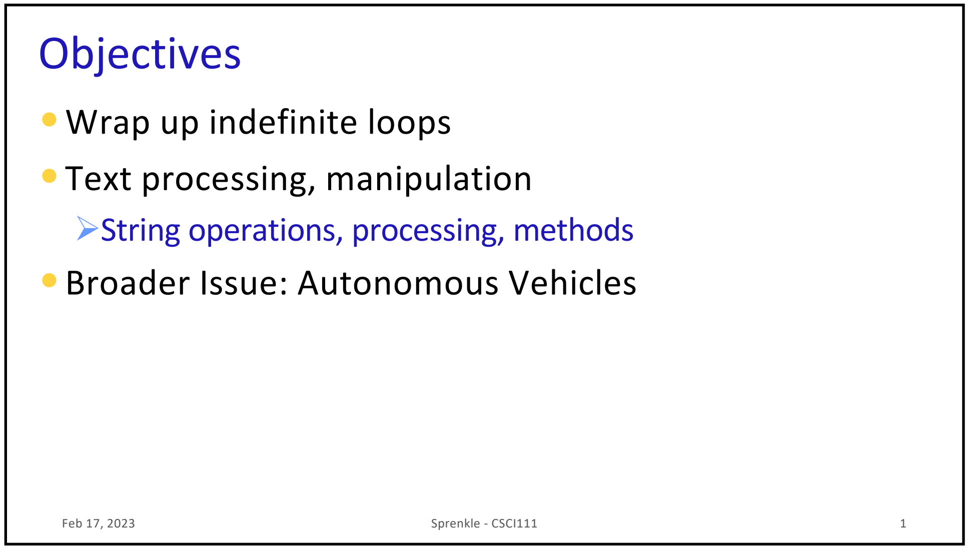
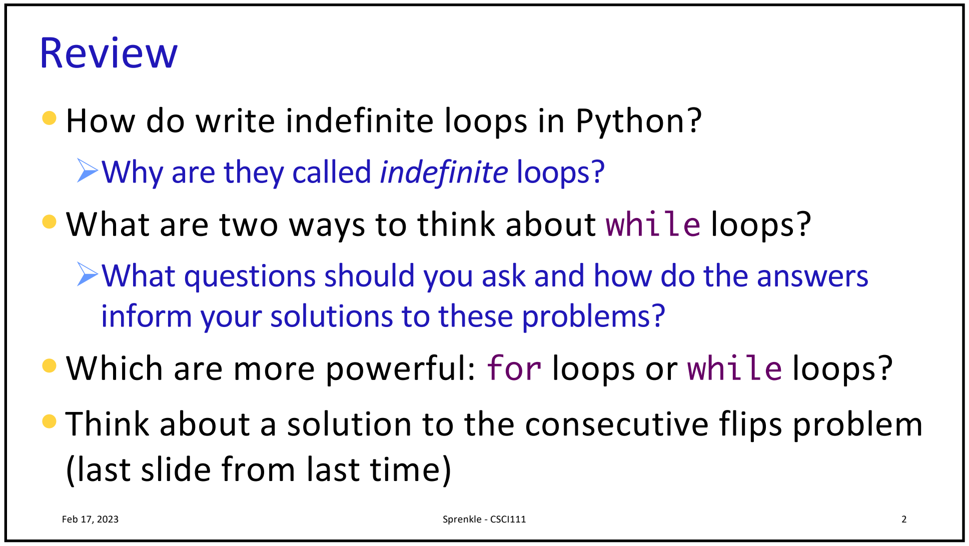


Objectives

- Wrap up indefinite loops
- Text processing, manipulation
  - ➢String operations, processing, methods
- Broader Issue: Autonomous Vehicles



