BOOLEAN VALUES AND NESTED LOOPS

CSSE 120—Rose Hulman Institute of Technology

Please fill out mid-term survey

- In Angel, under Lessons > Midterm Survey
- 10 mins
- More detailed feedback on programs will help

Choose a partner today

- During session 14, we'll be doing Tic Tac Toe in pairs. Sometime before you leave today, please find a partner and write both of your **usernames** next to each other on the sheet that will be passed around
- This will allow us to create an SVN repository for each pair.

Boolean Variables and Operations

- Boolean constants: **True**, **False**
- Relational operators (<, etc.) produce Boolean values.

```
>>> 4 < 5
True
>>> 6 != 6
False
```

- Other Boolean operators: **and**, **or**, **not**

P	Q	P and Q
T	T	T
T	F	F
F	T	F
F	F	F

P	Q	P or Q
T	T	T
T	F	T
F	T	T
F	F	F

P	not P
T	F
F	T

Nested Loops

- A *nested if* is an **if** inside an **if.**
- A *nested loop* is a loop inside a loop.
- Example:

```
for i in range(4):
    for j in range(3):
        print i, j, i*j
```

- What does it print?
- What if we change the second range expression to `range(i+1)`?

Q2-4, Hand in

Nested Loop Practice

- You will do several exercises that involve writing functions to generate patterned output.
- In each, you will accumulate each line's output in a string, then print it.
- Place this code inside NestedLoopPatterns.py in Session12 project

Nested Loops – Class Exercise

- First, we will write a function to generate a pattern of asterisks like

```
***********
***********
***********
```

- We will write a function called `rectangleOfStars(rows, columns)`.
- To produce the above pattern, we would call it with parameters 3 and 11.

Nested Loop Practice – Your Turn

- Complete these definitions and test your functions
  - triangleOfStars(n) produces a triangular pattern of asterisks. For example, triangleOfStars(6) produces

```
*
**
***
****
*****
******
```

Hint: Use the same idea as the previous example. Start each line with an empty string. As you go through your inner loop, accumulate the line's characters. Print the line before the next iteration of the outer loop.

  - triangleOfSameNum(n) produces a triangular pattern of numbers. For example, triangleOfSameNum(5) produces

```
1
22
333
4444
55555
```

If you finish with these in class, continue with the remaining homework problems.