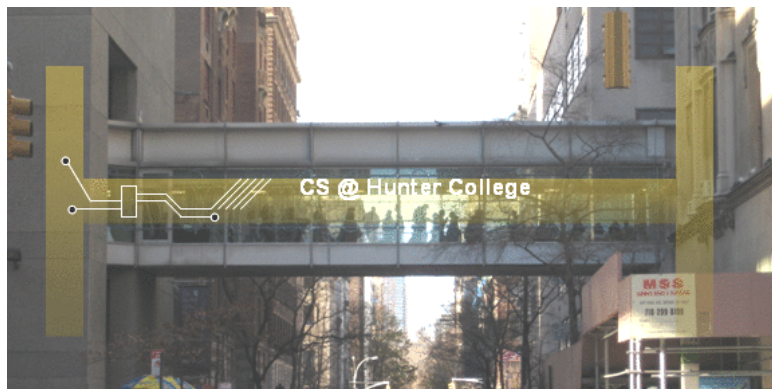
Recap

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

- In Python, we introduced:

Recap

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

- In Python, we introduced:
  - Decisions
  - Logical Expressions
  - Circuits

Lecture Slips & Writing Boards

- Turn in lecture slips & writing boards as you leave...