Review

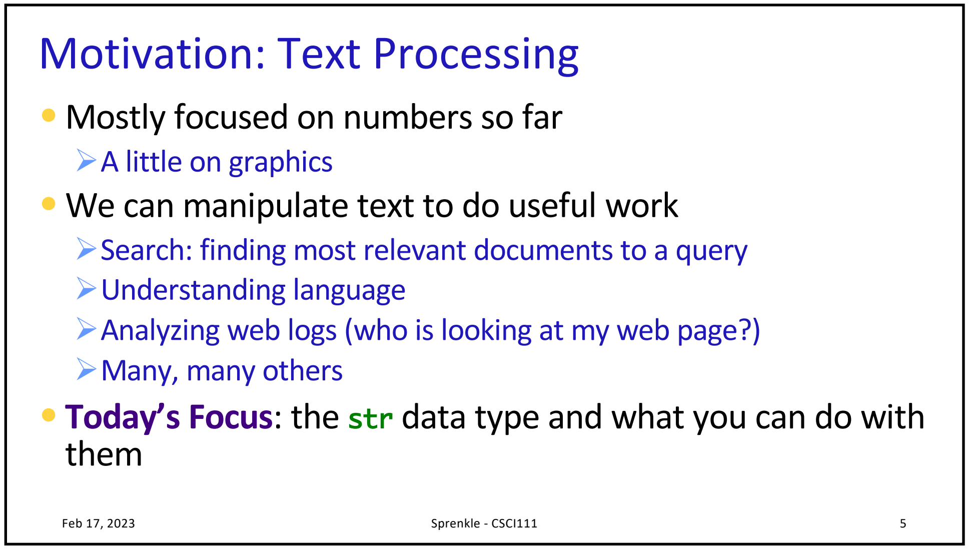
- How do write indefinite loops in Python?
  - ➢Why are they called *indefinite* loops?
- What are two ways to think about `while` loops?
  - ➢What questions should you ask and how do the answers inform your solutions to these problems?
- Which are more powerful: `for` loops or `while` loops?
- Think about a solution to the consecutive flips problem (last slide from last time)

Flipping Coins

- Problem: How many flips does it take to get 3 consecutive heads?
    - How can we simulate flipping a coin?
- Recap:
    - Have the *game* module
        - `flipCoin()` and constants for `HEADS` and `TAILS`
- Now:
    - Write solution using sentinel design pattern
    - write solution using a `while True` loop and `break`

