



**THE CS106A
SAGA CONTINUES**

STAR THE
Control Flow
STRIKES BACK
WARS.

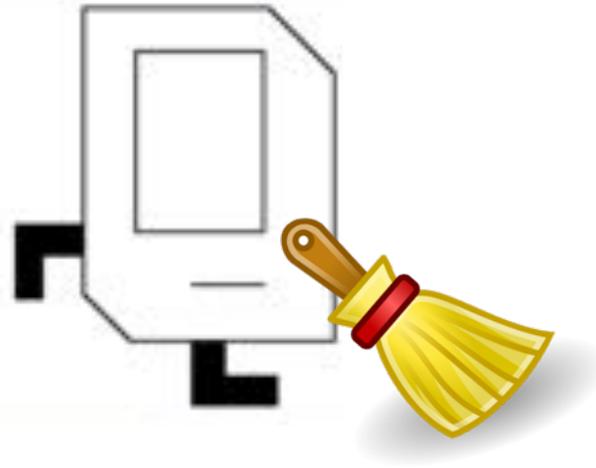
Control Flow Revisited

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Stanford University

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BILLY DEE WILLIAMS · ANTHONY DANIELS
... DAVID PRINCE · KENNY BAKER · PETER MAYHEW · FRANK OZ
... IRVIN KERSHNER ... GARY KURTZ
LEIGH BRACKETT · LAWRENCE KASDAN · GEORGE LUCAS

Executive Producer: **GEORGE LUCAS** Music by: **JOHN WILLIAMS**
Special Thanks to: ...
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Housekeeping



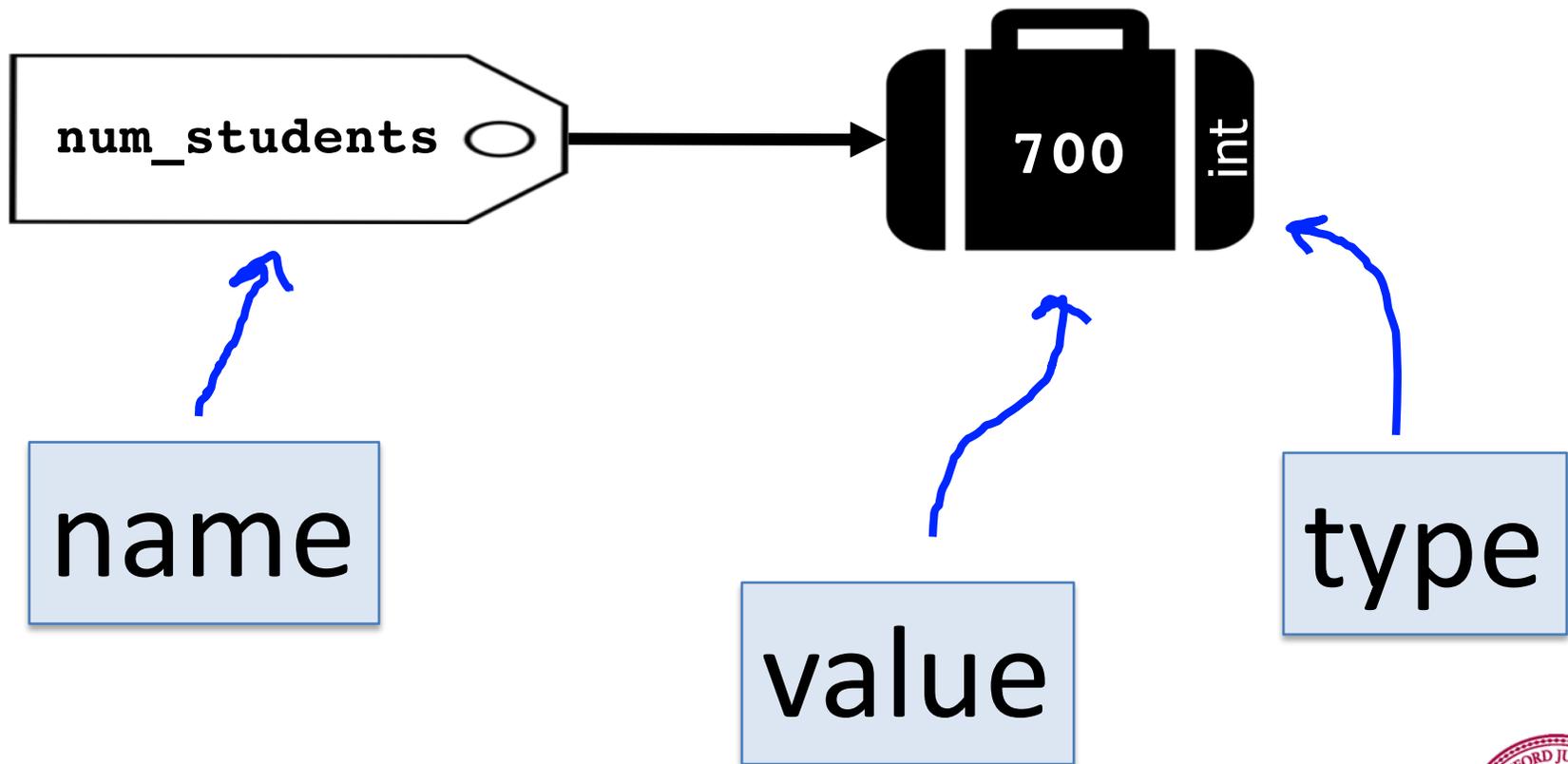
- Assignment #2 goes out today
 - It is due in one week
 - Worth the focus
- Code while you watch:
 - <https://us.edstem.org/courses/2695/lessons/5749>
- It is Friday! Which is just a beautiful thing.



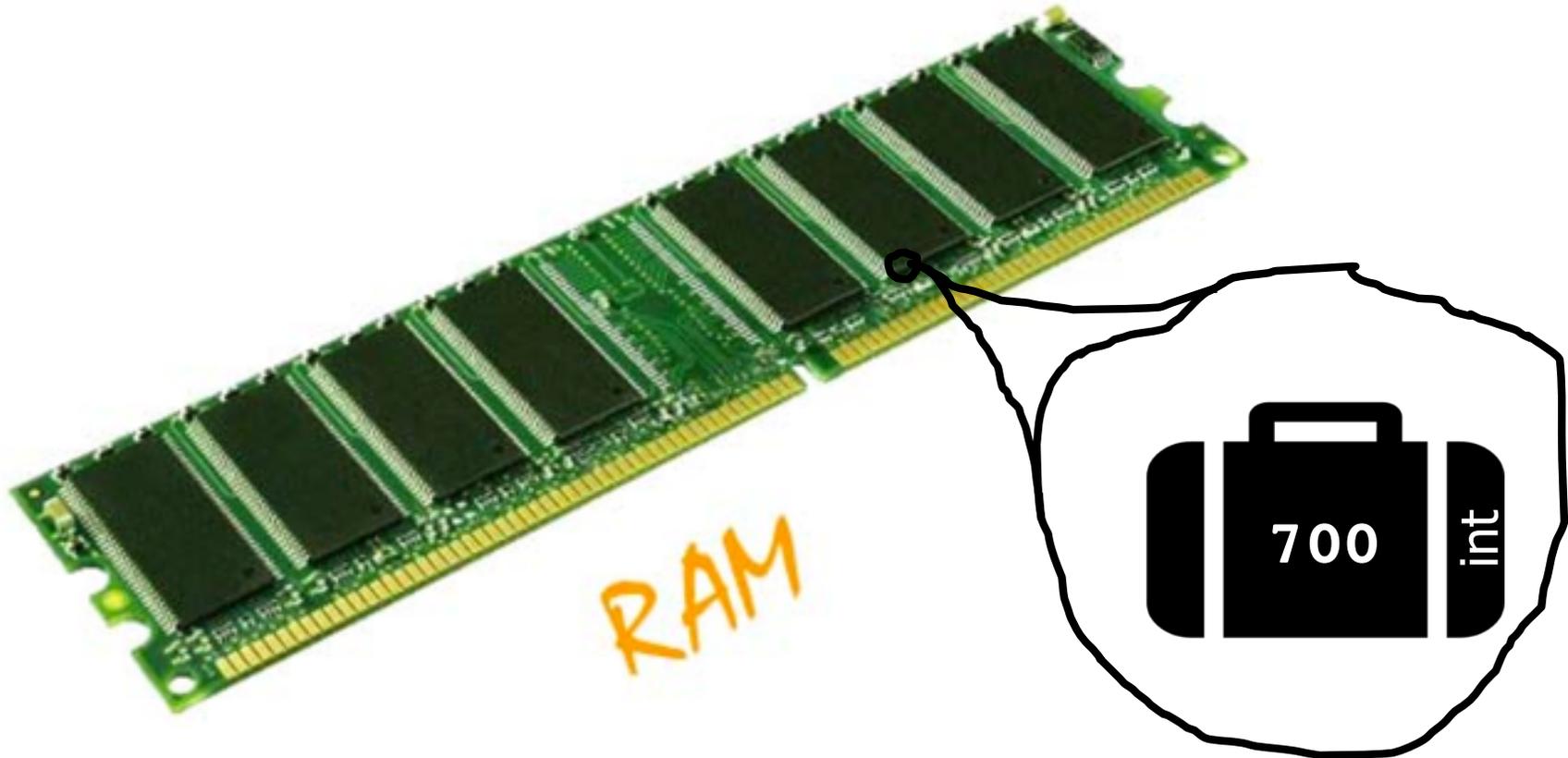
Review

Suitcase Analogy

```
num_students = 700
```



Teeny Tiny Suitcases



My computer has space for about 10 billion suitcases



Create, Modify, Use

```
# Create a variable, of type int  
# called age with the value 30.  
age = 31
```

```
# Use the value in age (output it)  
print("age is: " + str(age))
```

```
# Modify age to be one greater.  
age = age + 1
```



Create, Modify, Use

```
# Create a variable, of type int  
# called age with the value 30.  
age = 31
```

```
# Use the value in age (output it)  
print("age is: ", age)
```

```
# Modify age to be one greater.  
age = age + 1
```



Binary Operators

+ Addition

− Subtraction

* Multiplication

/ Division



Cool Example: Carbon Dating



C14 = 1.2 dpm



C14 = 13.6 dpm

$$\text{age} = K \cdot \log \left(\frac{c14}{100} \right)$$



Cool Example: Carbon Dating

```
def main():
    calculate_age_single_sample()

def calculate_age_single_sample():
    # ask the user to enter the percent c14 left in their sample
    pct_left = float(input("% of natural c14 in Sample:"))
    # calc the age: https://en.wikipedia.org/wiki/Radiocarbon\_dating
    age = math.log(pct_left / 100) * HALF_LIFE_CONSTANT
    # print the result
    print("Sample is " + str(age) + " years old.")
```

* It calculates the age of a C14 sample



Cool Example: Carbon Dating

```
def main():
```

```
    calculate_age_single_sample()
```

```
def calculate_age_single_sample():
```

```
    # ask the user to enter the percent c14 left in their sample
```

```
    pct_left = float(input("% of natural c14 in Sample:"))
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    # calc the age: https://en.wikipedia.org/wiki/Radiocarbon_dating
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```
    age = math.log(pct_left / 100) * HALF_LIFE_CONSTANT
```

```
    # print the result
```

```
    print("Sample is " + str(age) + " years old.")
```

terminal

```
> python carbondate.py
```

* It calculates the age of a C14 sample



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def main():  
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    age = math.log(pct_left / 100) * HALF_LIFE_CONSTANT  
    # print the result  
    print("Sample is " + str(age) + " years old.")
```

terminal

```
> python carbondate.py  
% of natural c14: 50
```



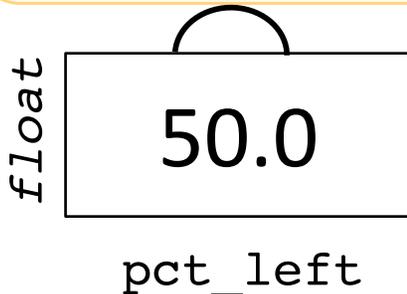
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terminal

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> python carbondate.py  
% of natural c14: 50
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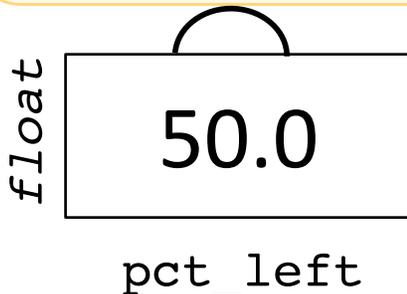
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    # print the result  
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```

terminal

```
> python carbondate.py  
% of natural c14: 50
```



5730.0

ty



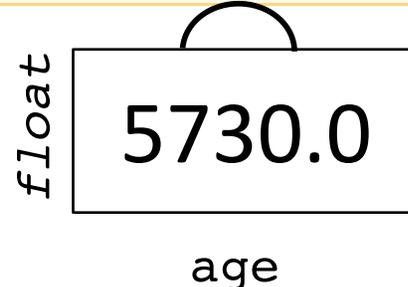
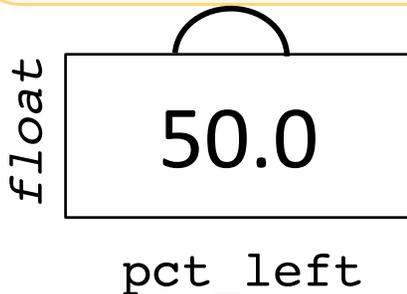
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    print("Sample is " + str(age) + " years old.")
```

terminal

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> python carbondate.py  
% of natural c14: 50
```



ty



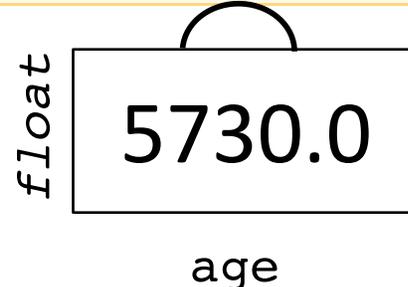
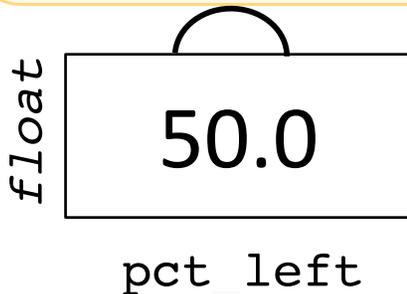
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    age = math.log(pct_left / 100) * HALF_LIFE_CONSTANT  
    # print the result  
    print("Sample is " + str(age) + " years old.")
```

terminal

```
> python carbondate.py  
% of natural c14: 50  
Sample is 5730.0 years old
```

