

Exam Review, While Loops

Rose-Hulman Institute of Technology
Computer Science and Software Engineering

Check out 11-WhileLoops from SVN

Outline

- Exam Review
- Loops

Exam 1

- Friday in class
- Format: Paper Part and Computer Part, approx. equal weight

Resources for Paper Part

- Textbook
- Notes sheet:
 - Single 8.5 by 11 page (both sides)
 - Whatever you want on it
 - Prepare this carefully!

No
Sharing!

Q1

Resources for Computer Part

- Any printed or handwritten material you choose (notes, books, printouts, ...)
- Your computer, with power adapter and network cable
 - Computer and anything actually on it
 - Network, but only to access your own SVN repository and any material directly reachable from the CSSE 120 ANGEL and web sites for this term

Q2

Possible Topics for Exam 1

- Zelle chapters 1-7
- algorithm
- comment
- variable, assignment
- identifier, expression
- loop
 - definite (for)
 - counted (range function)
- phases of software development
- print, input
- import, math functions
- int, float, long, conversion
- strings (basic operations)
- character codes (chr, ord)
- lists (concatenation, slices)
 - list methods
 - indexing
- reading, writing files
- formatted output using format()
- using objects, graphics
- event-driven programming

Questions?

+2 extra-credit in-class quiz points if you sign up and attend

-5 in-class quiz points if you sign up and don't attend without informing me before noon on Sunday

Sunday, 3:30-5:30, Olin 257

Software Sunday Sign-up

Review: Definite Loops

- *Definite loop*: knows before the loop starts to execute the number of iterations of the loop body

Review: Definite loop over list

- `def printSquares(listOfNums):`
 - `for num in listOfNums:`
 - `val = num * num`
 - `print(val)`
- Useful when:
 - Only need to read from the list
 - Don't need the index (position) in the list

Review: Definite, *counted* loop

- `def squareEach(listOfNums):`
 - for `i` in `range(len(listOfNums))`:
 - `val = listOfNums[i] * listOfNums[i]`
 - `listOfNums[i] = val`
- Useful when:
 - Need to write to the list
 - Need the index (position) in the list for some other reason

Is This Loop a Definite Loop?

```
# Open the file
inputFile = open(inputFileName, 'r')

# Process each line of file
for line in inputFile:
    image = Image(imageCenter, line.rstrip())
    image.draw(win)
    time.sleep(delay)

win.getMouse()
inputFile.close()
win.close()
```

Indefinite Loops

- Number of iterations is not known when loop starts
- Is a conditional loop
 - Keeps iterating as long as a certain condition remains true
 - Conditions are Boolean expressions
- Typically implemented using *while statement*
- Syntax: **while <condition> :**
 <body>

Q3-4

While Loop Debugging

- A *pre-test loop*: Condition tested at the top of the loop
- Example use of while loops:

Nadia deposits \$100 in a savings account each month. Each month the account earns 0.25% interest on the previous balance. How many months will it take her to accumulate \$10,000?

- What's wrong with `moneyDeposit.py` ?

Q5

Infinite loops on purpose

- With **for** loops, we could make the program run for a really long time, but not forever.
- Create a very simple **while** loop that runs forever.

Break statement

- Let us break out of a loop in the middle
- Here's the pattern:
 - while True:
 - # Do some processing
 - if processingSaysToStop:
 - break
 - # Do some more processing

Start HW11
when done

Complete TODOs in `guessMyNumber.py`

Demo your program when you finish

Exercise: While Loops

Q6