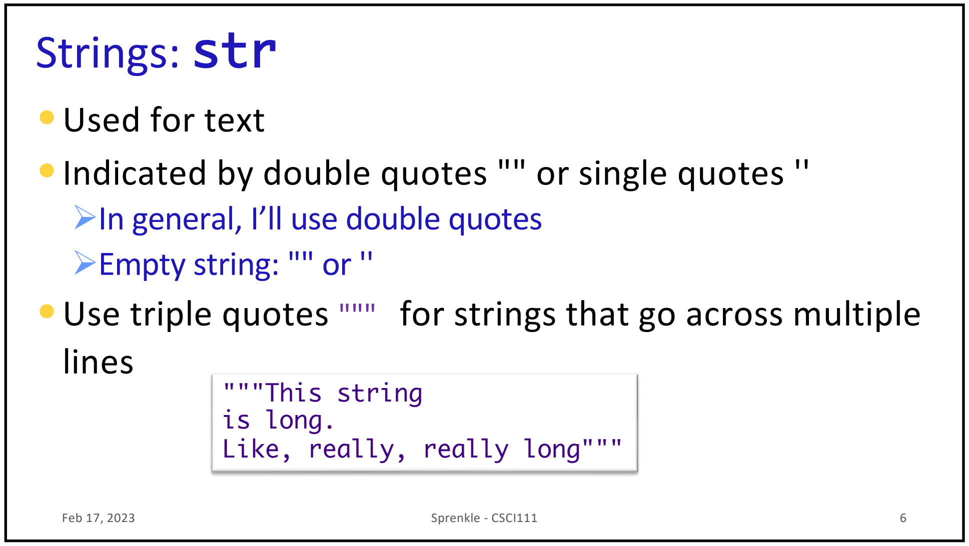
`game.py` `consecutiveHeads.py`

TEXT PROCESSING



Motivation: Text Processing

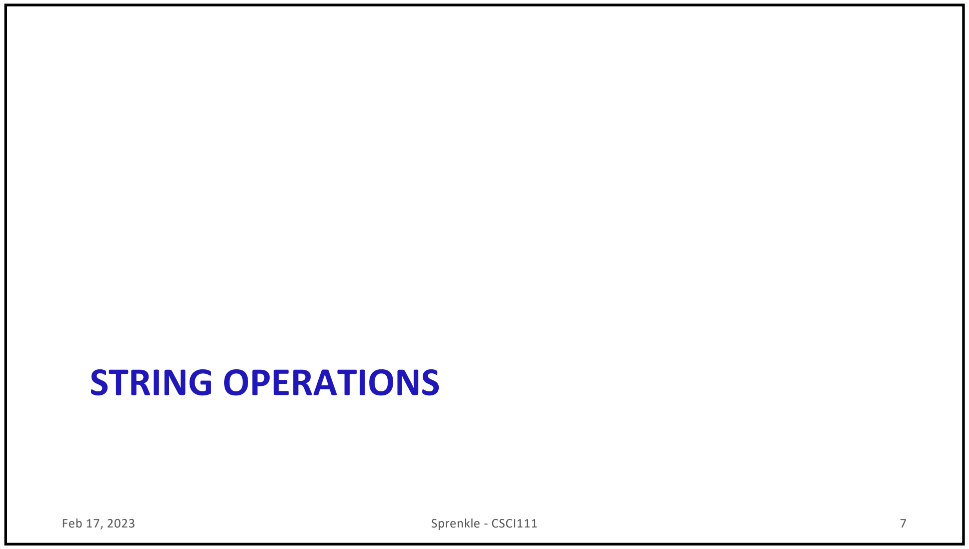
- Mostly focused on numbers so far
  - A little on graphics
- We can manipulate text to do useful work
  - Search: finding most relevant documents to a query
  - Understanding language
  - Analyzing web logs (who is looking at my web page?)
  - Many, many others
- **Today's Focus**: the `str` data type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



