BOOLEAN VALUES AND NESTED LOOPS

CSSE 120—Rose Hulman Institute of Technology

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)`?

Nested Loop Practice—Example

- Put this code inside NestedLoopPatterns.py in Session12 project
- 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.
- First, a function to generate a pattern of asterisks like

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

- To produce the above pattern, call `rectangleOfStars(3, 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.