

Objectives

- Software Qualities
- Problems with print
- Puzzles from Cyberspace

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Review

- How can I covert one primitive type to another primitive type?
- What is the short cut for adding 1 to a variable and saving it in that variable?
- String operators:
 - How do I concatenate two strings?
 - How can I concatenate a string x times?
- How do I put a tab in a string?

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Review

- Type conversion
 - Use type's *constructor*
- Shorthands, such as `x+=1`
- String operators
 - `+`: concatenate strings together
 - `*`: concatenate the string n number of times
- Escape Sequences
 - Example: `'\t'` → prints a tab

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Software Qualities


- Beyond functionality, what qualities do you like in software?
 - Web included

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Software Qualities

- Correct
- Efficient
 - Fast
 - Uses little memory
- Reliability
- Stability
- Robustness
- Secure
- Low cost
- Good support
- Usable 
 - Get what I need to do quickly
 - Pretty
 - ...
- Compatibility
- Portable (use anywhere)
- Maintainability

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Usability

- Want users to *like* to use your software
 - More revenue
 - Develop even better software
- How Apple makes money: best user interfaces → user buys products

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Usability Goals

- Pretty output, display, layout
 - Easy to read, understand, interpret
- Clear navigation
- Easy to perform frequent tasks
- Undoability
- Difficult to make irrecoverable errors



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Problem with print

- By default, `print` puts spaces in the output whenever there is a comma
- Example:

```
x = 13.54
print "You owe $", x, "."
```

Displays:

You owe \$ 13.54 .

Extra spaces

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Solution: using `str()`

- Recall: `str()` is constructor/converter function to convert other data types to strings
 - Example: `str(33) → '33'`
- Use constructor with the `+` (i.e., *concatenation*) operator when printing output
 - Gets rid of extra spaces you don't want.

```
print "You owe $" + str(x) + "."
```

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Another problem with print

```
SALES_TAX=.05 # the sales tax in VA
value = input("How much does your item cost? ")
with_tax = value * (1+SALES_TAX)
print "Your item that cost ($", value, ")",
print "costs $", with_tax, "with tax"
```

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sales_tax.py

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FORMATTING STRINGS

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Solution: Format Operator & Specifiers

- Format operator: `%`
- Format specifiers allow us to control how output is displayed to user
 - Right, left justification
 - Number of decimals to display

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Example using Format Operator

```

print "Your item that cost ($%.2f)" % value,
print "costs $%.2f with tax" % tax

```

Alternative:

```

print "Your item that cost ($%.2f) costs $%.2f with tax" % (value, tax)

```

Diagram labels:
 - **Formatting operator**: points to the % symbol in the first line.
 - **Format specifier**: points to the \$.2f in the first line.
 - **Replacement values**: points to the value and tax in the alternative line.

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Formatting Practice

- x = 10
- y = 3.5
- z = "apple"
- "%6.2f" % x
- "%6.2d" % x
- "%06.2f" % y
- "%+6.2f" % y
- "%-10s" % z
- "%5d %-7.3f" % (x,y)

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Four Puzzles in Cyberspace

- Context: Book *Code* v2 by Lawrence Lessig
- You read Chapter 2
 - Presents the problems, not the author's proposed solutions

Lida
Jean Paul
Anh
Will

Callie
Ola
Colin
Yates

Meng
Minh
Nick

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Four Puzzles from Cyberspace

- What are the four puzzles of cyberspace?
 - Favorite puzzle? Most interesting?
 - The most important to solve?
 - The hardest to solve?
- Do you consider Facebook to be "cyberspace"? If so, why? If not, how close is it?
- W&L administrators tried to regulate students use of juicycampus and acb
 - Why did they feel it should be regulated?
 - What types of regulation did they do? Was it effective?

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Four Puzzles from Cyberspace

- How many of you knew about MMOGs before reading this article?
 - How many of you participated in this or something similar?
 - What do people gain and lose by using an MMOG?
- Anybody maintain a blog?
- What is the effect of increased online social interaction on our real world social interactions?
- Every advancement in technology has positive and negative effects
 - What are the positive and negative effects of email? IM? Facebook?
- Internet cafés in NC/VA

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Relation to Class

- Problem solving through code

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