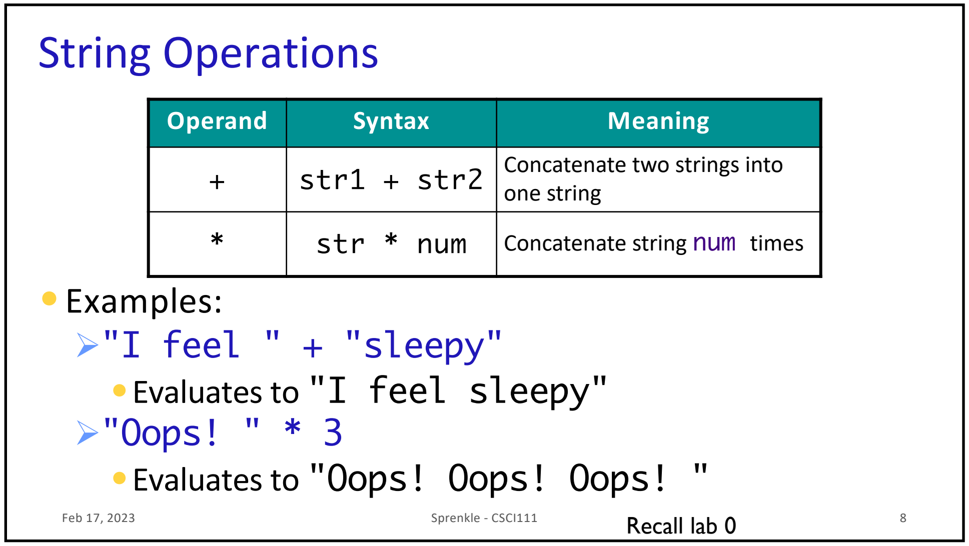
Strings: `str`

- 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"""
```



STRING OPERATIONS

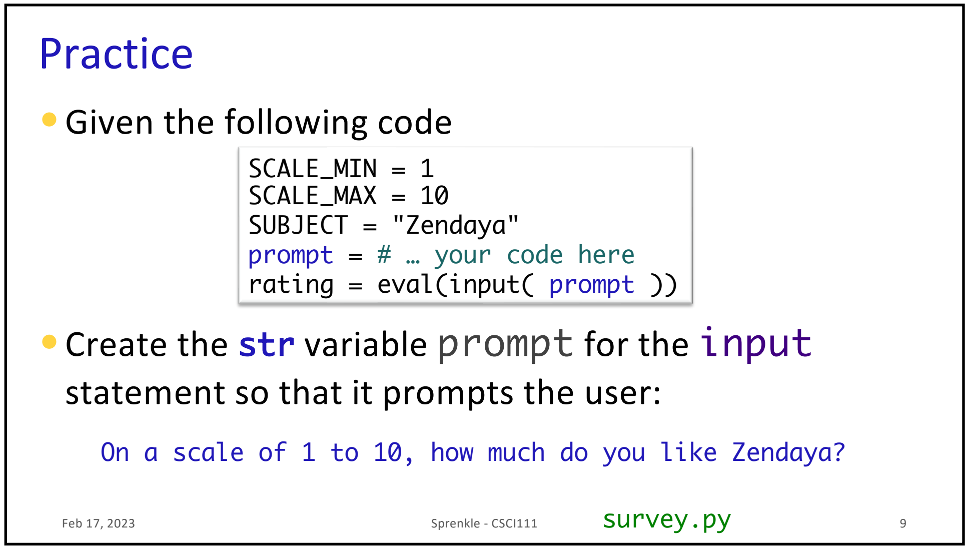


String Operations

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! Oops! "`

Recall lab 0



Practice

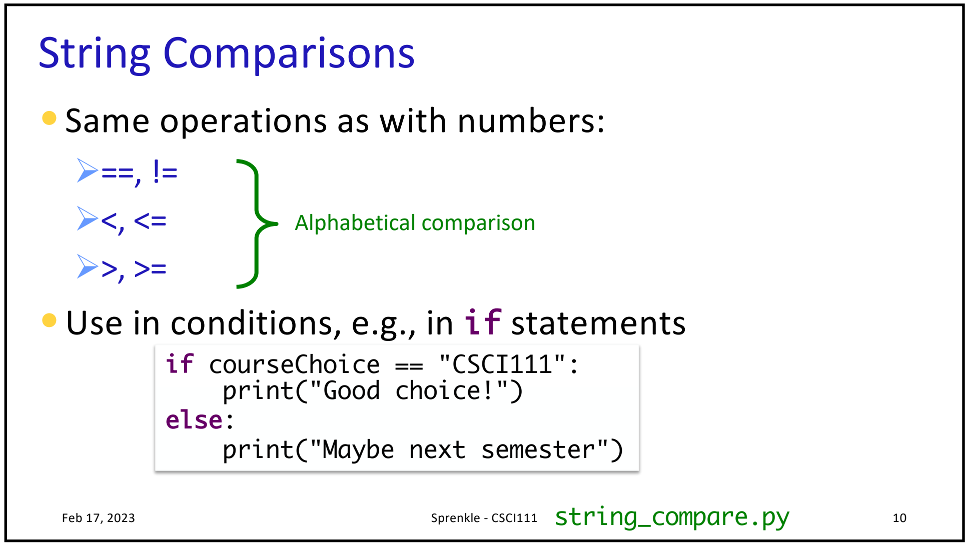
- Given the following code

```
SCALE_MIN = 1
SCALE_MAX = 10
SUBJECT = "Zendaya"
prompt = # … your code here
rating = eval(input( prompt ))
```

- Create the **`str`** variable `prompt` for the `input` statement so that it prompts the user:

