# Welcome to CS61A Lab 4 Sect. 29/47 :D

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OH: Tu, Th 4-5pm 411 Soda



Previous: Midterm (functions) **>>>**

**Today: Lists (data) >>>**

Next stop: Linked lists, mutable data, and dictionaries

# Anuncios

- Project 2 due 10/9, I believe. It will be out soon.
- HW3 is due tomorrow 10/1. It is hard, so get started!
- I made a place where you can book private appointments with me! dicksontsai.com/meet (idea from Prof. DeNero)
- Reminder: My OH are Tuesdays, Thursdays 4-5 PM in Soda 411

# Midterm Common Patterns

- You can write as much as you want on the test. E.g. you can write the expressions you are currently evaluating to the left of the env diagram so you won't get lost.
- A quick way to check your answer is to run it with the doctest examples or other simple examples. That way, you guess can be 'more educated'
- The class as a whole did well on WWPP and env diagrams, but had much more trouble on the coding problems. Practice! ☺
  - There is no 'formula' for you to follow. Try to understand your tools intuitively, e.g. when is a func useful, etc.

# Tip of the Day [Daily double!]

- Test-driven development
  - Find yourself using print/python3 –i file.py a lot? Here are some suggestions you can try out.
  - If you don't understand a problem, make tests for it. Having edge cases written especially helps.
- Practice running through code in your head
  - Great for exams and programming interviews!
  - …but it's not a skill you acquire for free. You must develop those skills.
  - This skill + regular testing (and informative test output) = success!

# Directions

1. Access the lab at cs61a.org
2. Please do not skip the WWPP questions. You should be actually typing the code into the interpreter.
3. My lab assistants and I will make two passes:
    1. one pass where you will explain the WWPP problems
    2. one pass where you have to walk us through how you solve a problem from this lab/HW3.
4. Must submit: Q6, Q7, Q11, Q12 in `lab04.py`

# To get to my website

- dicksontsai.com/cs61a
- OR
  - Go to cs61a.org
  - Click the “Staff” link
  - Click my name
- Go to Discussion for discussion materials

- You will find my slides to discussion/lab. They will be different, because I add more content along the day based on student feedback.

# Optional Conceptual Questions (Friday 9/26 lecture)

1. What are the two behaviors that all 'sequences' must have?
2. How do lists conform to the sequence abstraction?
3. How do for loops work? State the rules, and provide an example.
4. How are for loops different from while loops?
5. What does it mean to 'unpack' a sequence? Is `x, y = [1, 2]` an instance of sequence unpacking?
6. Print -5 to 10 using a for loop and range
7. Construct a list from -5 to 10 using a list comprehension.
8. Let's tweak our list comprehension a bit. Construct a list of squares from -5 to 10. i.e. [25, 16, 9, 4, 1, 0, 1, 4, …, 100]
9. Now try creating a list with the same numbers, but with the odd ones removed, i.e. [16, 4, 0, 4, 16, …, 100]
10. Try using keep_if, apply_to_all, and reduce on the list you just created

# Optional Conceptual Questions (Monday 9/29 lecture)

1. What is the closure property of data types? Give a real life example.
2. Draw a box-and-pointer diagram for [[1, [2, [[3]]], 4]], [5, 6]]
3. Draw out the tree for [[1, [2], 3, []], [[4], [5, 6]], 7]
4. How do I get the 3rd element of [1, 2, 3, 4, 5]?
5. How do I get the last two elements of [1, 2, 3, 4, 5]?
6. T/F: All trees are binary trees.
7. How do I check if 'w' is in 'tungsten'? Write out the Python expression.
8. Dictionaries are _____ collections of _____.
    1. What are the restrictions on dictionary keys?
9. I have an empty dictionary `a = {}`
    1. How do I add values to it? Try `a[2] = 5`
    2. How do I look up values from it? Try `a[2]`. Now try `a[3]`. What's the difference?
    3. How do I re-write the value `a[2]`?