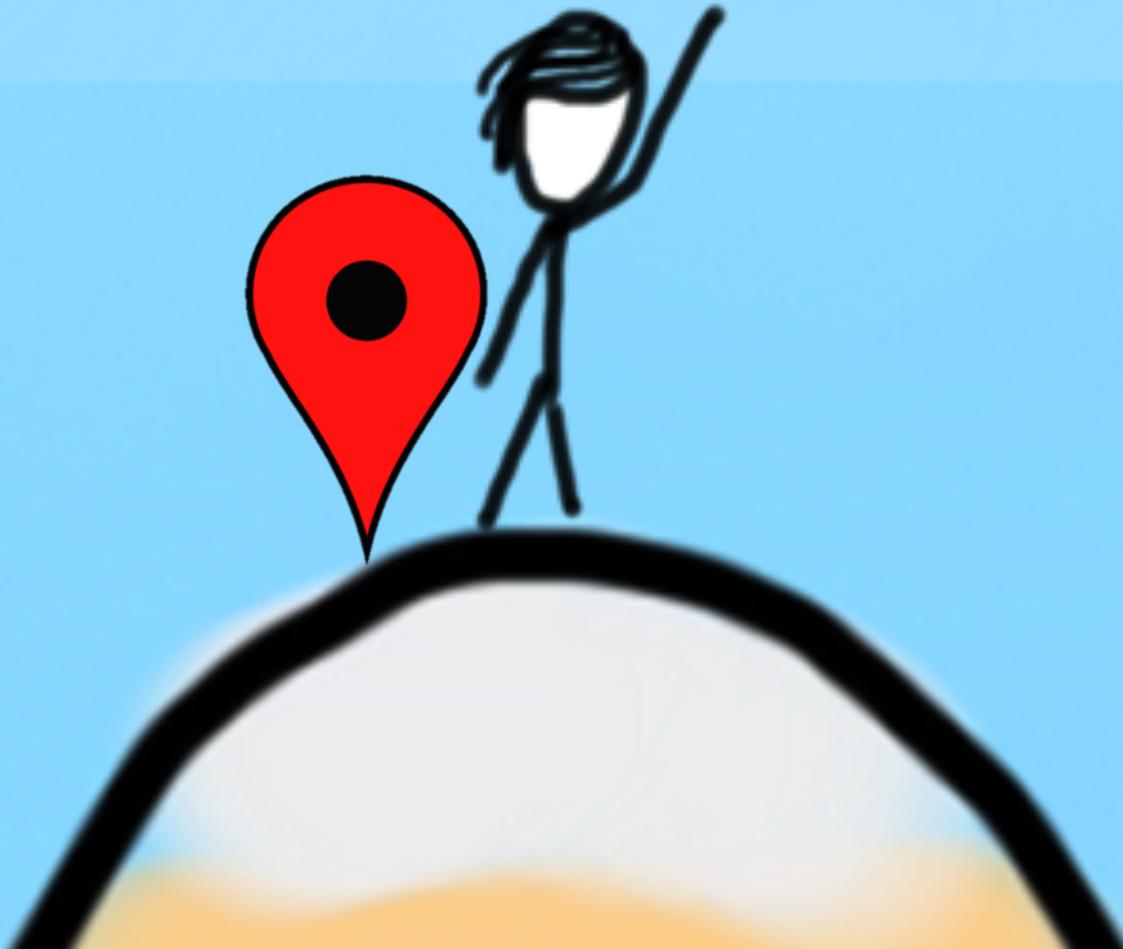


ty

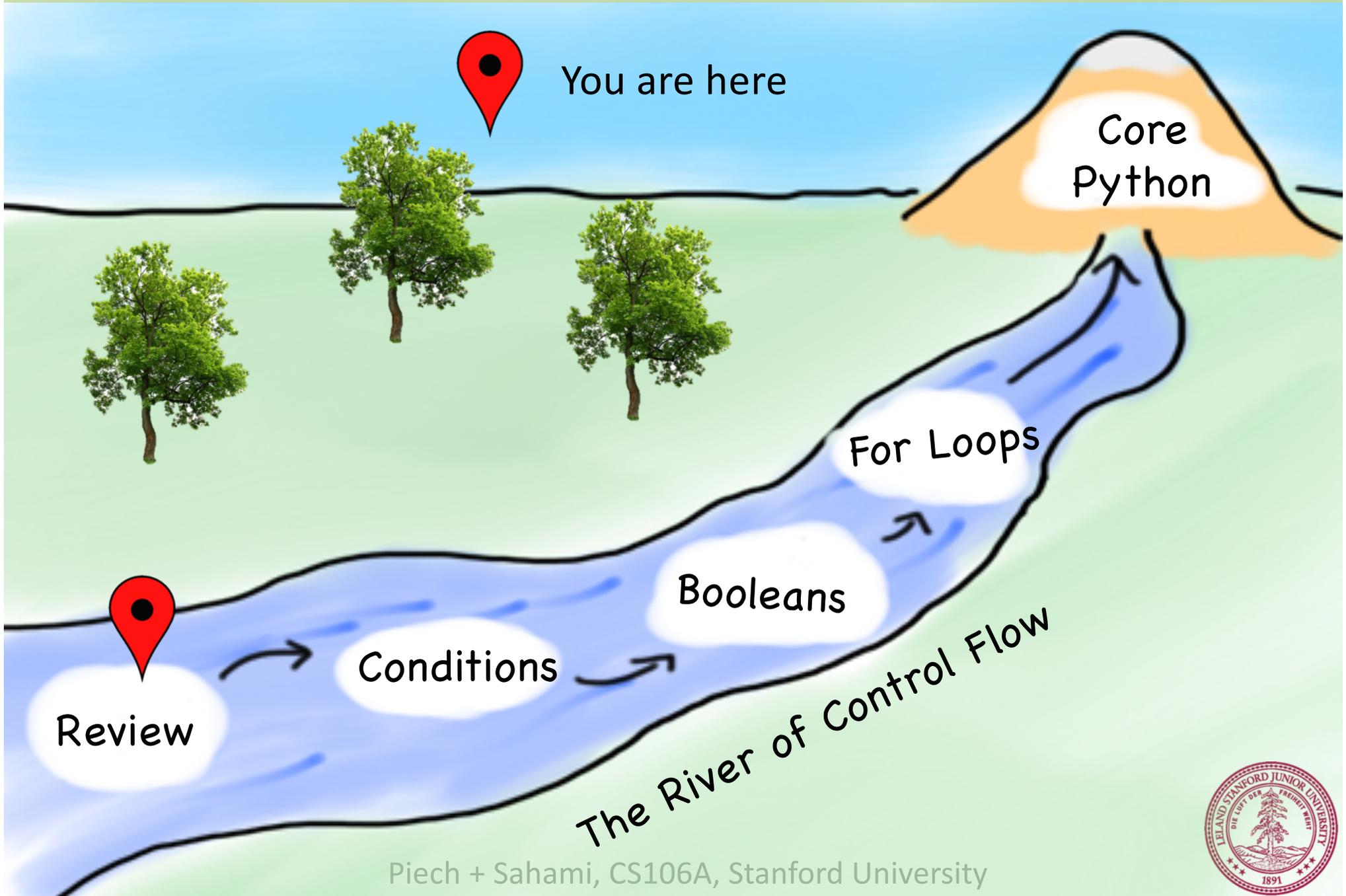


Today's Goal

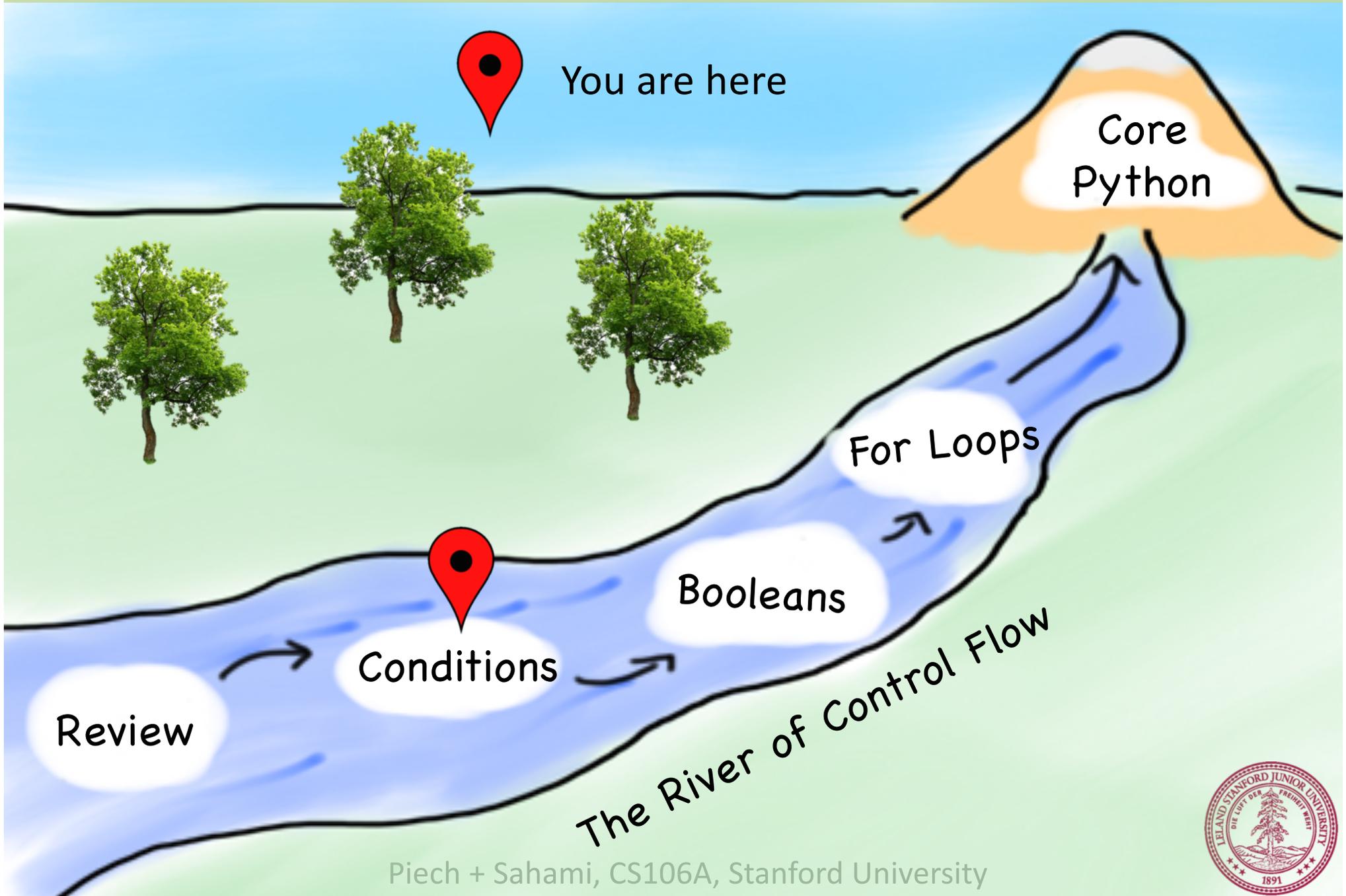
1. Be able to use For / While / If in Python



Today's Route



Today's Route



While Loop in Karel

```
while front_is_clear() :  
    body
```

```
if beepers_present() :  
    body
```



While Loop Redux

while *condition* :
body

if *condition* :
body

The condition should be a “boolean” which is either **True** or **False**



Cool Example: Carbon Dating

```
def main():  
    calculate_age_single_sample()  
  
def calculate_age_single_sample():  
    # ask the user to enter the percent c14 left in their sample  
    pct_left = float(input("% of natural c14 in Sample:"))  
    # calc the age: https://en.wikipedia.org/wiki/Radiocarbon_dating  
    age = math.log(pct_left / 100) * HALF_LIFE_CONSTANT  
    # print the result  
    print("Sample is " + str(age) + " years old.")
```

* It calculates the age of a C14 sample



Cool Example: Carbon Dating

Before repeating the body,
check if this statement
evaluates to True

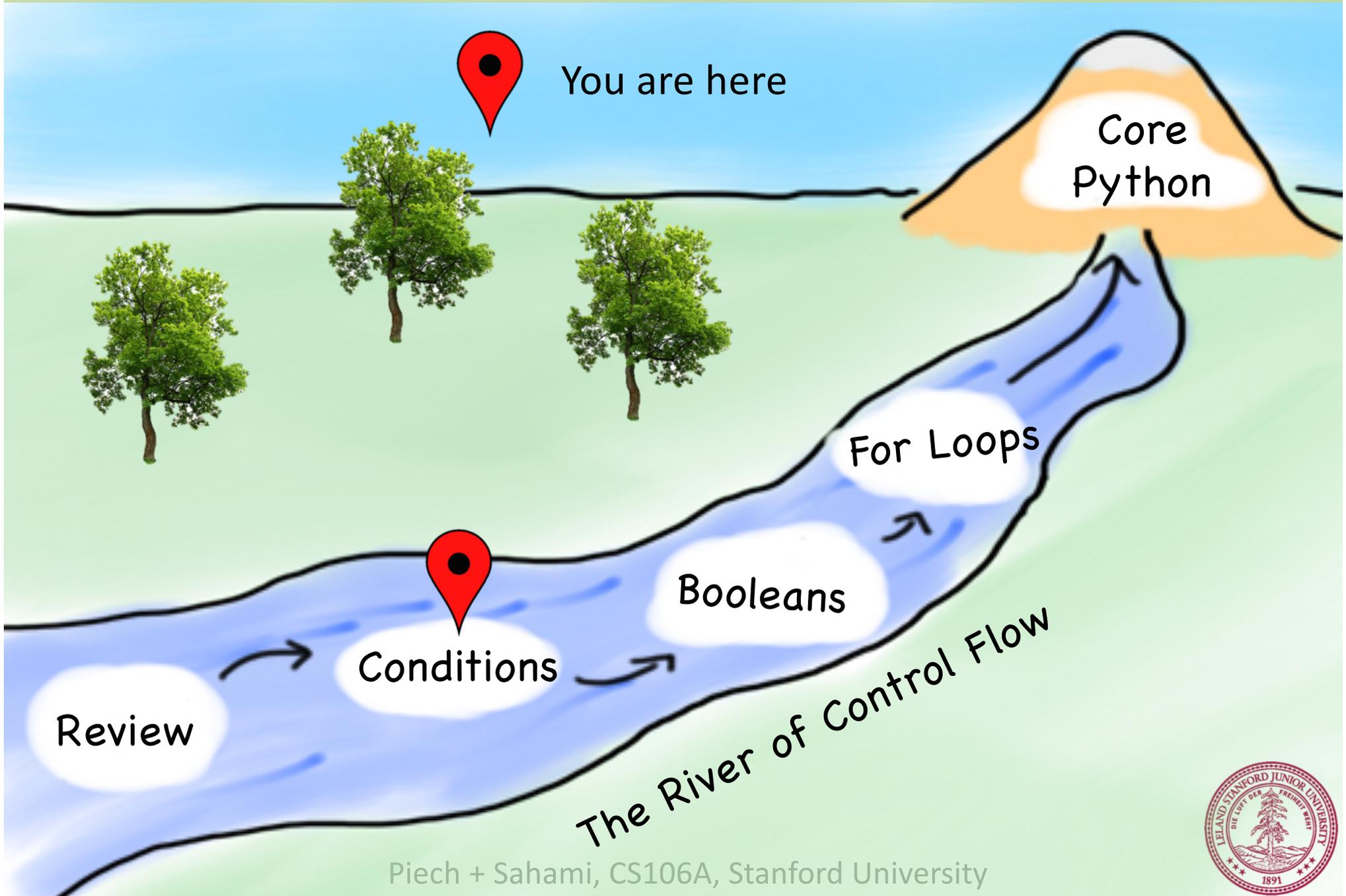
```
def main():  
    while True:  
        calculate_age_single_sample()
```

```
def calculate_age_single_sample():  
    # ask the user to enter the percent c14 left in their sample  
    pct_left = float(input("% of natural c14 in Sample:"))  
    # calc the age: https://en.wikipedia.org/wiki/Radiocarbon\_dating  
    age = math.log(pct_left / 100) * HALF_LIFE_CONSTANT  
    # print the result  
    print("Sample is " + str(age) + " years old.")
```

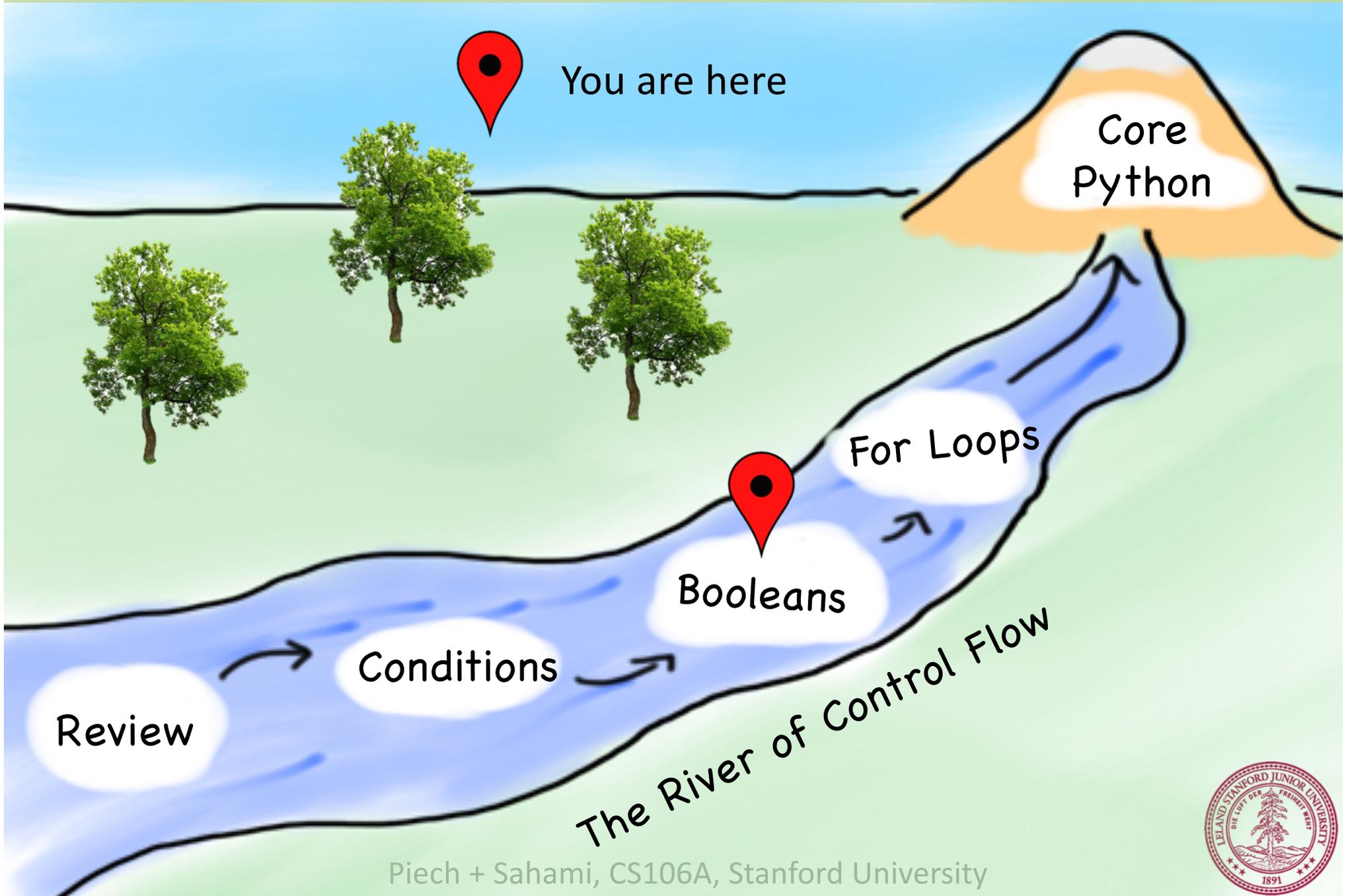
* It calculates the age of a C14 sample



Today's Route



Today's Route



Booleans

1 < 2



Booleans

$1 < 2$

True



Comparison Operators

Operator	Meaning	Example	Value
==	equals	$1 + 1 == 2$	True
!=	does not equal	$3.2 != 2.5$	True
<	less than	$10 < 5$	False
>	greater than	$10 > 5$	True
<=	less than or equal to	$126 <= 100$	False
>=	greater than or equal to	$5.0 >= 5.0$	True