```
On a scale of 1 to 10, how much do you like Zendaya?
```

survey.py



String Comparisons

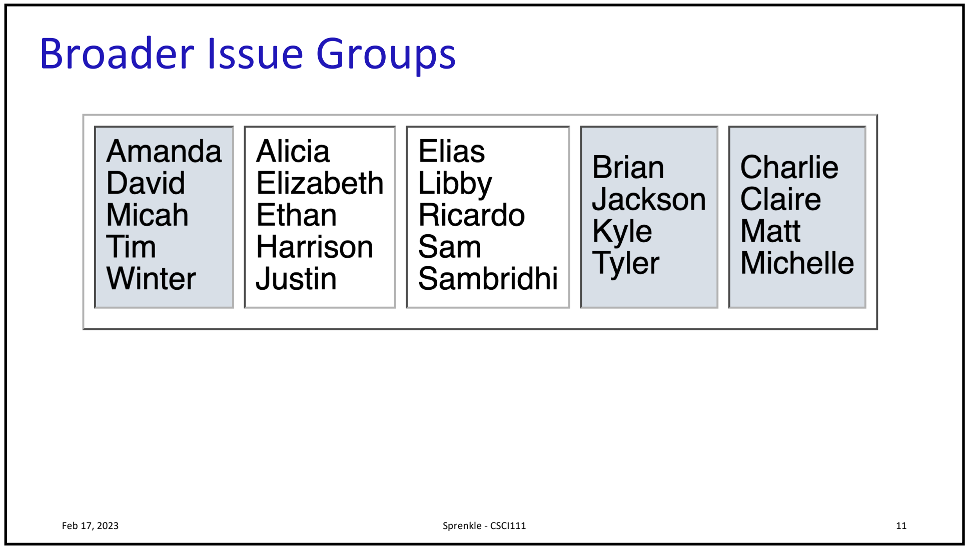
- Same operations as with numbers:
  - ==, !=
  - <, <=
  - >, >=

Alphabetical comparison

- Use in conditions, e.g., in **`if`** statements

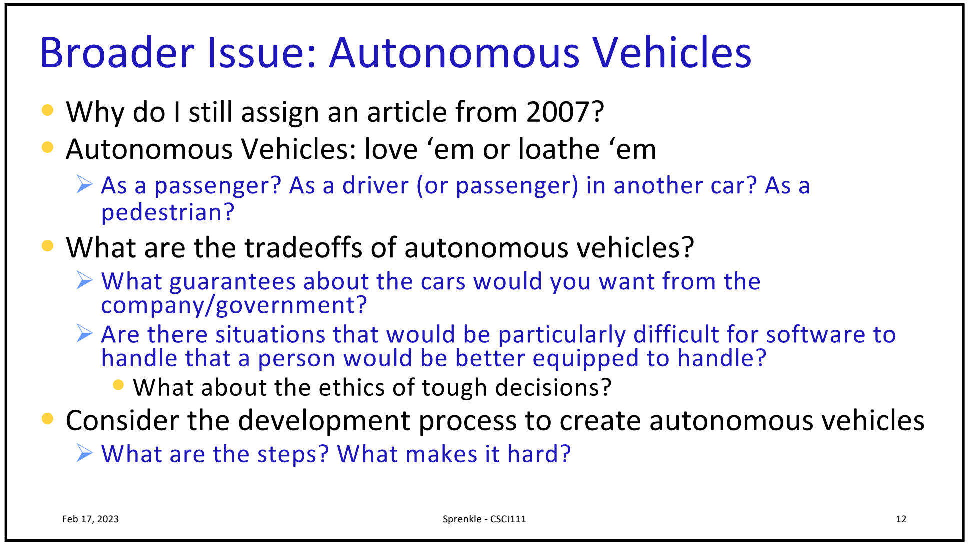
```
if courseChoice == "CSCI111":
    print("Good choice!")
else:
    print("Maybe next semester")
```

string_compare.py



Broader Issue Groups

Amanda	Alicia	Elias	Brian	Charlie
David	Elizabeth	Libby	Jackson	Claire
Micah	Ethan	Ricardo	Kyle	Matt
Tim	Harrison	Sam	Tyler	Michelle
Winter	Justin	Sambridhi		



Broader Issue: Autonomous Vehicles

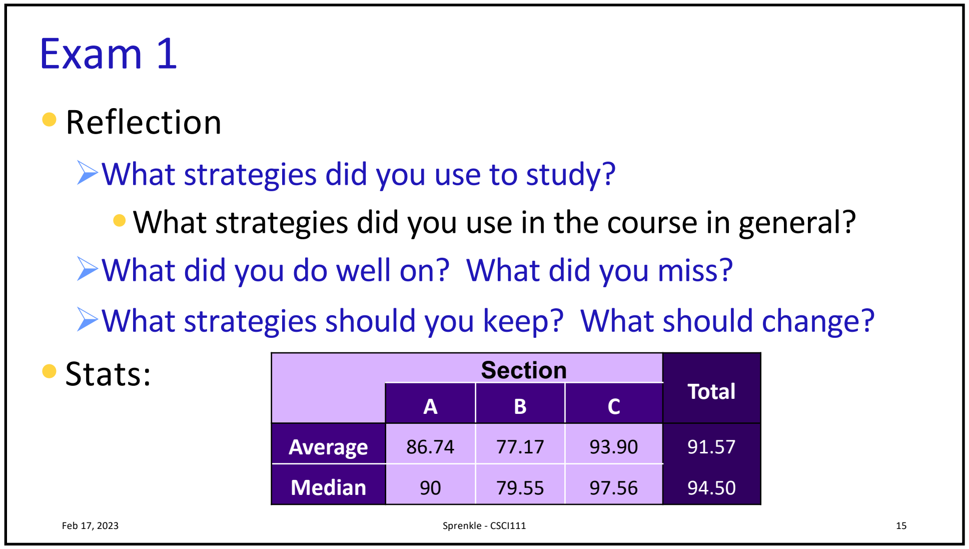
- Why do I still assign an article from 2007?
- Autonomous Vehicles: love ‘em or loathe ‘em
  - As a passenger? As a driver (or passenger) in another car? As a pedestrian?
- What are the tradeoffs of autonomous vehicles?
  - What guarantees about the cars would you want from the company/government?
  - Are there situations that would be particularly difficult for software to handle that a person would be better equipped to handle?
    - What about the ethics of tough decisions?
- Consider the development process to create autonomous vehicles
