CSCI 141

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Lecture 26

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Review

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- All material for the exam has been presented: anything new is bonus extra fun stuff that won't be tested.
- Wednesday and Friday will be review; no quizzes, attendance is not required. Bring your questions!

Today

- Review: your questions
- Review: a few "greatest hits"?
- Review: solution code for A4 and A5?
- List comprehensions?

How to Study

- **Solve problems.**
- Sources of problems:
    - Quizzes (many q??.py are posted alongside lectures)
    - Worksheets
    - ABCD exercises
    - Homework, Midterm
    - Sample problems (to be released tonight)

What to study

- **The final exam is cumulative.**
- A comprehensive study guide can be generated by concatenating all **Goals** slides.

Pre-midterm

hardware and interactions
pseudocode / algorithms
comments
data types and conversions: int, float, str, bool
function calls; arguments and return values
variables
math, comparison, and logical operators, precedence
statement vs expression
binary conversion
if/elif/else, nesting
while loop syntax and behavior
importing modules
for loops, range

These are my notes on what to write problems about, generated from the goals slides.

Post-midterm

defining functions with and without return values and parameters
docstrings, specs, pre/postconditions
local variables, variable scope; parameters are local variables
tuples - unpacking, packing, return values and parameters
function composition
strings: operators, len, indexing, negative indices, slicing, in, lexicographic ordering
string methods: upper, lower, find, replace
lists: same stuff as strings
lists: modifying using assignment, append, extend, concatenation, insert, remove, del
lists are mutable; variables hold references:
    multiple variables can refer to the same object
    you can pass a reference to a mutable object into a function
dictionaries: creation, assignment/indexing, in, del; iterating over keys and values
files: open function, "r" vs "w"
    read(), read(size), readlines(), write(string), seek(pos)
    iterating over a file object

Greatest Hits: A5 Written

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Suppose `len(a)` is 4. Give the output of each print function call in the following code. If a given line causes an error, write ERROR and assume that line is skipped going forward.

```
a.append(a[-2:])
print(len(a))
a.extend(a)
print(len(a))
```

Greatest Hits: A5 Written

Which of the following types can be used as keys of a dictionary? Check all that apply:

- [ ] str
- [ ] int
- [ ] float
- [ ] list
- [ ] dict

Midterm Exam: Greatest Hits

- 2: syntax errors
- 3.4: 4*5+9**2
- 3.7: float(str(float(int(4.7) + 4) - 20)) // 3
- 5: day/mark
- 9: while x <= 5
- 15: average scores

Problem-solving

```
def the_snap(avengers):
    """ Remove a randomly chosen half of the
        elements from the given list of avengers
    """
```

Problem-solving

```
def sort(a_list):
    """ Return a new list containing the same
    elements as a_list, but in sorted order
    Pre: all elements can be compared with <
    """
```