* All have equal precedence



Comparison Operators

Operator	Meaning	Example	Value
==	equals	<code>1 + 1 == 2</code>	True
!=	does not equal	<code>3.2 != 2.5</code>	True
<	less than	<code>10 < 5</code>	False
>	greater than	<code>10 > 5</code>	True
<=	less than or equal to	<code>126 <= 100</code>	False
>=	greater than or equal to	<code>5.0 >= 5.0</code>	True

* All have equal precedence



Comparison Operators

```
if 1 < 2 :  
    print("1 is less than 2")
```

```
num = int(input("Enter a number: "))  
if num == 0:  
    print("That number is 0")  
else :  
    print("That number is not 0.")
```



If Else Revisited

```
num = int(input("Enter a number: "))
if num == 0:
    print("Your number is 0 ")
else:
    if num > 0:
        print("Your number is positive")
    else:
        print("Your number is negative")
```



If Else Revisited

```
num = int(input("Enter a number: "))  
if num == 0:  
    print("Your number is 0 ")  
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else:  
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```



If Else Revisited

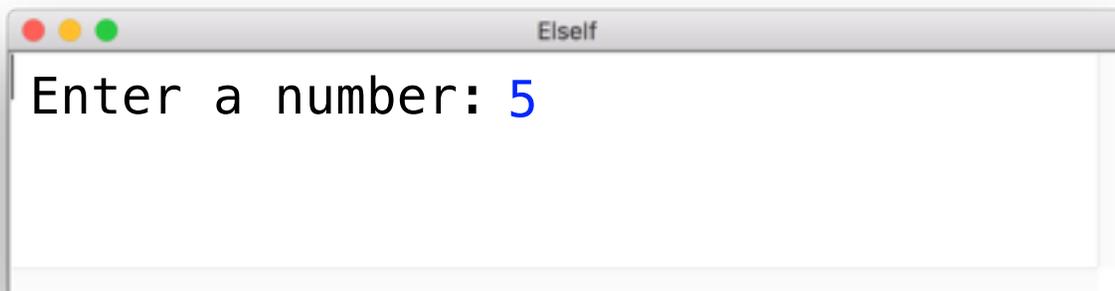
```
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    print("Your number is 0 ")  
elif num > 0:  
    print("Your number is positive")  
else:  
    print("Your number is negative")
```



If Else Revisited

"5"

```
num = int(input("Enter a number: "))
if num == 0:
    print("Your number is 0 ")
elif num > 0:
    print("Your number is positive")
else:
    print("Your number is negative")
```



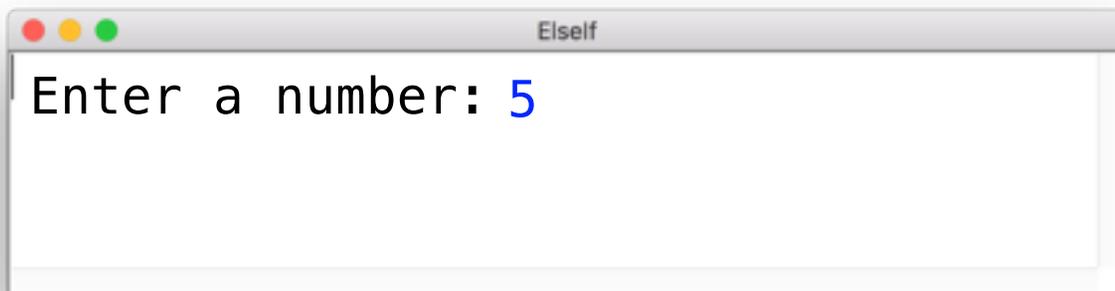
A screenshot of a terminal window with a title bar that says "Elsif". The terminal content shows the prompt "Enter a number: 5" where the number 5 has been entered.



If Else Revisited

5

```
num = int(input("Enter a number: "))  
if num == 0:  
    print("Your number is 0 ")  
elif num > 0:  
    print("Your number is positive")  
else:  
    print("Your number is negative")
```



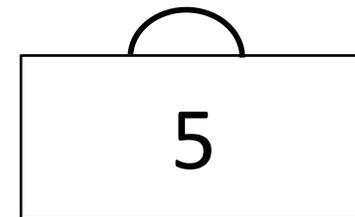
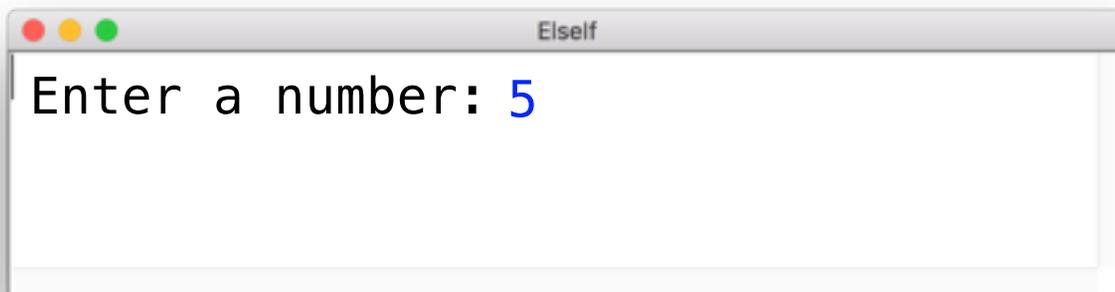
A screenshot of a terminal window titled "Elsif". The window has a white background and a grey title bar with three colored window control buttons (red, yellow, green) on the left. The text "Enter a number: 5" is displayed in a monospaced font, with the number "5" in blue, indicating it was entered by the user.



If Else Revisited

5

```
num = int(input("Enter a number: "))  
if num == 0:  
    print("Your number is 0 ")  
elif num > 0:  
    print("Your number is positive")  
else:  
    print("Your number is negative")
```

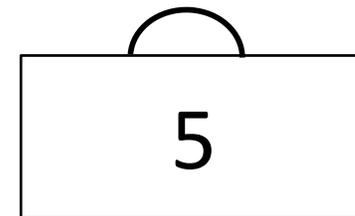


num



If Else Revisited

```
num = int(input("Enter a number: "))  
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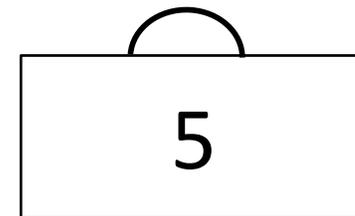
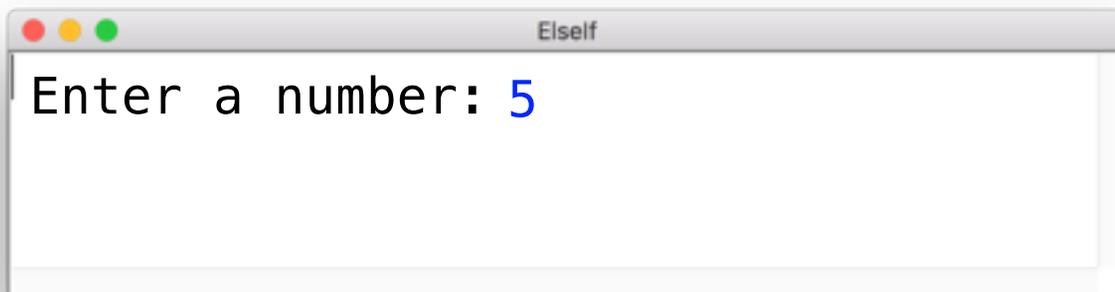


num



If Else Revisited

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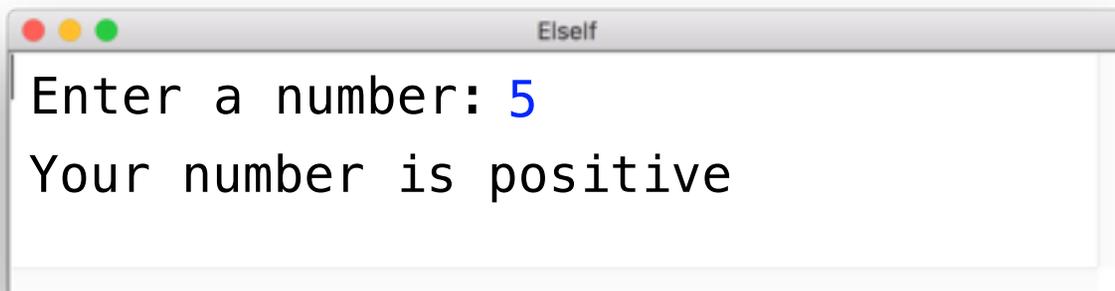


num

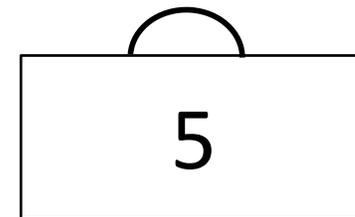


If Else Revisited

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if num == 0:  
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```



A terminal window titled "Elsif" showing the execution of the Python code. The prompt "Enter a number:" is followed by the user input "5". The program then outputs "Your number is positive".

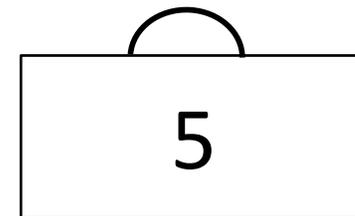
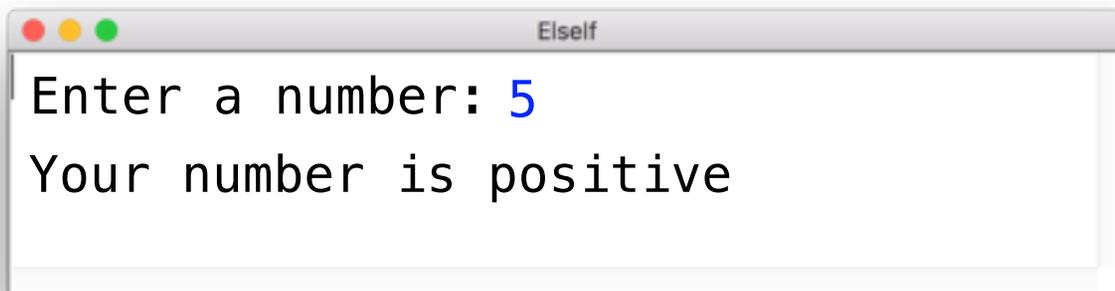


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If Else Revisited

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else:  
    print("Your number is negative")
```



num



Conditions in Python



Use **while** and **if** statements in Python.

They are the same as in Karel, except that the *test* can be any expression that evaluates to **True** or **False**



Amazing

Guess My Number

```
GuessMyNumber
I am thinking of a number between 0 and 99...
Enter a guess: 50
Your guess is too high

Enter a new number: 25
Your guess is too low

Enter a new number: 40
Your guess is too low

Enter a new number: 45
Your guess is too low

Enter a new number: 48
Congrats! The number was: 48
```

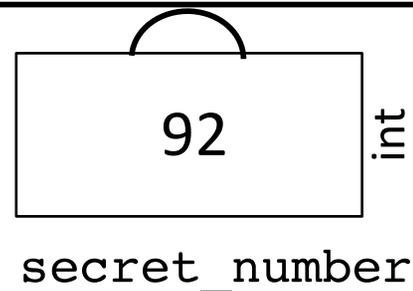


Guess My Number

```
secret_number = random.randint(1, 99)
print("I am thinking of a number between 1 and 99...")
guess = int(input("Enter a guess: "))
# True if guess is not equal to secret number
while guess != secret_number:
    # True if guess is less than secret number
    if guess < secret_number:
        print("Your guess is too low")
    else:
        print("Your guess is too high")

    print("") # an empty line
    guess = int(input("Enter a new guess: "))

print("Congrats! The number was: " + str(secret_number))
```

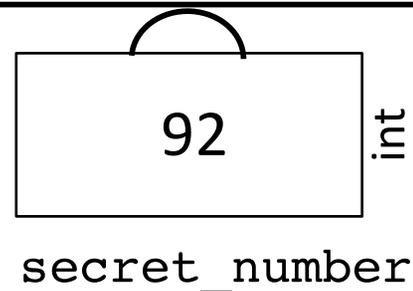


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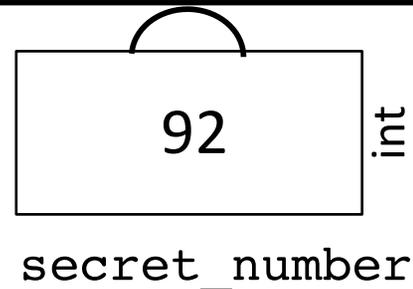
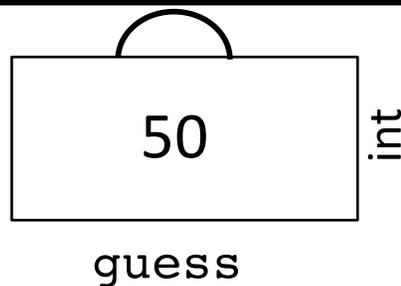


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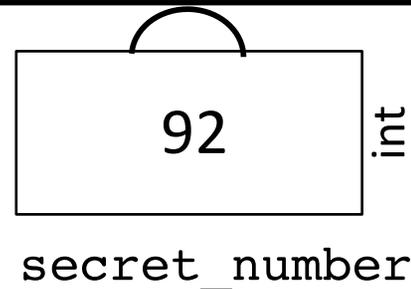
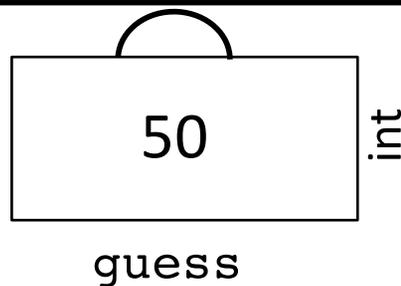


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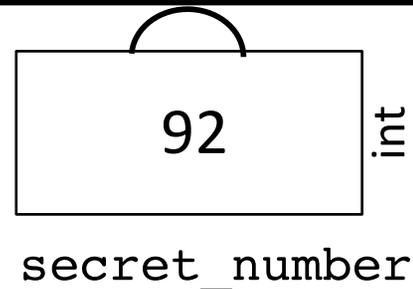
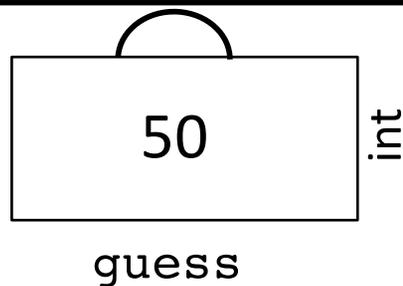


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    print("") # an empty line
    guess = int(input("Enter a new guess: "))

print("Congrats! The number was: " + str(secret_number))
```

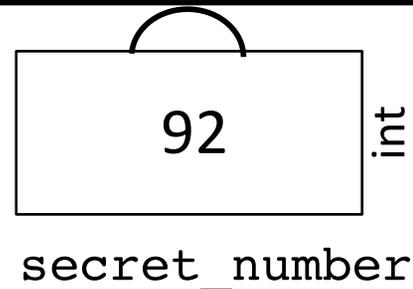
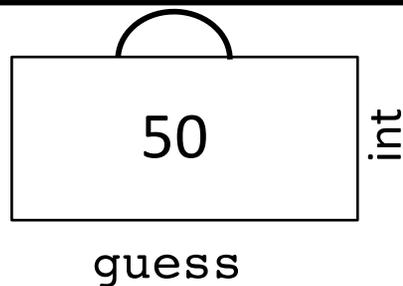


