Objectives

- Wrap up indefinite loops
- Text process, manipulation
 - > String operations, processing, methods

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Review

- How do you tell Python to make decisions in code?
 - What are the different ways to express these decisions?
- What is a definite loop? What is an indefinite loop?
- What is the syntax for writing an indefinite loop?
- Which is more powerful—a for loop or a while loop? Why?

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Problem

- We are grading a science fair.
- There is different criteria for winning first place, depending on what grade you are.
- Given the variables scienceScore and grade
 - Write a condition that will evaluate to True if (and only if) the student's score is above the first place threshold of 60 points and the student's grade is 8.
 - Otherwise, the condition should evaluate to False

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Problem

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scienceScore > 60 and grade == 8

while Loops: comparing use of break

```
# have to look inside loop to
# condition says when loop
                                 # know when it stops
# will continue
                                 while True :
x=eval(input("Enter number:"))
while x \% 2 != 0:
                                    x = eval(input("Enter number:"))
  print("Error!")
                                    if x \% 2 == 0:
                                                "breaks" out of a loop
                                       break
  x = eval(input("Enter))
              number: "))
                                    print("Error!")
print(x, "is an even number.")
                                 print(x, "is an even number.")
   Says when to keep going
                                          Says when to stop
                                      Using break statements:
                                          Best when loop has to
                                          execute at least once.
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                                                                 5
```

Flipping Coins

 Problem: How many flips does it take to get 3 consecutive heads?

consecutiveHeads.py

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Motivation: Text Processing

- Mostly focused on numbers so far
 - > A little on graphics
- We can manipulate strings to do useful work
 - ➤ Web search: finding most relevant documents to a query
 - > Analyzing web logs (who is looking at my web page?)
 - ➤ Many, many others
- Today's Focus: the Str data type and what you can do with them

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Strings: **str**

- Used for text
- Indicated by double quotes "" or single quotes "
 - ➤ In general, I'll use double quotes
 - ➤ Empty string: "" or "
- Use triple quotes """ for strings that go across multiple lines

```
"""This string is long.
Like, really, really long"""
```

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STRING OPERATIONS

String Operations

Operand	Syntax		Meaning
+	str1 +	str2	Concatenate two strings into one string
*	str *	num	Concatenate string num times

• Examples:

```
>"I feel " + "sleepy"
```

- Evaluates to "I feel sleepy"
- > "Oops! " * 3
 - Evaluates to "Oops! Oops! "

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Recall lab 0

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String Comparisons

• Same operations as with numbers:

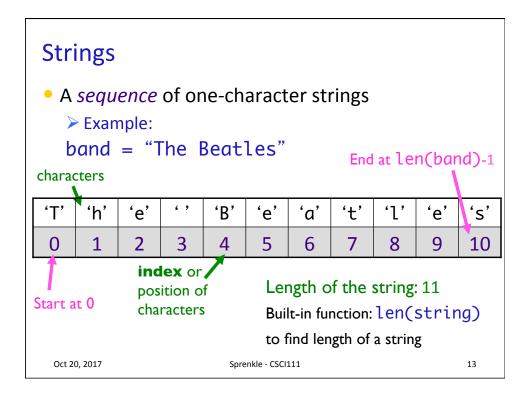
```
> ==, !=
> <, <=
> >, >=
}
Alphabetical comparison
```

• Use in conditions in **if** statements

```
if courseChoice == "CSCI111":
    print("Good choice!")
else:
    print("Maybe next semester")
```

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Sprenkle - CSCI111 string_compare.py12



Iterating Through a String

Use a **for** loop to iterate through *characters* in a string
 string of length 1

for char in string:
 print(char)

Read as "for each character in the string"

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Midterm Grade Calculation

- 50% Exam 1
- 50% Labs

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Broader Issue: Self-Driving Cars

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Broader Issue: Self-Driving Cars

- Self-driving cars: love 'em or loathe 'em
 - As a passenger?
 - > As a driver (or passenger) in another car?
 - > As a pedestrian?
- What are the tradeoffs of self-driving cars?
 - What guarantees about the cars would you want from the company/government?
 - Are there situations that would be particularly difficult for software to handle that a person would be better equipped to handle?
- What should the next DARPA challenge be?
- What problem does the ethical knob attempt to solve?
 - Is the "ethical knob" a good solution?

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Looking Ahead

Lab Prep Assignment: Tuesday (in progress)