CSCI 141

Lecture 8:
Conditionals, continued:
nested and chained conditionals
Happenings

Tuesday, 4/23 – Peer Lecture Series: React Workshop
— 5 pm in CF 162

Tuesday, 4/23 – Artificial Intelligence Presents: Visual Recognition
— 6 pm in PH 228
Announcements

• A2 deadline moved to Wednesday of next week

• A3 will be out Monday as scheduled, due the following Wednesday 5/1

• Midterm exam is in 2 weeks: Friday 5/3
Goals

• Know how to use an `if` statement to conditionally execute a block of code.

• Know how to use an `if/else` statement to choose which of two code blocks to execute.

• Understand the behavior of the equality comparison operators (==, !) on non-numeric types.

• Understand how conditional statements can be nested to make decisions among more than two possibilities.

• Know how to use chained conditionals (`if/elif/else`)
Equality Comparisons

• The operators == and != check whether two values are equal or not.

• Unlike some operators (e.g., //), the concept of equality has meaning for some non-numeric types:

\[
\begin{align*}
4 &= 5 & \Rightarrow & \text{False} \\
"abc" &= "bcd" & \Rightarrow & \text{False} \\
"abc" &= "abc" & \Rightarrow & \text{True} \\
type(4) &= type(5) & \Rightarrow & \text{True} \\
5.0 &= 5 & \Rightarrow & \text{True}
\end{align*}
\]
Equality Comparisons

Lightning round!

10 == 4 + 6  => True

"abc" == "ab" + "c" => True

'abc' == "abc" => True

"Scott" == "scott" => False

(4+3 > 5) == (1.0 > 4) => False

int(5.6) != int(5.1) => False
Last time: **if** statement

```python
if isRaining:
    print("You should wear a raincoat!")
```

- **if** keyword
- a boolean expression (the condition)
- a colon:
- an indented **code block**: one or more statements to be executed if the boolean expression evaluates to **True**
Last time: if statement with an else clause

if isRaining:
    print("Wear a raincoat!")
else:
    print("Don’t wear a raincoat!")
Demo:
Get isRaining from the user
Demo:
Get isRaining from the user

• Update ifelse.py to ask the user whether it’s raining, and set the isRaining bool accordingly.
Today’s Quiz

• 3 minutes
Today’s Quiz

• 3 minutes

• Working with a neighbor: do your answers agree? (2 minutes)
Nested Conditionals

If/else lets you choose between two options.

What if there are more than two possibilities?

```python
# assume x and y are numbers
if x < y:
    print("x is less than y")
else:
    if x > y:
        print("x is greater than y")
    else:
        print("x and y must be equal")
```

Note: the conditions still have to be boolean expressions (i.e., they evaluate to True or False)

an indented code block containing one or more statements

the inner if statement is the indented code block for the else clause of the outer if statement.
Nested Conditionals

How many comparison operators (<, >) are evaluated by the following code?

```python
x = 4
y = 5
if x < y:
    print("x is less than y")
else:
    if x > y:
        print("x is greater than y")
    else:
        print("x and y must be equal")
```

A. 0  B. 1  C. 2  D. 3
Demo

**Task:** Write a program to ask the user for their 141 section number and print out when their lab section happens.

```bash
>>> %Run section_times.py
Enter your CSCI 141 section number: 20892
Your lab is on Tuesday from 10 - 12.
```
Chained Conditionals: Demo
Chained Conditionals: Demo

- sections.py: with chained if/else statements
- sections_elif.py: with if/elif/else
- sections_refactored.py: refactored to set variables then call print once
- sections_refactored.py: with feature to check for conflicts with lab
Chained Conditionals: Syntax

```python
if isRaining and not isWindy:
    print("Bring an umbrella!")
elif isRaining and isWindy:
    print("Wear a raincoat!")
else:
    print("No rain gear needed!")
```

- **elif keyword**
- an indented code block to be executed if:
  - none of the above conditions was True
  - and this elif's condition is True

  (this behaves exactly like nesting an if inside each else)

- an indented code block to be executed if the none of the above conditions was true

  (the else clause is optional)