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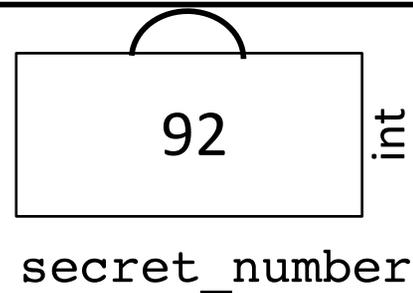
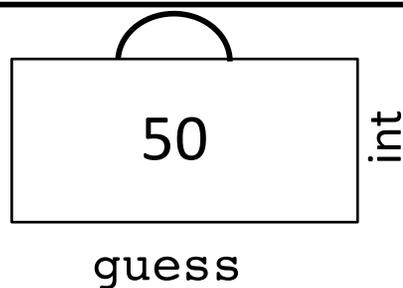


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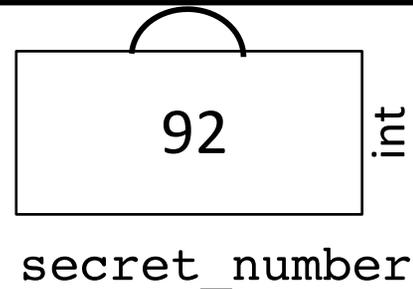
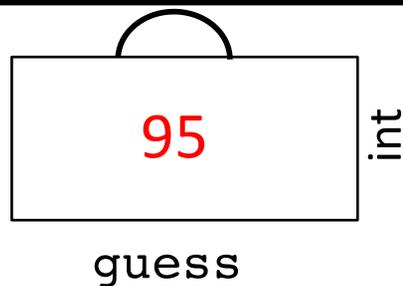


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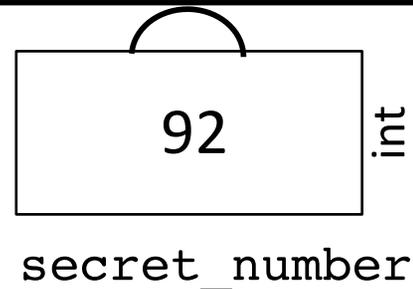
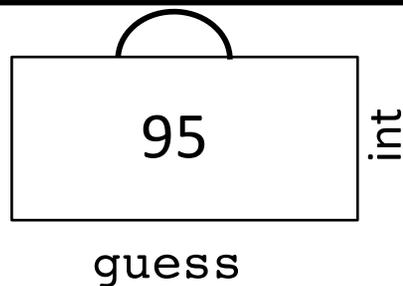
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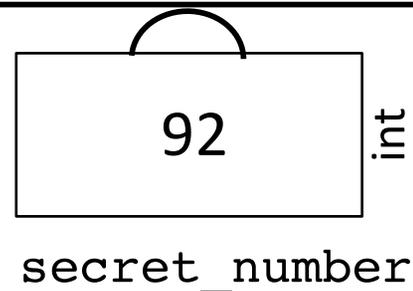
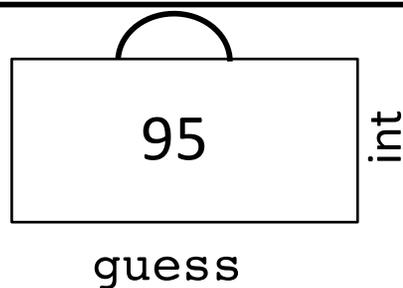


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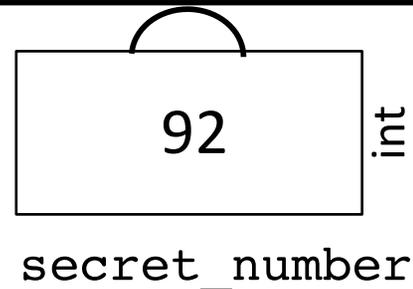
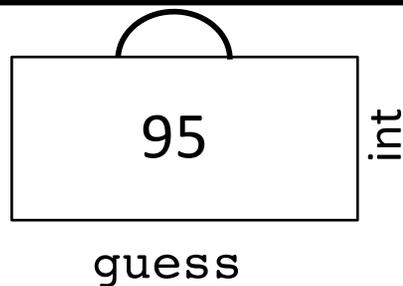


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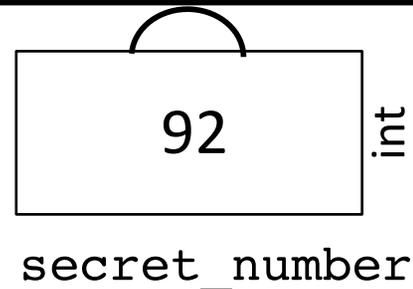
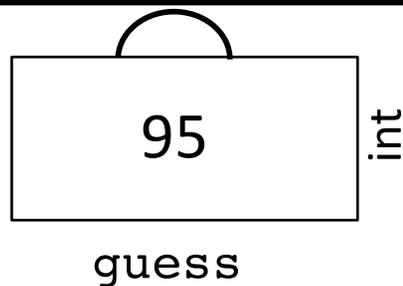


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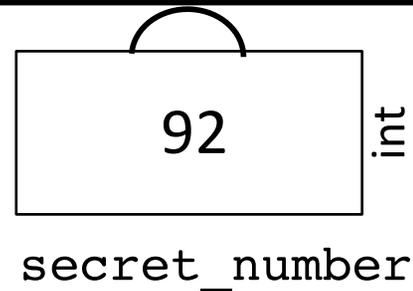
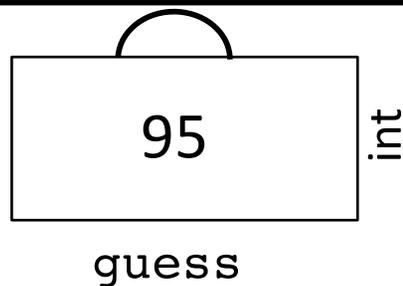


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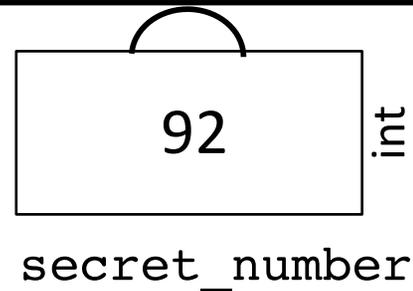
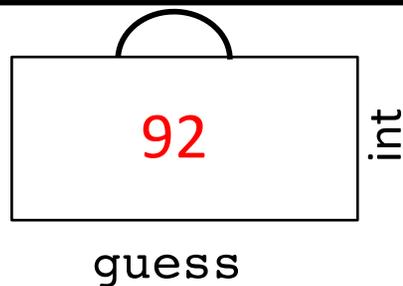


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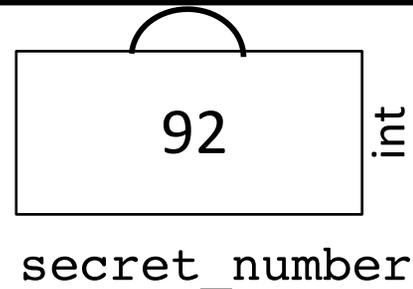
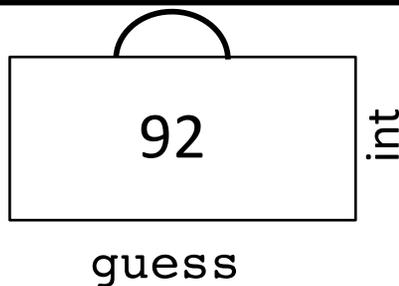
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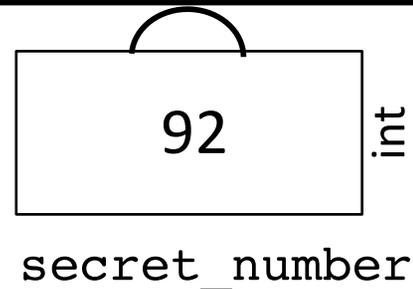
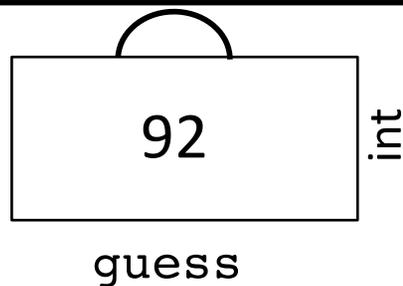


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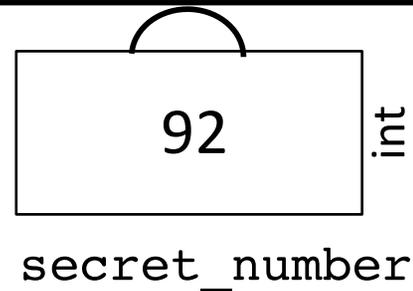
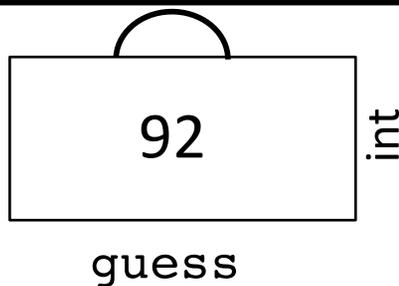


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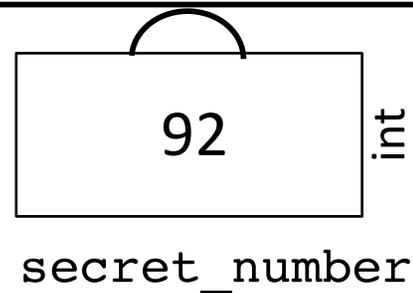
Behind the Scenes



Guess My Number

```
secret_number = random.randint(1, 99)
print("I am thinking of a number between 1 and 99...")
```

```
print("Congrats! The number was: " + str(secret_number))
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Guess My Number

```
secret_number = random.randint(1, 99)
print("I am thinking of a number between 1 and 99...")
```

```
while ???:  
    # Repeat some stuff???
```

```
print("Congrats! The number was: " + str(secret_number))
```



Guess My Number

```
secret_number = random.randint(1, 99)
print("I am thinking of a number between 1 and 99...")
```

```
while ???:
    # Get a new guess
```

```
    # Report high/low
```

```
print("Congrats! The number was: " + str(secret_number))
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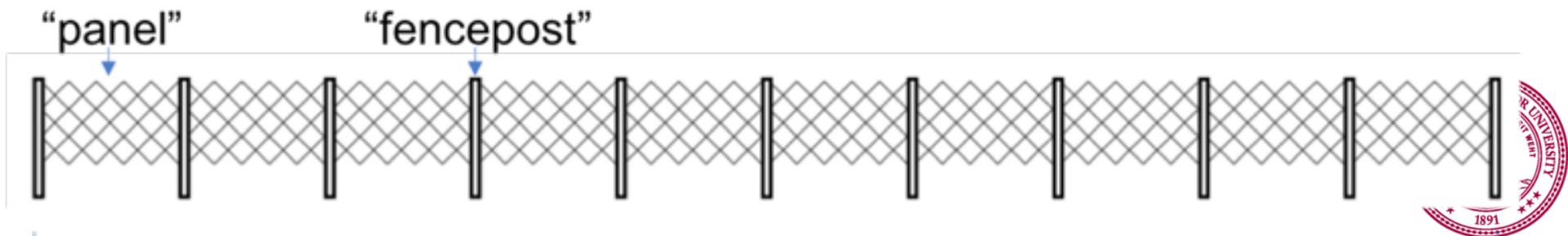
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while guess != secret_number:
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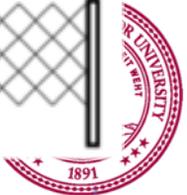
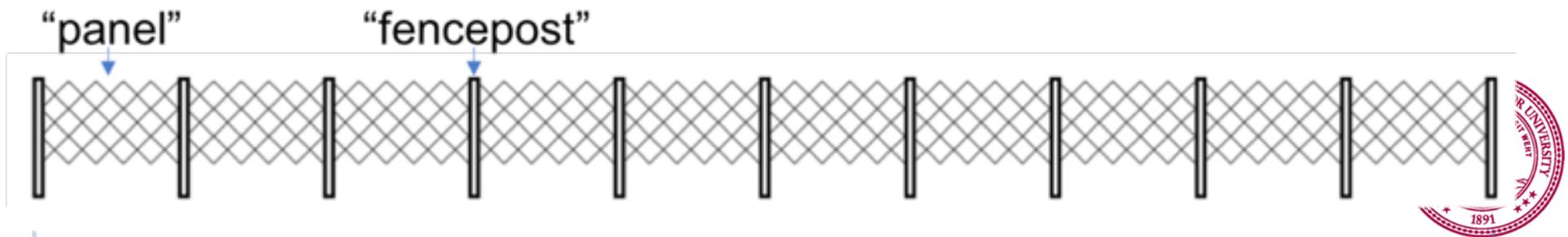
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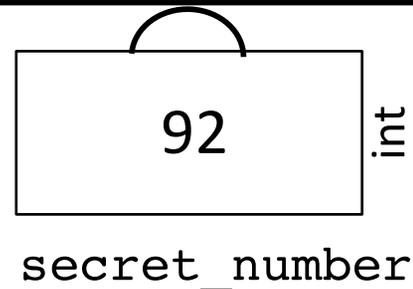
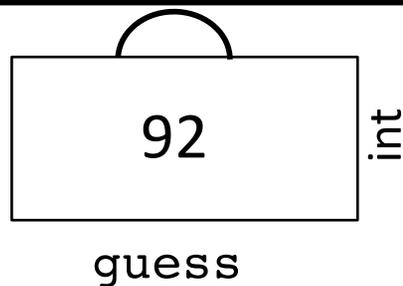


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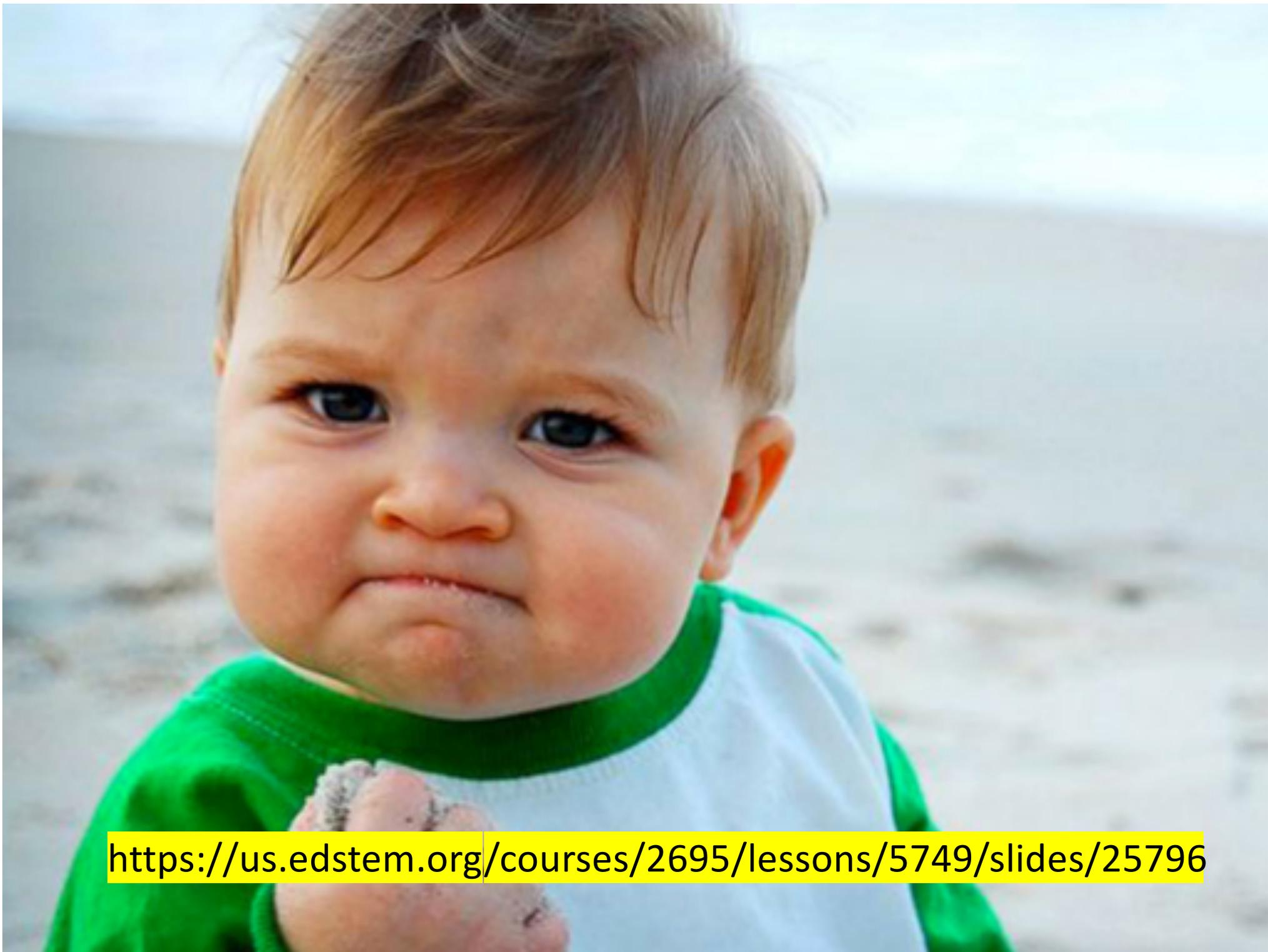
Time to shine

