Announcements

• Reminders:
  – Program #1 due on 9/7 by 11:55pm
  – Briggs computer labs are up!
    • Look for an email early next week about if/when our class will move over to Briggs.
  – Tutors will be available starting Sept. 4th
    • Sun-Thurs 7-10pm in Briggs 019
  – Keep up with the Zybooks assignments
    • Posted on course website

Demo

• Code in Box.com folder – link on website
• For more information about string formatting, see Section 7.2 and 7.4 in Zybook

Terminology

• A literal is a piece of data that you type directly into your program's code.
  – Ex: 6, 9.25, "Blah blah blah"
• A variable is a placeholder for a piece of data.
• Every literal and variable in a program has a data type.
Comments

• Lines that Python ignores completely.
• Used to tell a reader of your program what the program is doing.
• For any line that has a # sign, Python will ignore everything to the right of the #.

End of Introductory Stuff!

• Key concepts: algorithms, variables, data types (int/float/string), comments, literals
• Python statements you should understand:
  - print
  - input
  - math calculations

The if Statement

Figure 4-1  A simple decision structure

Python syntax:

if condition:
  Statement
  Statement

• First line known as the if clause
  — Includes the keyword if followed by condition
  • The condition can be true or false
  • When the if statement executes, the condition is tested, and if it is true the block statements are executed. Otherwise, block statements are skipped
**if Statement Examples**

```python
if a < b:
    print("a is less than b")

if a > b:
    print("a is greater than b")

if a <= b:
    print("a is less than or equal to b")

if a >= b:
    print("a is greater than or equal to b")
```

**Boolean Expressions and Relational Operators**

- **Boolean expression**: expression tested by if statement to determine if it is true or false
  - Example: `a > b`
    - true if `a` is greater than `b`; false otherwise
- **Relational operator**: determines whether a specific relationship exists between two values
  - Example: greater than (`>`)
Code with an if-Statement

```python
# This program calculates your exam average.
exam1 = int(input("What is your first exam score? "))
exam2 = int(input("What is your second exam score? "))
exam3 = int(input("What is your third exam score? "))
average = (exam1 + exam2 + exam3) / 3
choice = input("Did you do the extra assignment? (yes or no)")
if choice == "yes":
    average = average + 5
print("Your exam average is", average)
```

Saved as exam-if.py in my code directory

The if-else Statement

```python
# This program calculates your exam average.
exam1 = int(input("What is your first exam score? "))
exam2 = int(input("What is your second exam score? "))
exam3 = int(input("What is your third exam score? "))
average = (exam1 + exam2 + exam3) / 3
choice = input("Did you do the extra assignment? ")
if choice == "yes":
    print("Your exam average is", average + 5)
else:
    print("Your exam average is", average)
```

Saved as exam-if-else.py in my code directory
Comparing Strings

- Strings can be compared using the == and != operators
- String comparisons are **case sensitive**
- Strings can be compared using >, <, >=, and <=
  - Compared character by character based on the ASCII values for each character
  - If shorter word is substring of longer word, longer word is greater than shorter word

```
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>77</td>
<td>97</td>
<td>14</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>a</td>
<td>r</td>
<td>y</td>
<td></td>
</tr>
</tbody>
</table>
```

Using String Comparisons

```python
# This program takes in 2 names and prints them out in alphabetical order

name1 = input("Enter name 1: ")
name2 = input("Enter name 2: ")

print("Here are the names, listed alphabetically.")
if name1 < name2:
    print(name1)
    print(name2)
else:
    print(name2)
    print(name1)
```

Saved as compareNames.py in my code directory

Practice

- Write a program that prompts a user for his or her age and prints out whether or not they are (legally) allowed to drink alcohol.

Next Time

- Nested Decision Structures
- if-elif-else Statement
- Do zybooks assignment
  - On course website