

More on Loops

CS 8: Introduction to Computer Science, Winter 2019
Lecture #8

Ziad Matni, Ph.D.
Dept. of Computer Science, UCSB

Administrative

- Hw04 – due today
- **No homework this week**
- Lab04 starts tomorrow (but is due Monday)
- You can check old homework on GradeScope
- Midterm Exam #1 is **Wednesday!!!**

Yaaaay!

Midterm Exam – Special Office Hours

- For this week ONLY, I'm changing my office hours from Wed 1 – 2:30 to:
- **Tuesday 10:30 AM – noon**
- No office hours (this week) on Wednesday

Midterm #1 Exam

- **Feb. 6th 9:30 AM – 10:45 AM**
- In **THIS** classroom (unless you are a DSP student)
- Come **10 MINUTES EARLY**
- **CLOSED BOOK!** But you can bring **1 page of notes**
 - Single-side only, 8.5" x 11"
 - Hand-written *or* computer printed is OK!
 - Must turn it in *with the exam* when done
 - No calculators / cell phones / any type of computer
- Bring your **UCSB ID** with you. **NO EXCEPTIONS.**

Midterm #1 Exam

WHAT'S ON IT?!

- **Everything**
 - Review ALL lectures
 - Review ALL readings
 - Review ALL labs
 - Review ALL homework

Midterm #1 Exam

SAMPLE QUESTIONS?!?!?!?!?!?!?!!

- Yes! See Study Guide on the class website!

Lecture Outline

- More Loops!!!

Example for loop using string

- What do you think this code does?

```
s = "Take me home, country roads"
for c in s:
    if c in ('a', 'e', 'i', 'o', 'u'):
        print("Vowel found: ", c)
```


Example for loop using string

- What do you think this code does?

```
s = "Take me home, country roads"
t = 0                                # Set-up for an accumulated sum
for c in s:
    if c in ('a', 'e', 'i', 'o', 'u'):
        t = t + 1 # Accumulated sum
print("There were", t, "vowels found")
```

Example for loop using string

- What do you think this code does?

```
s = "TAKE ME HOME, COUNTRY ROADS"
t = 0                                # Set-up for an accumulated sum
for c in s:
    if c in ('a', 'e', 'i', 'o', 'u'):
        t = t + 1 # Accumulated sum
print("There were", t, "vowels found")
```

Class Exercise

Get together with 2 or 3 other people around you and answer this question.

You can use your notes from last time. You can use your computers:

A prime number is a positive, non-zero integer that cannot be divided by any other positive, non-zero integer, except ONE (1) and ITSELF.

For example, 5 is a prime number, but 6 is not (it's divisible by 2 and by 3).

The first five prime numbers are: 2, 3, 5, 7, and 11

- a) Write a Python function, **prime()**, that takes an argument **n** and returns either True (if **n** is a prime number) or False (if **n** is NOT a prime number).
- b) Write Python code that tests **prime()** with numbers from 2 to 3,000 (inclusive) and prints out all the prime numbers in that range.

BONUS POINTS: print out the results one line, separated by commas

Class Exercise

```
def prime(n):  
    p = True  
    for i in range(2, n):  
        if n % i == 0:  
            p = False  
    return p
```

Class Exercise

```
def prime(n):  
    p = True  
    for i in range(2, n):  
        if n % i == 0:  
            p = False  
    return p  
  
for i in range(2, 3000):  
    if prime(i):  
        print(i)          BONUS: print(i, ", ", end="")
```

Simpler Drawing By Repetition

- *Drawing a **square** using Turtle and loops!*

```
def drawSquare2(myTurtle, sideLength):  
    for i in range(4):  
        myTurtle.forward(sideLength)  
        myTurtle.right(90)
```

More Drawing Abstraction

- *Drawing a **triangle** using Turtle and loops!*

```
def drawTriangle(myTurtle, sideLength):  
    for i in range(3):          # draw 3 sides, not 4  
        myTurtle.forward(sideLength)  
        myTurtle.right(120)    # 120° × 3
```

More Drawing Abstraction

- *Drawing any regular polygon using Turtle and loops!*

```
def drawPolygon(myTurtle, sideLength, numSides):  
    turnAngle = 360 / numSides  
    for i in range(numSides):  
        myTurtle.forward(sideLength)  
        myTurtle.right(turnAngle)
```


Questions?

YOUR TO-DOs

- ☐ Study for your midterm!!!
- ☐ Do **Lab4** (lab tomorrow ; turn it in by next **MONDAY**)
- ☐ Get 7-8 hours of sleep (*your brain cells will thank you*)