Challenge: Sentinel Loops

- **sentinel**: A value that signals the end of user input.
 - **sentinel loop**: Repeats until a sentinel value is seen.
- Example: Write a program that prompts the user for numbers until the user types -1, then output the total of the numbers.
 - In this case, -1 is the sentinel value.

```
Type a number: 10
Type a number: 20
Type a number: 30
Type a number: -1
total is 60
```





<https://us.edstem.org/courses/2695/lessons/5749/slides/25796>

Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence  
  
total = 0  
while num != -1:  
    num = int(input("Enter a number: "))  
    total += num  
  
print("total is " + total)
```

NameError:
name 'num' is not defined



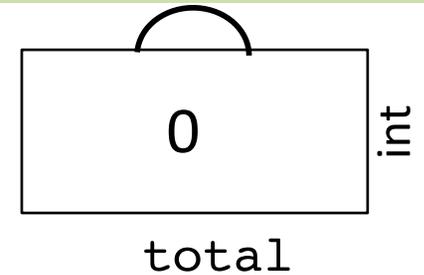
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# fencepost problem!  
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```
total = 0
```

```
num = int(input("Enter a number: "))
```

```
while num != -1:
```

```
    total += num
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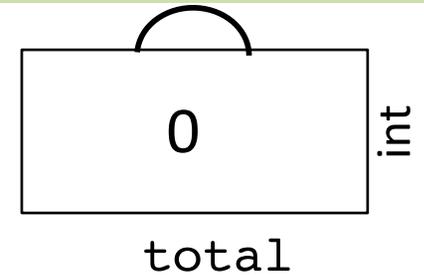
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    num = int(input("Enter a number: "))
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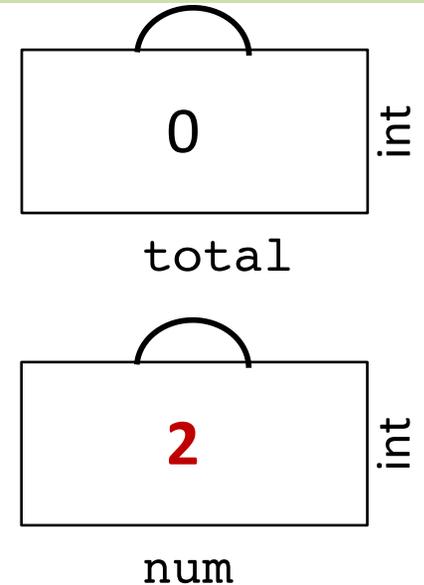
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num = int(input("Enter a number: "))
```

```
while num != -1:
```

```
    total += num
```

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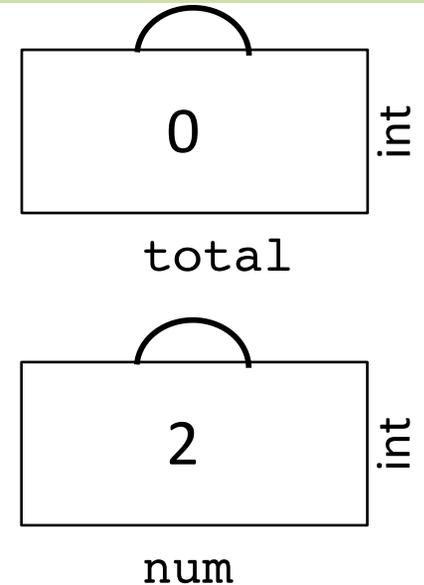
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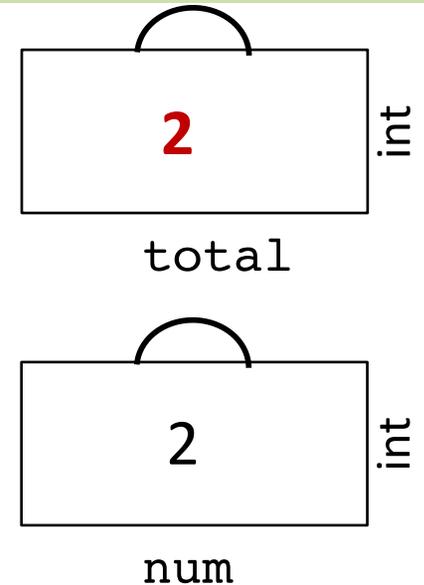
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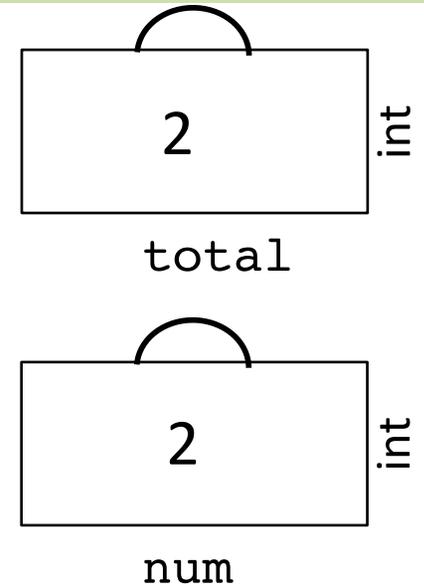
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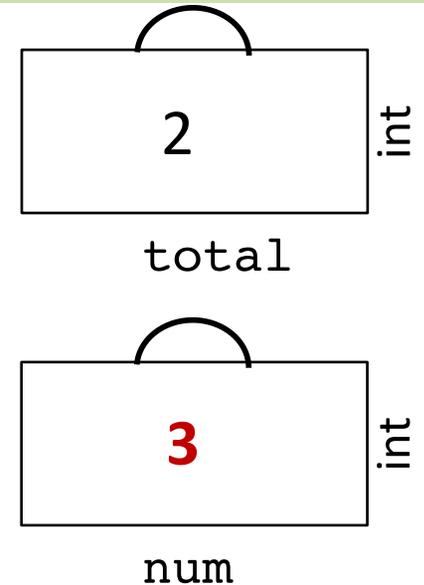
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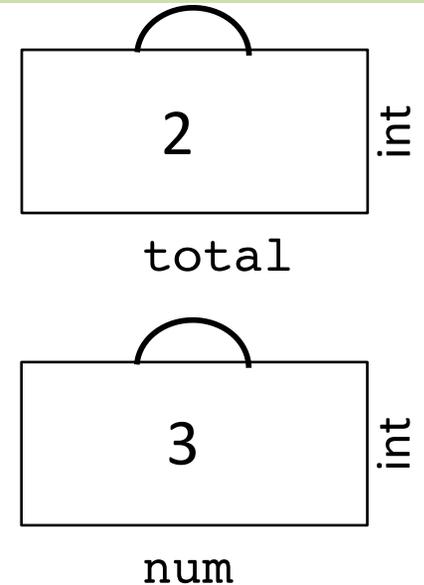
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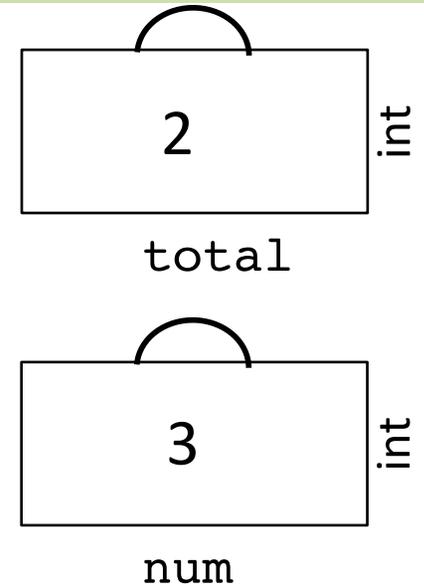
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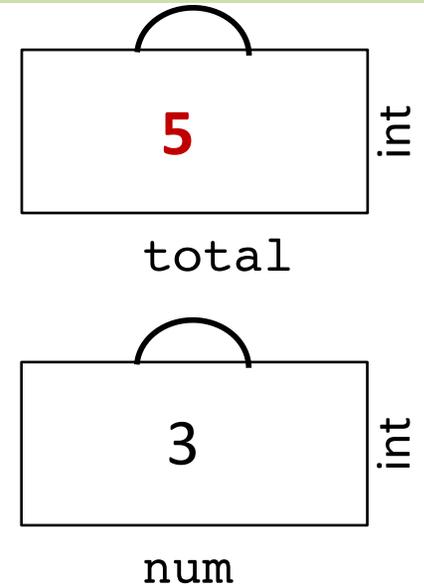
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# add number to total - fence
```

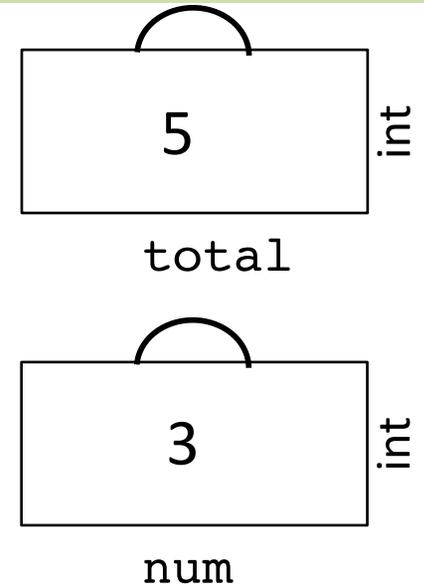
```
total = 0  
num = int(input("Enter a number: "))  
while num != -1:  
    total += num  
    num = int(input("Enter a number: "))  
print("total is " + total)
```



Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence
```

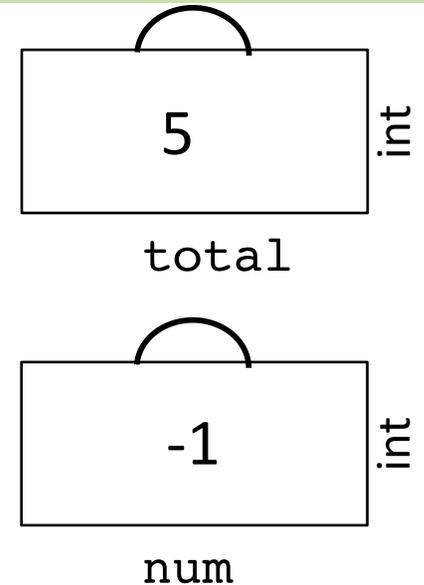
```
total = 0  
num = int(input("Enter a number: "))  
while num != -1:  
    total += num  
    num = int(input("Enter a number: "))  
print("total is " + total)
```



Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence
```

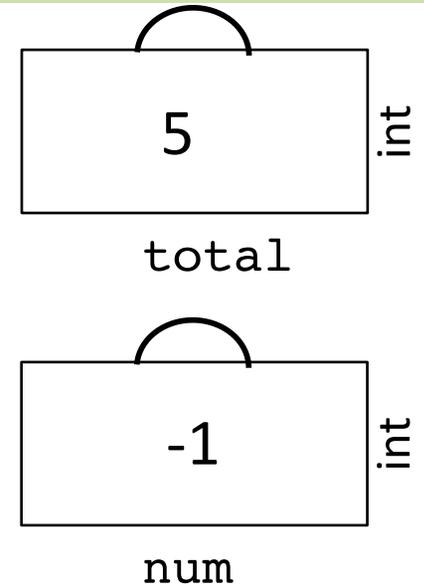
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num = int(input("Enter a number: "))  
while num != -1:  
    total += num  
    num = int(input("Enter a number: "))  
print("total is " + total)
```



Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence
```

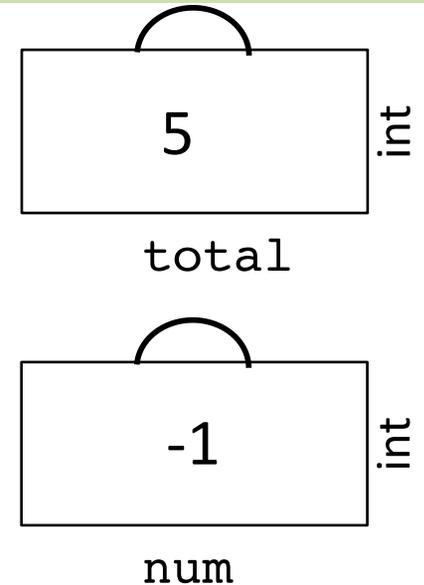
```
total = 0  
num = int(input("Enter a number: "))  
while num != -1:  
    total += num  
    num = int(input("Enter a number: "))  
print("total is " + total)
```



Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence
```

```
total = 0  
num = int(input("Enter a number: "))  
while num != -1:  
    total += num  
    num = int(input("Enter a number: "))  
  
print("total is " + total)
```

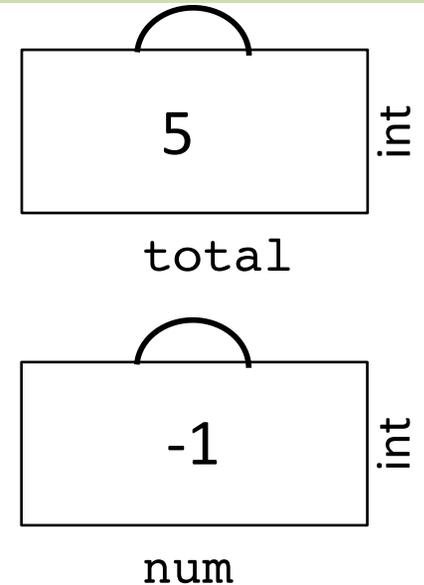


Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence
```

```
total = 0  
num = int(input("Enter a number: "))  
while num != -1:  
    total += num  
    num = int(input("Enter a number: "))
```

```
print("total is " + total)
```



Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence  
  
total = 0  
while True:  
    num = int(input("Enter a number: "))  
    if num == -1:  
        break # immediately exits loop  
    total += num  
print("total is " + total)
```



Example: Sentinel Loops

```
# fencepost problem!  
# ask for number - post  
# add number to total - fence  
  
total = 0  
while True:  
    num = int(input("Enter a number: "))  
    if num == SENTINEL:  
        break # immediately exits loop  
    total += num  
print("total is " + total)
```



Logical Operators

In order of precedence:

Operator	Example	Result
<code>not</code>	<code>not (2 == 3)</code>	<code>True</code>
<code>and</code>	<code>(2 == 3) and (-1 < 5)</code>	<code>False</code>
<code>or</code>	<code>(2 == 3) or (-1 < 5)</code>	<code>True</code>

Can "chain" tests as in algebra

```
# assume x is 15  
2 <= x <= 10
```

```
# identical version  
2 <= x and x <= 10
```



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False

5 * 7 >= 3 + 5 * 6 and not False



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False

35 >= 3 + 5 * 6 and not False



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False

35 >= 3 + 5 * 6 and not False

35 >= 3 + 30 and not False



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False

35 >= 3 + 5 * 6 and not False

35 >= 3 + 30 and not False

35 >= 33 and not False



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False

35 >= 3 + 5 * 6 and not False

35 >= 3 + 30 and not False

35 >= 33 and not False

True and not False



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False

35 >= 3 + 5 * 6 and not False

35 >= 3 + 30 and not False

35 >= 33 and not False

True and not False

True and True



Precedence Madness

Precedence:

arithmetic > comparison > not > and/or

5 * 7 >= 3 + 5 * (7 - 1) and not False

35 >= 3 + 5 * 6 and not False

35 >= 3 + 30 and not False

35 >= 33 and not False

True and not False

True and True

True



George Boole



English Mathematician teaching in Ireland 1815 – 1864

Boole died of being too cool

Piech + Sahami, CS106A, Stanford University

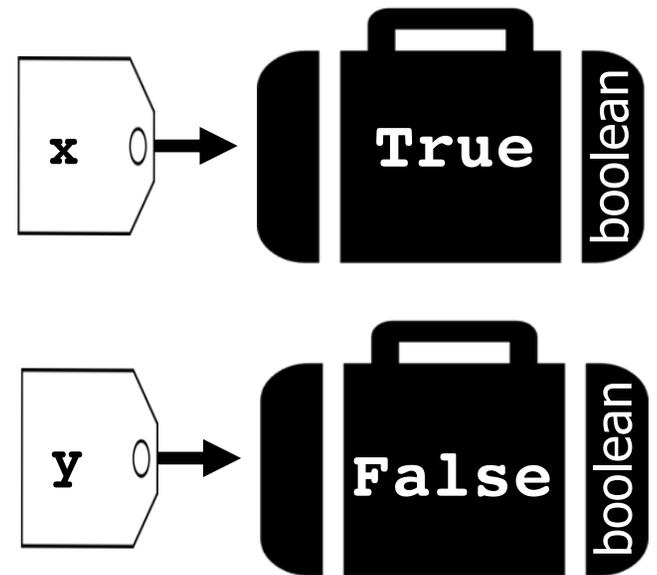


Boolean Variables

Store expressions that evaluate to True/False

`x = 1 < 2` # True

`y = 5.0 == 4.0` # False



Boolean Variables

```
# Store expressions that evaluate to True/False
x = 1 < 2    # True
y = 5.0 == 4.0 # False

# Directly set to True/False
is_sheltering = True
is_raining = False
```