  - What are the steps? What makes it hard?

Broader Issue: Autonomous Vehicles

- Development Process
  - Writing code
    - Breaking complex problem into smaller pieces
    - Iteration
  - Testing code – safety-critical system
    - Iteration
  - Dealing with changing conditions
    - Emphasis on “soft”, easily changed code
  - Dealing with other systems
    - Need a common API

Midterm Grade Calculation

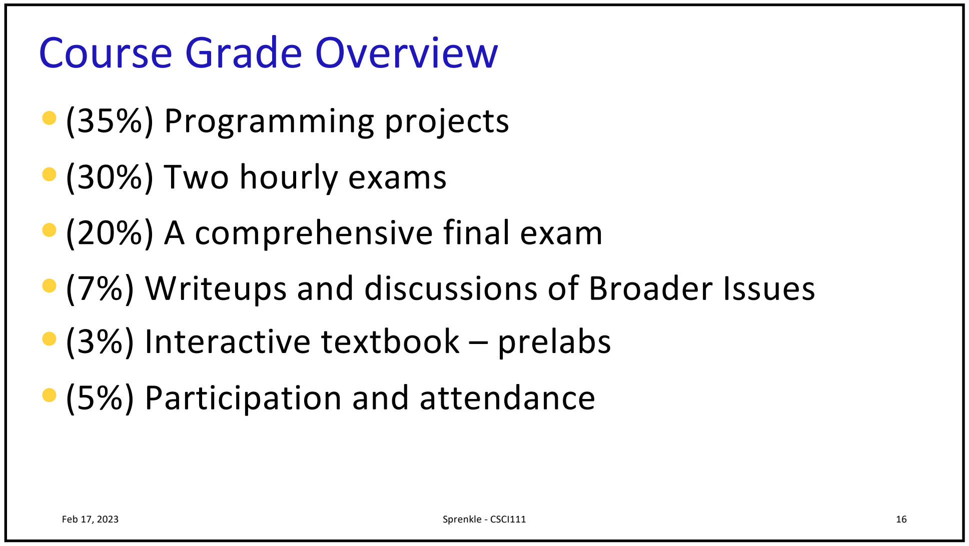
- 50% - Exam 1
- 50% - Labs



Exam 1

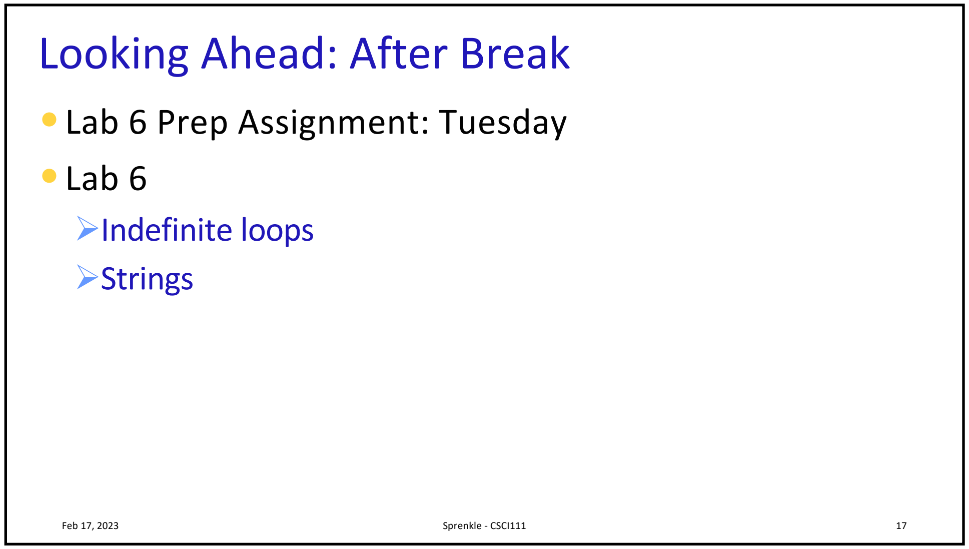
- Reflection
  - ➢What strategies did you use to study?
    - What strategies did you use in the course in general?
  - ➢What did you do well on? What did you miss?
  - ➢What strategies should you keep? What should change?
- Stats:

	Section			Total
	A	B	C	
Average	86.74	77.17	93.90	91.57
Median	90	79.55	97.56	94.50



Course Grade Overview

- (35%) Programming projects
- (30%) Two hourly exams
- (20%) A comprehensive final exam
- (7%) Writeups and discussions of Broader Issues
- (3%) Interactive textbook – prelabs
- (5%) Participation and attendance



Looking Ahead: After Break

- Lab 6 Prep Assignment: Tuesday
- Lab 6
    - Indefinite loops
    - Strings