

Lecture 22:

# MIDTERM REVIEW

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CSC111: Introduction to CS through Programming

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# Outline

- Jordan-led review and some sample problems
- Administrative details
- “Ask Me Anything” (30 min)

# Recap: information you should review

- Basic hardware (processor, RAM, hard drive, etc.)
- Data types (`int`, `float`, `string`, `bool`, `list`, `dict`) and the operations they support
- Familiar functions: `print`, `range`, `eval`, `input`
- Exceptions and how to debug them
- Conditional statements
- Loops (both `for` and `while`)
- Defining / calling functions

# Recap: stuff you should be able to do

- Define terms
- Describe what a function or line of code does
- Read a snippet of code and find / correct **common errors**
- **Trace the execution** of a short program, including functions that take in parameters and return values
- Write a **function** from a given description

# Example problems: hardware

- Describe the piece of hardware pictured:
  - what is it **called**?
  - what does it **do**?



# Example problems: data types

- What **data type** is **x** in this expression?

$$x = 3$$

# Example problems: **data types**

- What **data type** is **x** in this expression?

**x** = "Boo!"

# Example problems: data types

- What **data type** is **x** in this expression?

```
x = ["ghost",
      "bat",
      "pumpkin"]
```

# Example problems: **data types**

- What **data type** is **x** in this expression?

“bat” in x

# Example problems: numeric operations

- What is the result the following expression?

$$9 + 3$$

# Example problems: numeric operations

- What is the result the following expression?

$$9 + 3.0$$

# Example problems: numeric operations

- What is the result the following expression?

$$9 \quad / \quad 3$$

# Example problems: numeric operations

- What is the result the following expression?

9   //   3

# Example problems: numeric operations

- What is the result the following expression?

$$9 \% 3$$

# Example problems: **string operations**

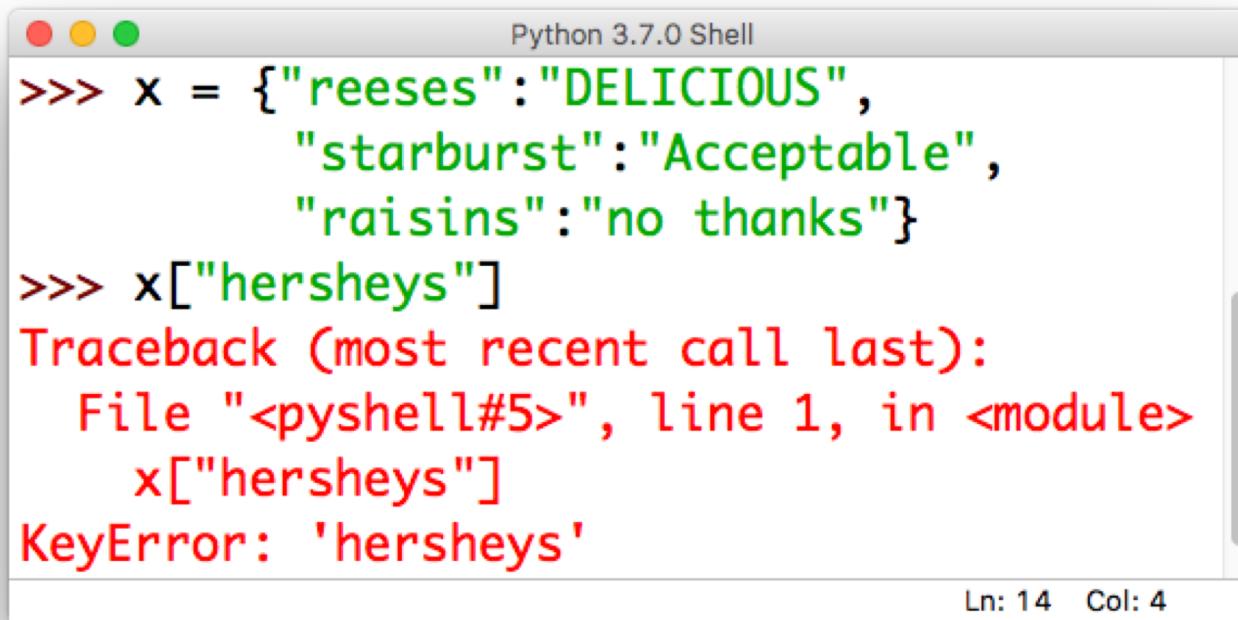
- Write an expression that returns the value of a string **x** with all instances of the letter “o” replaced with “oOo”

# Example problems: **familiar functions**

- Name 3 built-in python **functions**,  
and **describe** how they work

# Example problems: exceptions

- Describe what the following **Exception** is telling you about the mistake in the corresponding code.



The image shows a screenshot of the Python 3.7.0 Shell window. The title bar reads "Python 3.7.0 Shell". The shell displays the following code and its execution:

```
>>> x = {"reeses": "DELICIOUS",
         "starburst": "Acceptable",
         "raisins": "no thanks"}
>>> x["hersheys"]
Traceback (most recent call last):
  File "<pyshell#5>", line 1, in <module>
    x["hersheys"]
KeyError: 'hersheys'
```

At the bottom right of the window, there is a status bar with the text "Ln: 14 Col: 4".

# Example problems: reading code

- Describe the output of the following script:

```
1 halloween_stuff = {"ghost":3, "bat":10, "pumpkin":5}
2
3 for item, num in halloween_stuff.items():
4
5     if num < 6:
6         print(num * item)
7     else:
8         print("Too many", item+"s")
```

# Example problems: user input

- Consider the following script:

```
1 from random import choice
2
3 num_houses = int(input("How many stops? "))
4
5 for n in range(num_houses):
6
7     print("House", n, "-", choice(["TRICK", "TREAT"]))
```

- What happens when the user enters the value 3?

# Example problems: user input

- Consider the following script:

```
1 from random import choice
2
3 num_houses = int(input("How many stops? "))
4
5 for n in range(num_houses):
6
7     print("House", n, "-", choice(["TRICK", "TREAT"]))
```

- What happens when the user enters the value 3.0?

# Example problems: user input

- Consider the following script:

```
1 from random import choice
2
3 num_houses = int(input("How many stops? "))
4
5 for n in range(num_houses):
6
7     print("House", n, "-", choice(["TRICK", "TREAT"]))
```

- What happens when the user enters **the value three?**

# Example problems: writing functions

- Define a function called `printInfo(...)` that takes in a value, prints out its data type, and then prints the following:
  - if the value was a string, prints out the length
  - if the value was a list or dictionary, prints out the number of items
  - if the value was a dictionary, prints out the keys

# Administrative details

This is a  
MIDTERM EXAMINATION  
prepared for

**CSC111: Introduction to Computation  
through Programming**

as taught by R. Jordan Crouser in Fall 2018.

The following materials are **permitted** while taking this examination:

- a single sheet of your own notes (handwritten, double-sided)
- blank scrap paper (provided)

**HONOR CODE:**  
**No other resources are permitted during this exam.**

This includes (but is not limited to):  
homework solutions, lecture notes, textbooks, online materials,  
tutors, teaching assistants, and other students.

YOUR NAME: \_\_\_\_\_

# Administrative details

- The exam will begin promptly at 11am: arrive on time
- It will end at 12:05pm
- You will turn your handwritten sheet of notes (as well as any scrap paper) with your exam

# Ask me anything

**What lingering questions do you have?**