Boolean Variables

```
# Store expressions that evaluate to True/False
x = 1 < 2      # True
y = 5.0 == 4.0 # False

# Directly set to True/False
is_sheltering = True
is_raining = False

play_again = input('Play again? "y" or "n"') == 'y'
if play_again:
    ...
```





FreeSignPrinter.com

is_allowed = **not** food **or** drinks

*know your logical precedence





FreeSignPrinter.com

is_allowed = **not** food **or** drinks
False

*know your logical precedence





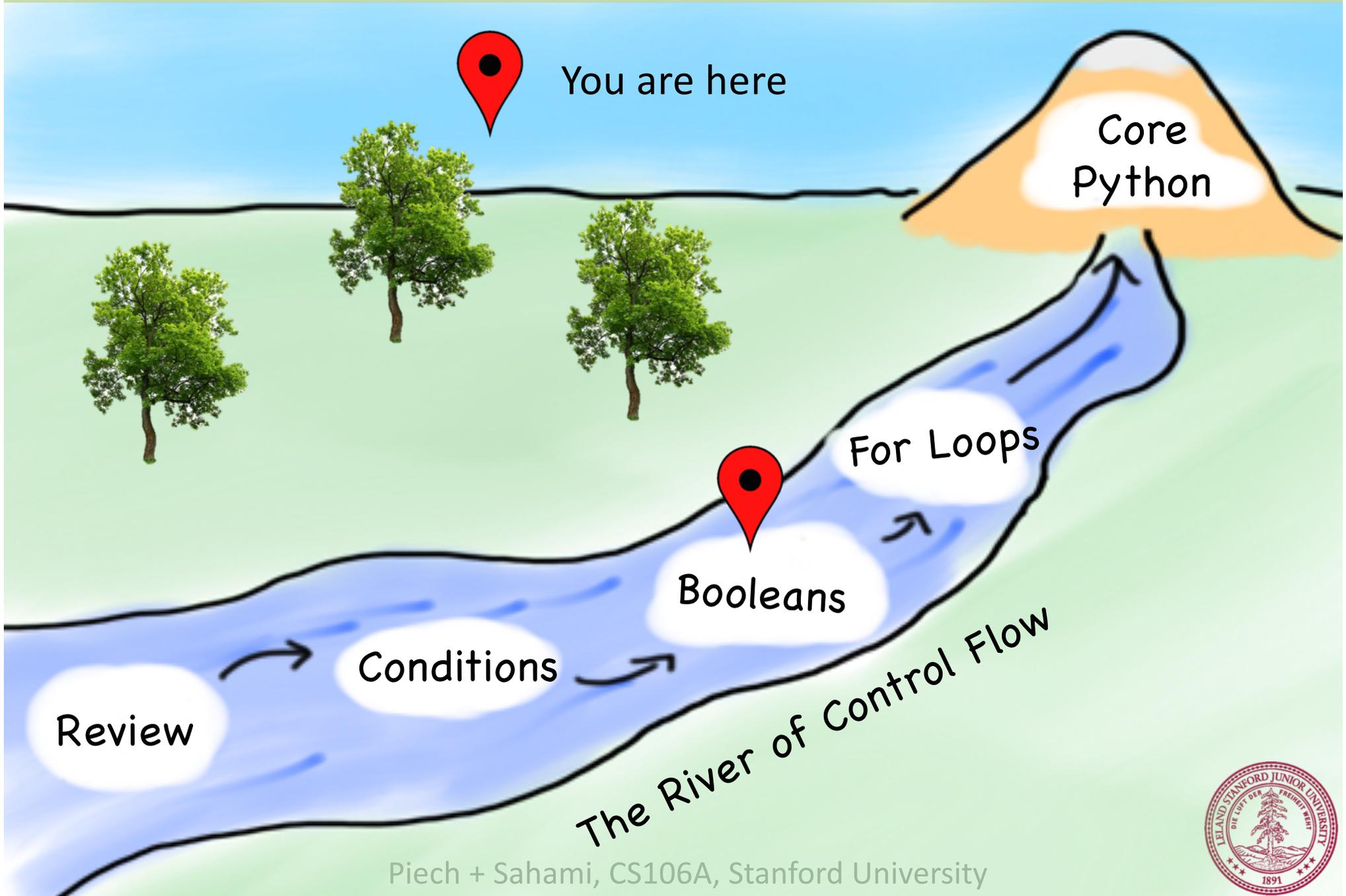
FreeSignPrinter.com

is_allowed = **not** food **or** drinks
False **True**

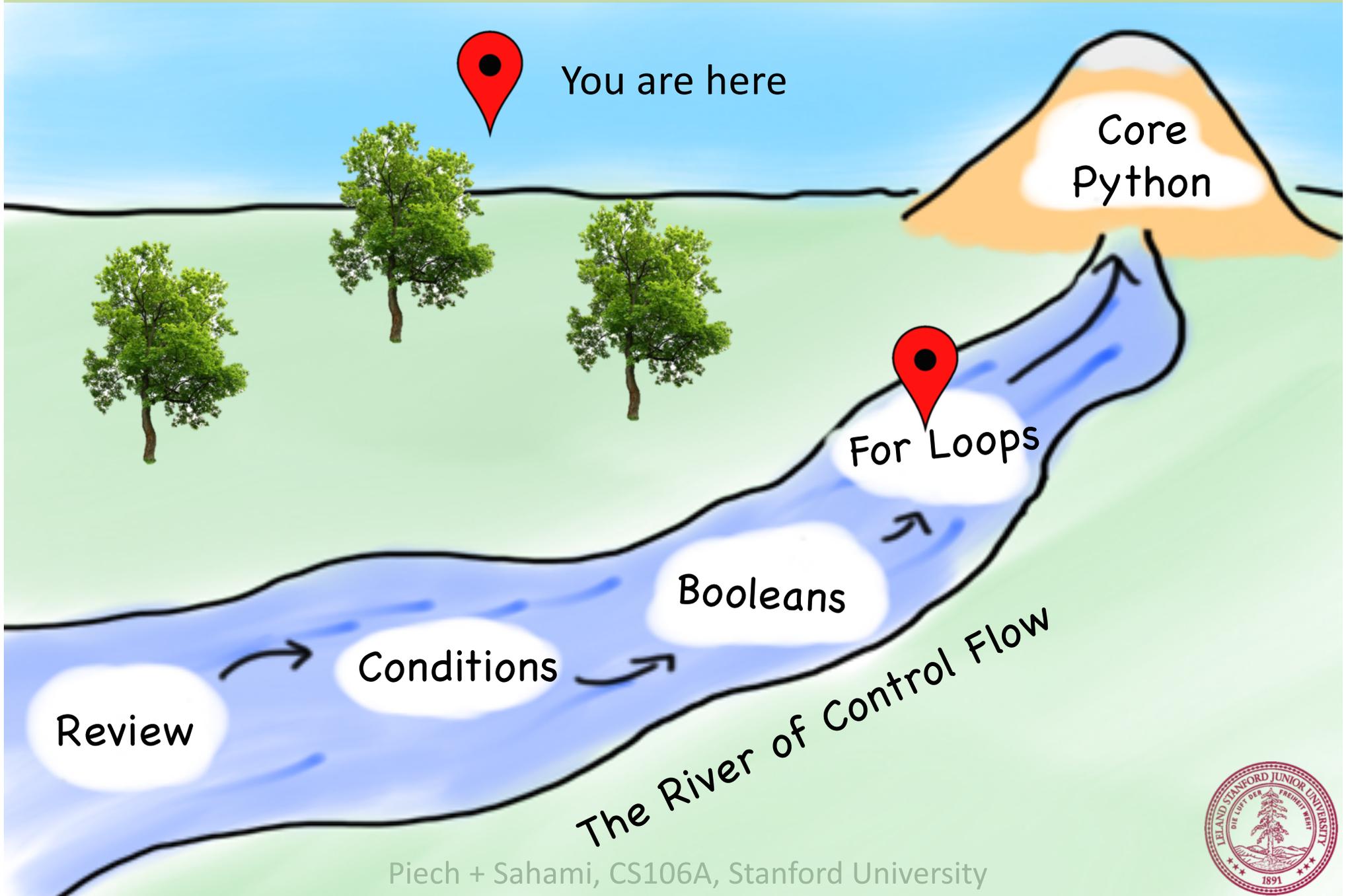
*know your logical precedence



Today's Route



Today's Route



How would you print “Python rocks socks”
100 times

For Loop Redux

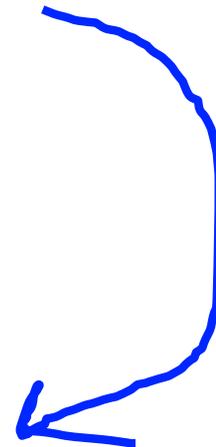
```
public void run() :  
    for i in range(100):  
        print("Python rocks socks!")
```



For Loop Redux

```
for i in range(100):  
    print("Python rocks socks!")
```

```
i = 0  
while i < 100:  
    print("Python rocks socks!")  
    i += 1
```



For Loop Redux

Create a counting
variable *i*

Which takes on
the values 0 to 99
one at a time

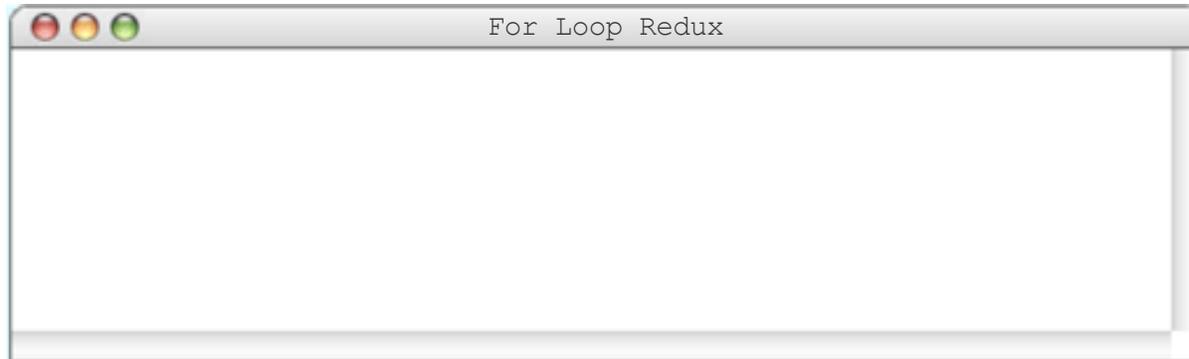
```
for i in range(100):  
    print("Python rocks socks!")
```



For Loop Redux

range(3) -> [0, 1, 2]

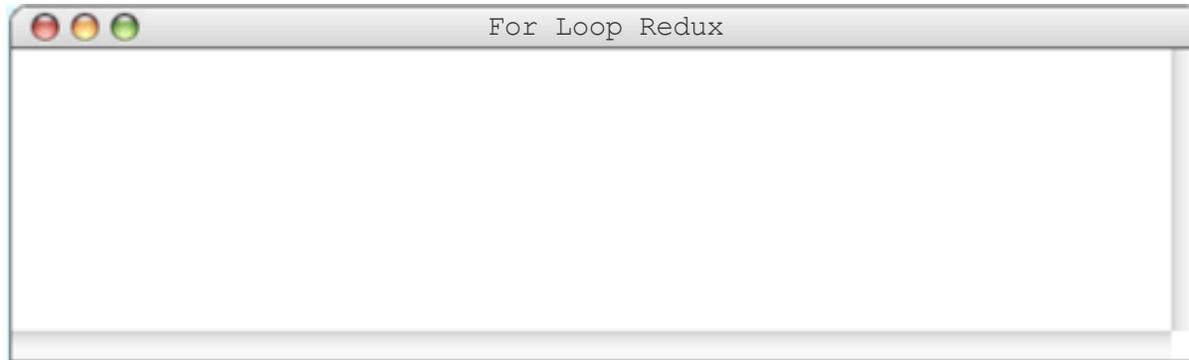
```
for i in range(3):  
    print("Python rocks socks!")
```



For Loop Redux

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```

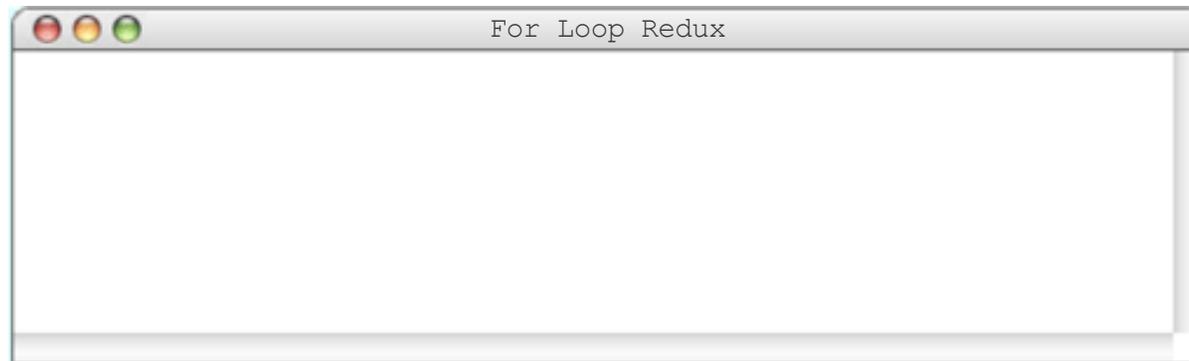


For Loop Redux

i 0

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```



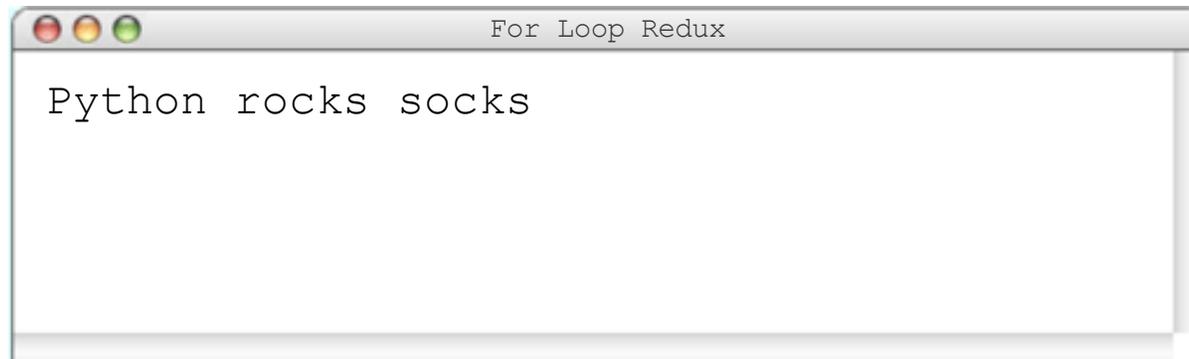
For Loop Redux

i 0

range(3) -> [0, 1, 2]

```
for i in range(3):
```

```
    print("Python rocks socks!")
```

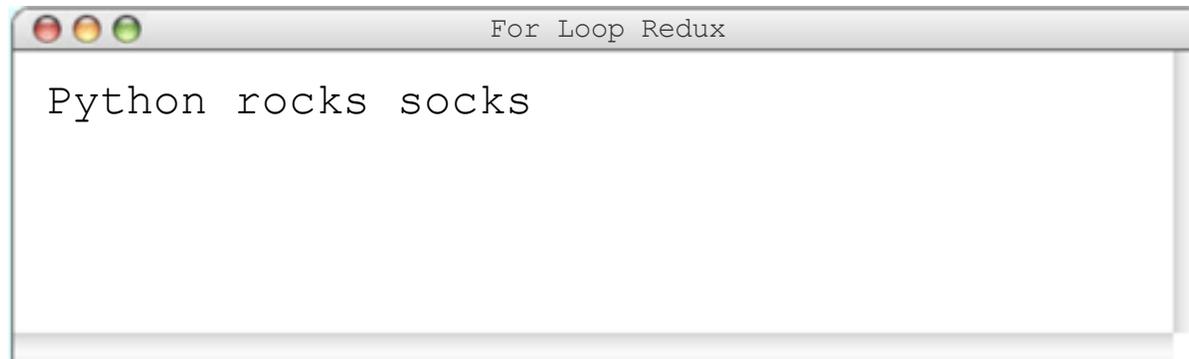


For Loop Redux

i 0

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```

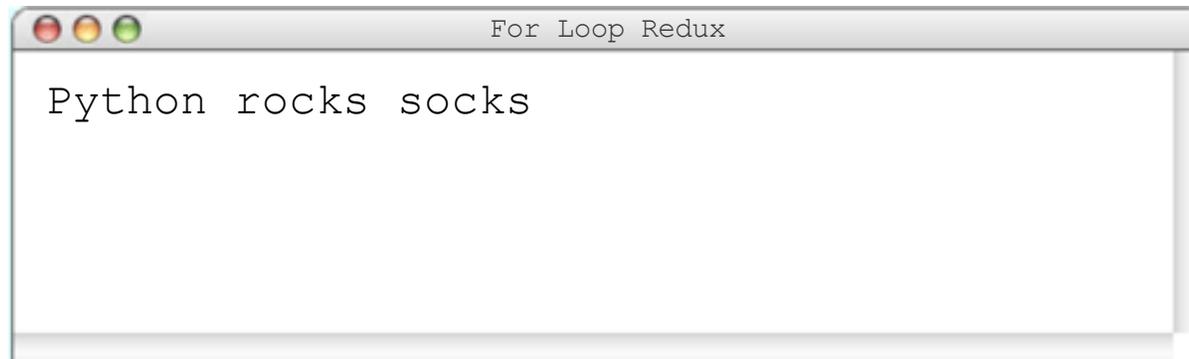


For Loop Redux

i 1

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```

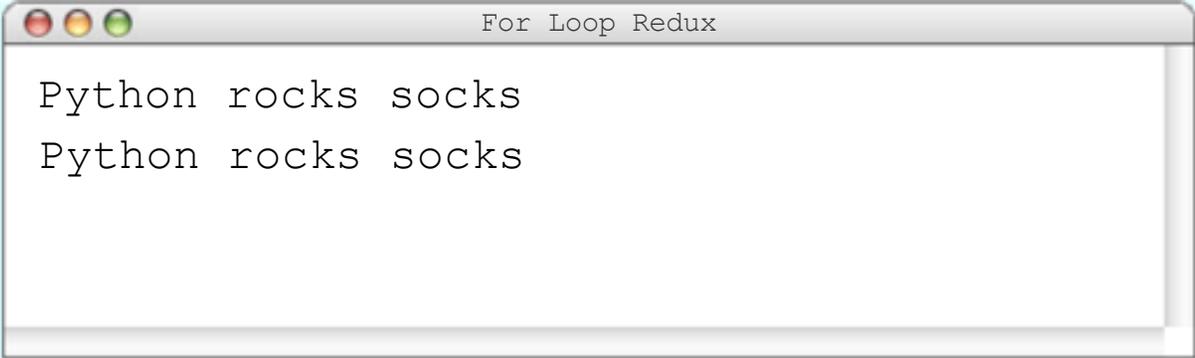


For Loop Redux

`i` 1

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```



A terminal window titled "For Loop Redux" showing the output of the code above. The output consists of two lines of text: "Python rocks socks" and "Python rocks socks".

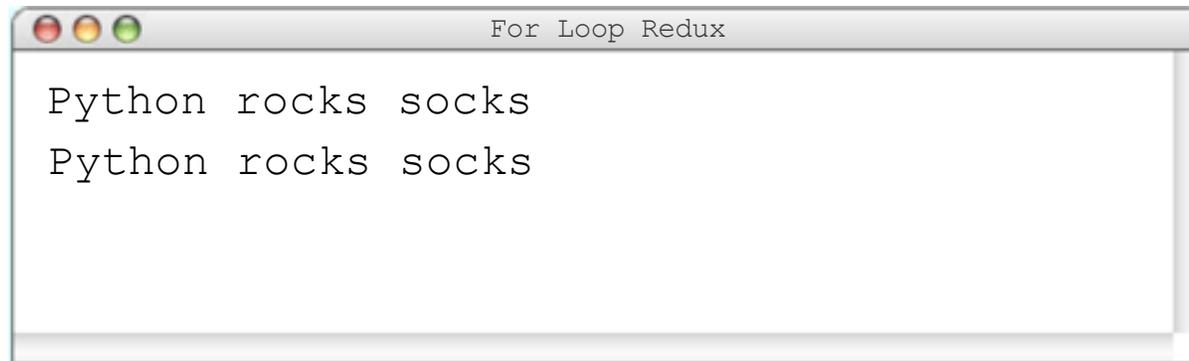


For Loop Redux

i 1

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```

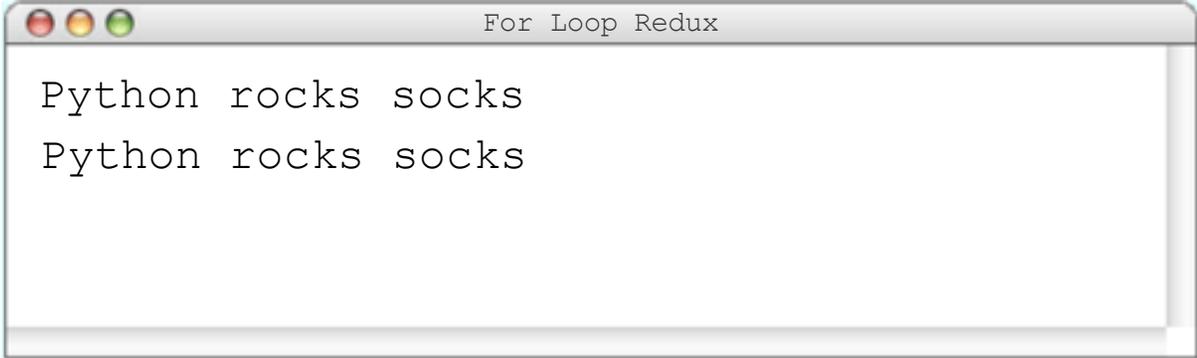


For Loop Redux

i 2

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```



A terminal window titled "For Loop Redux" with two lines of output: "Python rocks socks" and "Python rocks socks".

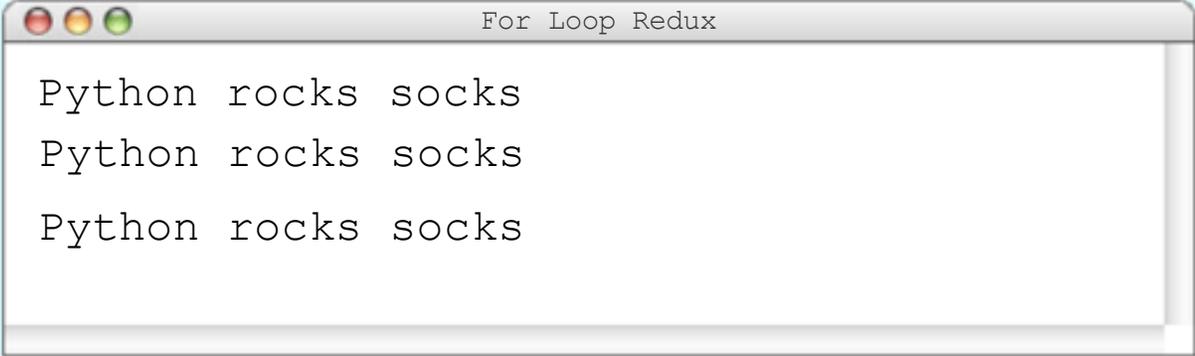


For Loop Redux

`i` 2

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```



A terminal window titled "For Loop Redux" showing the output of the Python code above. The output consists of three lines, each containing the text "Python rocks socks".

```
Python rocks socks  
Python rocks socks  
Python rocks socks
```



For Loop Redux

i 2

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```



```
For Loop Redux  
Python rocks socks  
Python rocks socks  
Python rocks socks
```

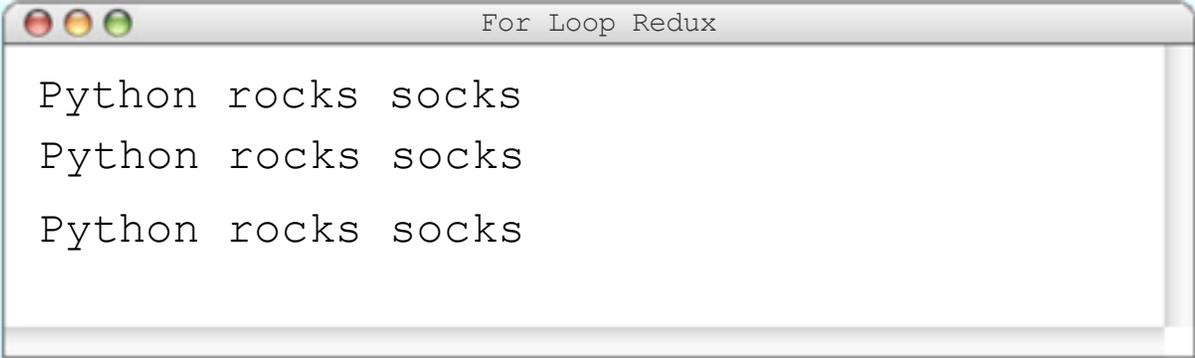


For Loop Redux

i 3

range(3) -> [0, 1, 2]

```
for i in range(3):  
    print("Python rocks socks!")
```



A terminal window titled "For Loop Redux" showing the output of the Python code above. The output consists of three lines, each containing the text "Python rocks socks".

```
Python rocks socks  
Python rocks socks  
Python rocks socks
```

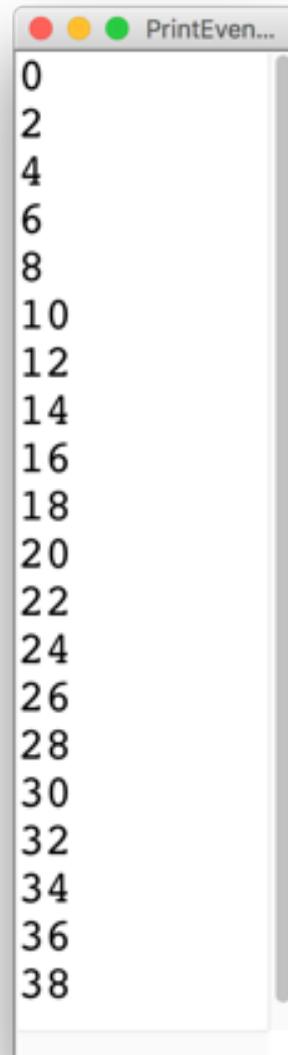


You can use the for loop variable



How would you print the first 100 even numbers?

Printing Even Numbers

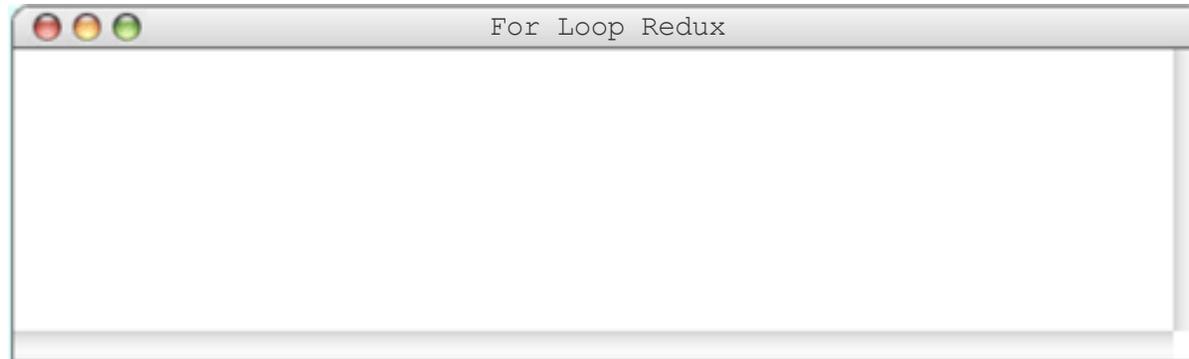


```
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
```



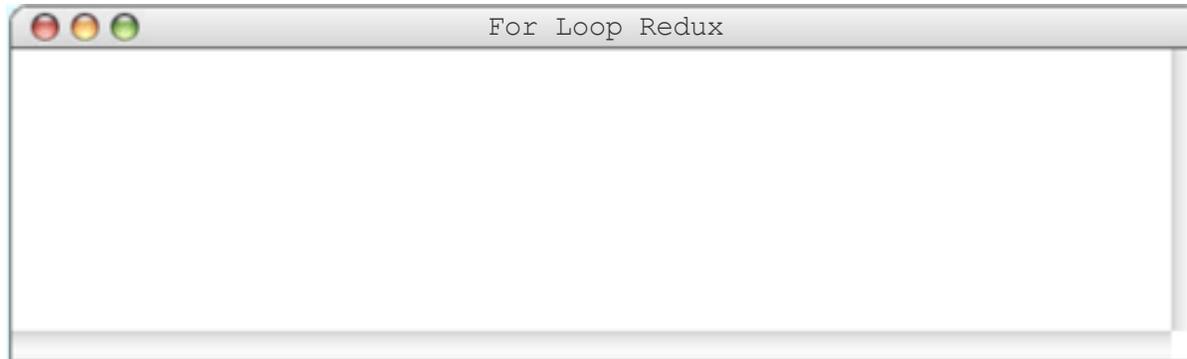
Printing Even Numbers

```
for i in range(3):  
    print(i * 2)
```



Printing Even Numbers

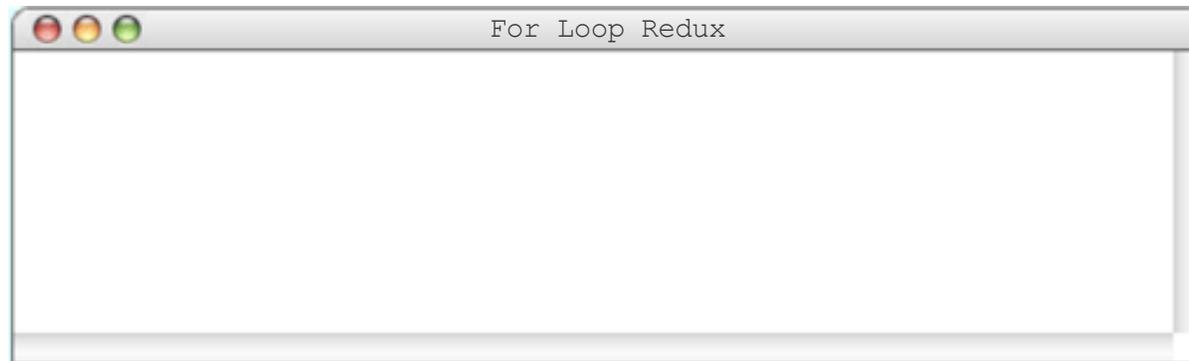
```
for i in range(3):  
    print(i * 2)
```



Printing Even Numbers

`i` 0

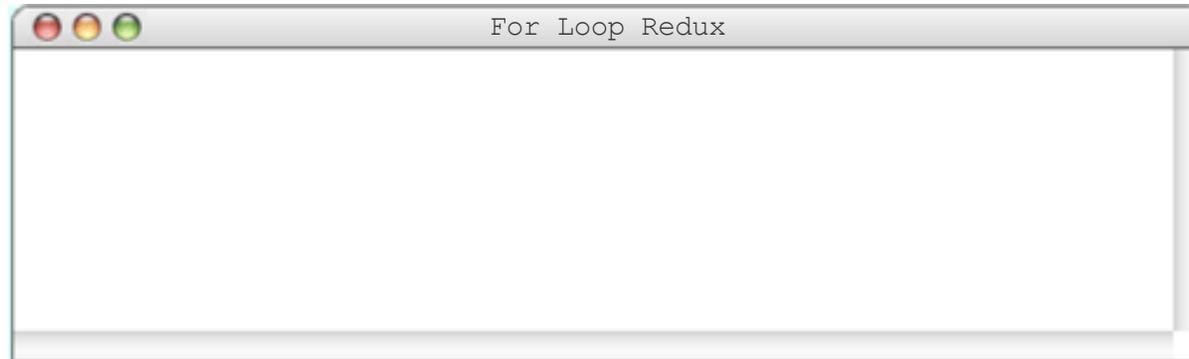
```
for i in range(3):  
    print(i * 2)
```



Printing Even Numbers

`i` 0

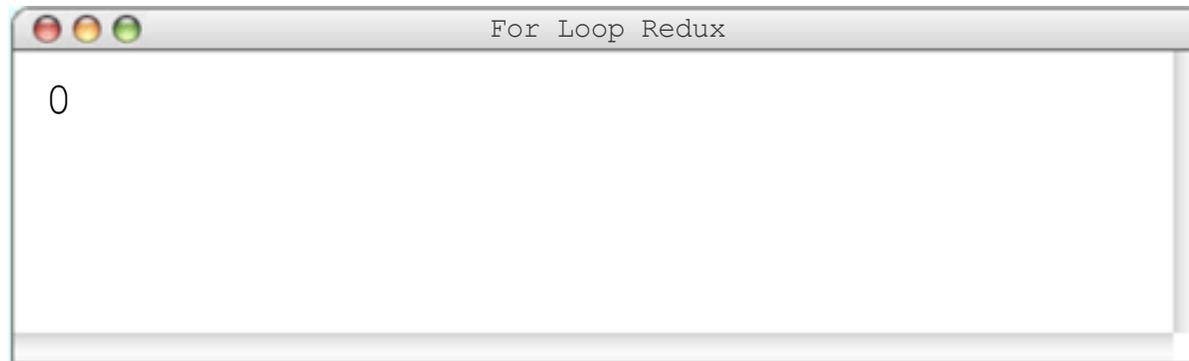
```
for i in range(3):  
    print(i * 2)
```



Printing Even Numbers

`i` 0

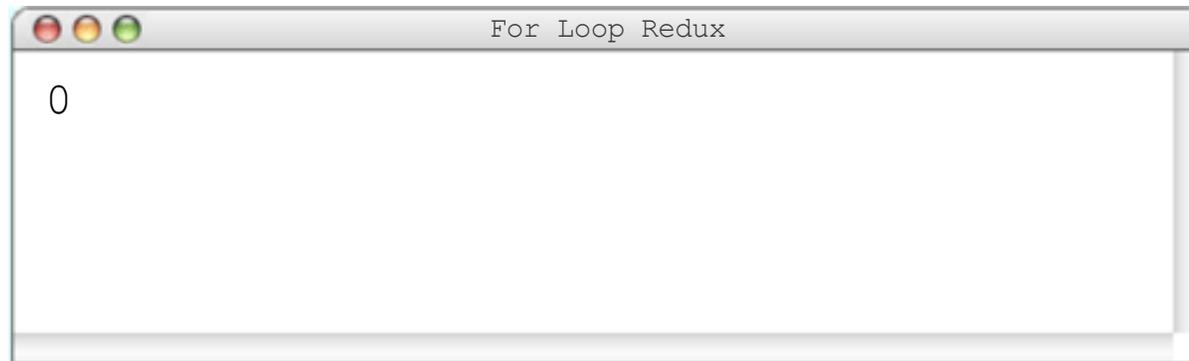
```
for i in range(3):  
    print(i * 2)
```



Printing Even Numbers

`i` 1

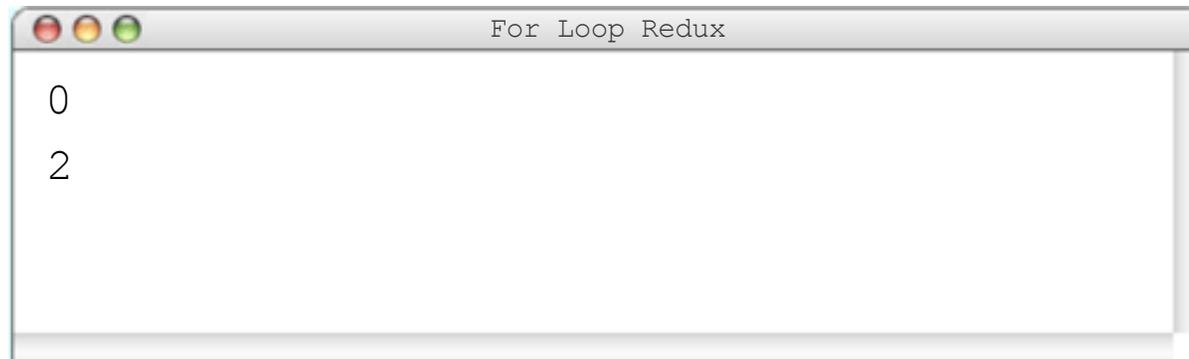
```
for i in range(3):  
    print(i * 2)
```



Printing Even Numbers

`i` 1

```
for i in range(3):  
    print(i * 2)
```



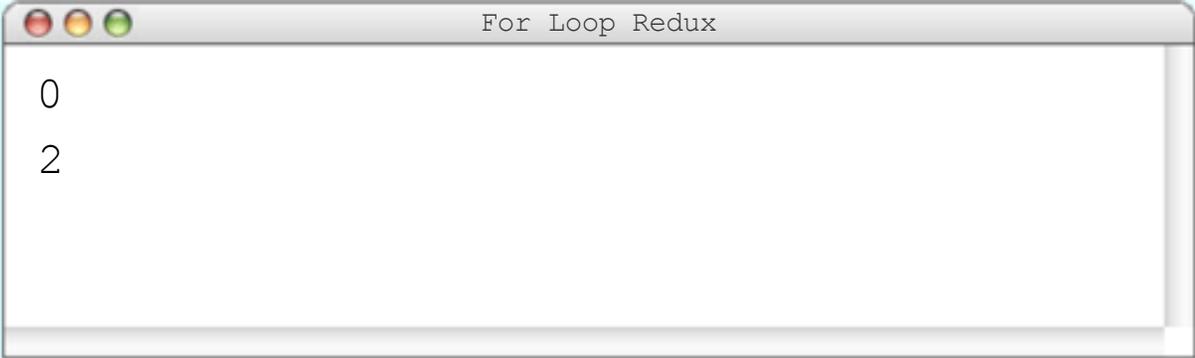
A terminal window titled "For Loop Redux" showing the output of the code. The output consists of two lines: "0" and "2".



Printing Even Numbers

`i` 2

```
for i in range(3):  
    print(i * 2)
```



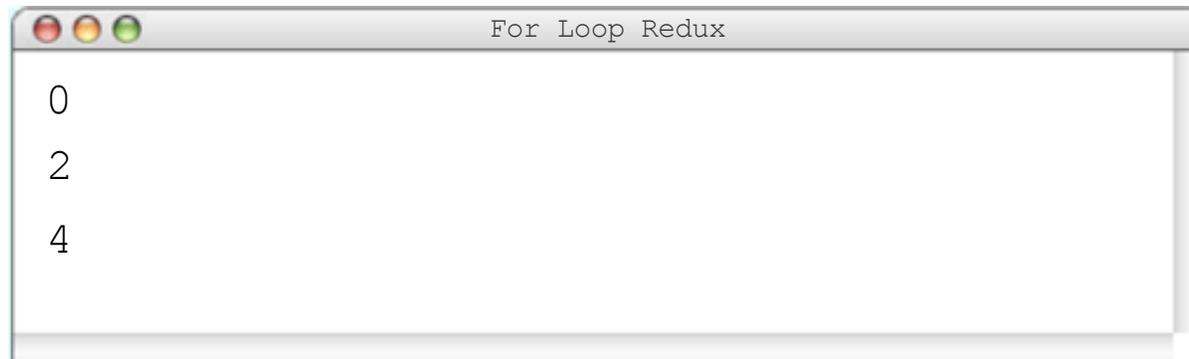
A terminal window titled "For Loop Redux" with a standard macOS-style title bar (red, yellow, green buttons). The window contains the output of the Python code: "0" on the first line and "2" on the second line.



Printing Even Numbers

`i` 2

```
for i in range(3):  
    print(i * 2)
```



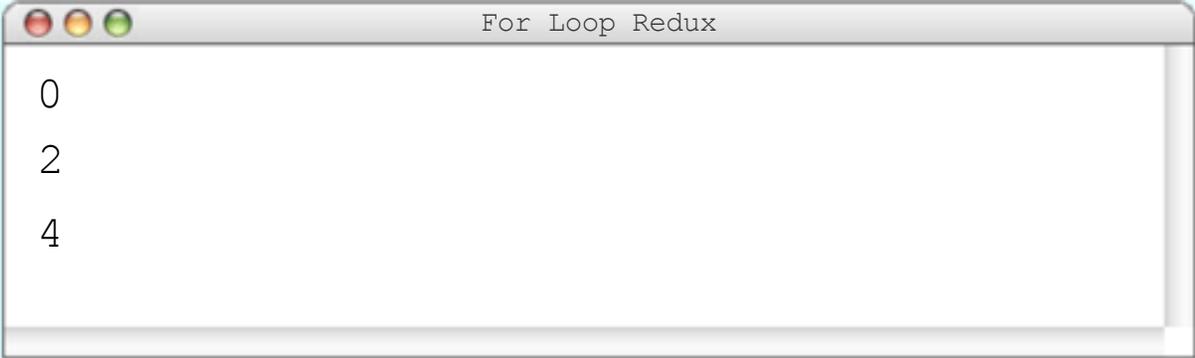
A terminal window titled "For Loop Redux" showing the output of the code. The output consists of three lines: 0, 2, and 4.



Printing Even Numbers

`i` 3

```
for i in range(3):  
    print(i * 2)
```



A terminal window titled "For Loop Redux" showing the output of the code. The output consists of three lines: 0, 2, and 4.



Printing Even Numbers

`i` 3

```
for i in range(3):  
    print(i * 2)
```

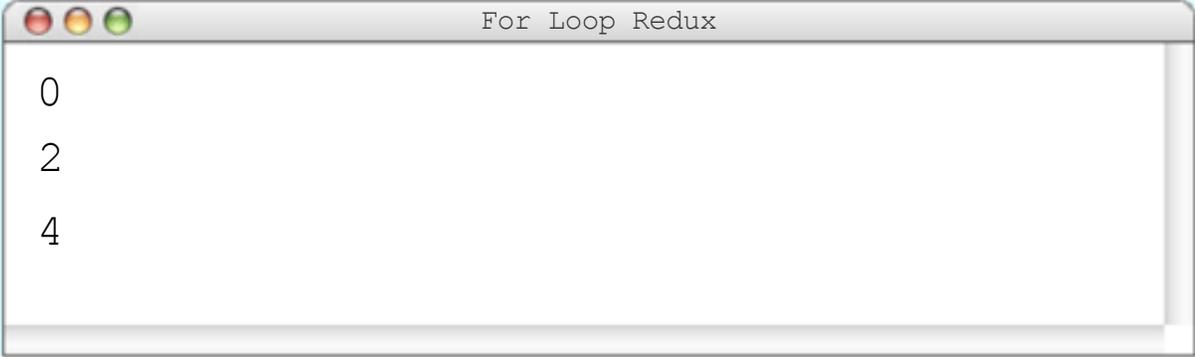


```
For Loop Redux  
0  
2  
4
```



Printing Even Numbers

```
for i in range(3):  
    print(i * 2)
```



A terminal window titled "For Loop Redux" showing the output of the Python code. The output consists of three lines: 0, 2, and 4, each on a new line.



Printing Even Numbers

```
# our solution 0, 1, 2
```

```
for i in range(3):
```

```
    print(i * 2)
```

Start at 0

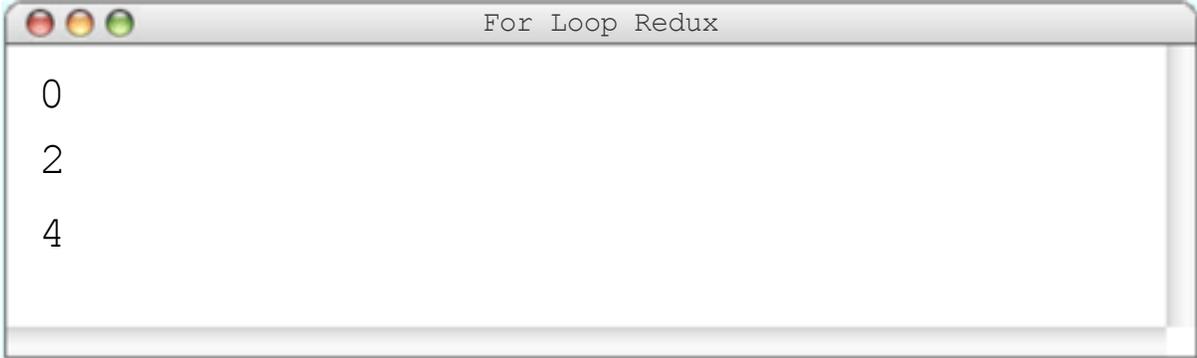
Stop before 6

```
# equivalently
```

```
for i in range(0, 6, 2):
```

```
    print(i)
```

Skip by 2 each time



```
For Loop Redux
0
2
4
```



Game Show

```
GameShow
Welcome to the CS106A game show!
Choose a door and win a prize
Door: 2
You chose door 2
You win $ [REDACTED]
```

* To be delivered via amazon
gift cards



Choose a Door

```
door = int(input("Door: "))
# while the input is invalid
while door < 1 or door > 3 :
    # tell the user the input was invalid
    print("Invalid door!")
    # ask for a new input
    door = int(input("Door: "))
```

or
and



The Door Logic

```
prize = 4

if door == 1:
    prize = 2 + 9 // 10 * 100

elif door == 2:
    locked = prize % 2 != 0
    if not locked:
        prize += 6

elif door == 3 :
    for i in range(door):
        prize += i
```

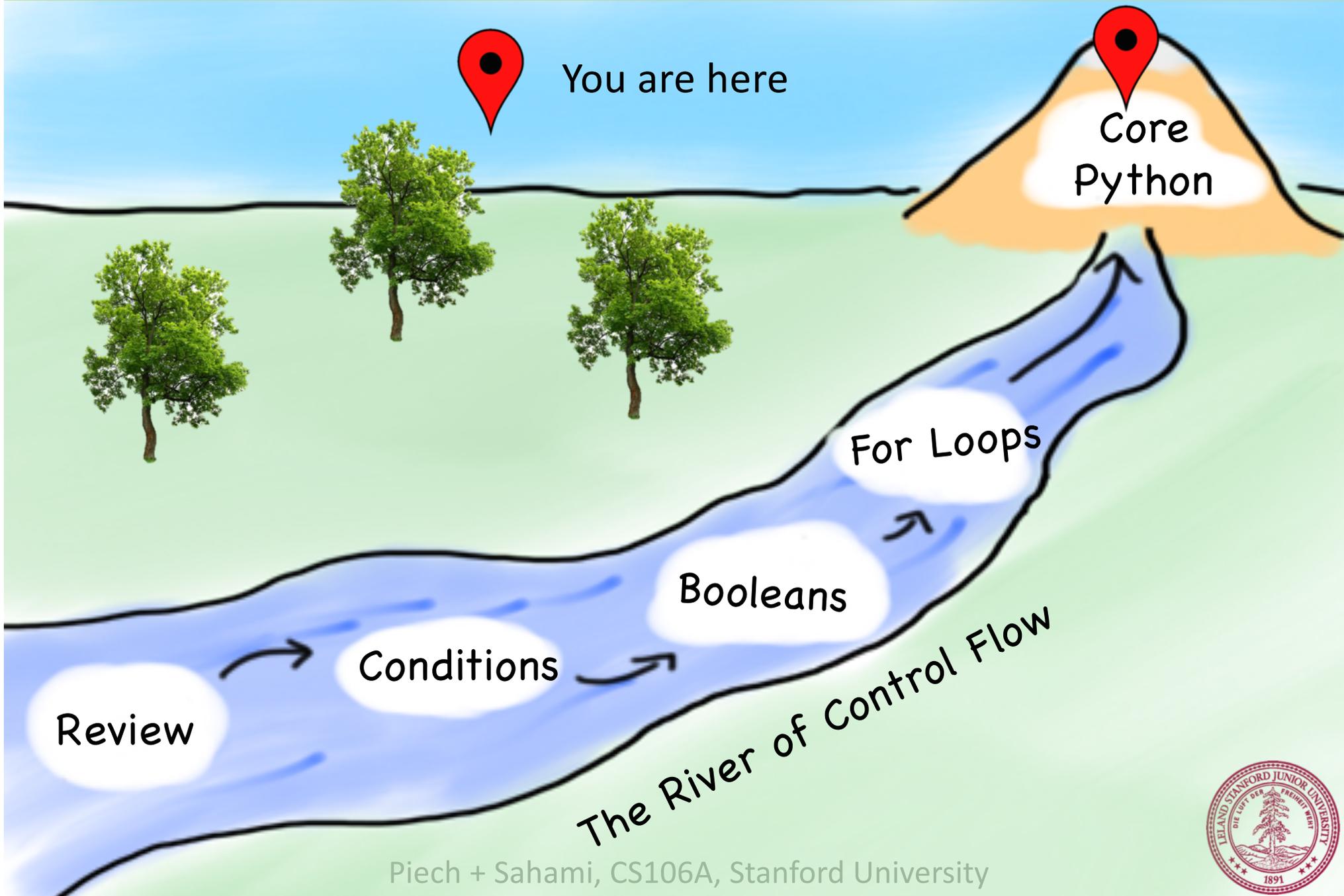


That's all

```
def main() :  
    for i in range(999999):  
        print("You rock!")  
        print("See you on Monday")
```



Today's Route



Today's Goal

1. Be able to use For / While / If in Python

