Module 4: Branching and Looping

Comparison Operators

Let's continue our previous exploration of operators, this time with *comparison operators*.

The comparison operators will compare values, and let you know if the comparison is *True* or *False*.

Here are some common comparison operators:

Operator	Operation
==	Is equal to
!=	Is not equal to
>	Is greater than
>=	Is greater than or equal to
<	Is less than
<=	Is less than or equal to

Operator Exercises – Equality Operators

The operators == and != are used to test equality – *are the values of two things the same?*

Try following expressions in the REPL and see what they evaluate to:

Expression	Evaluation Result
a = 1 1 == a	
2 == a	
1 != a	
2 != a	
b = "Jane"	

"Jane" == b	
"Joan" == b	
"JANE" == b	
"JANE" == b.upper()	

Operator Exercises – Relation Operators

The other operators in the table above can be used to test if one value is bigger or smaller than another.

Try the following expressions in the REPL and see what they evaluate to:

Expression	Evaluation Result
1 > 1	
1 > 2	
2 > 1	
1 < 2	
1 >= 1	
1 >= 2	
2 >= 1	
2 <= 1	

Branching: If Statement

An *if* statement is used to execute program code only if a condition is true.

Create an if statement by:

- Entering the *if* keyword
    - followed by an expression that will be evaluated to either True or False
    - with a colon (:) ending the line.
- Indenting he body of the statement – the code that is conditionally executed.

Enter the following program and call it "rps.py":

```
from random import randint

def rps():
     '''return a random pick of rock, paper, or scissors'''

     pick = randint(1, 3)

     if 1 == pick:
          return "rock"

     if 2 == pick:
          return "paper"

     if 3 == pick:
          return "scissors"
```

Run the program. Then you can make a call to your function by typing into the console:

```
>>> rps()
```

Looping: While Statement

Enter and run the following program and call it "prompt_for_guess.py":

```
def ask(prompt):
     '''Get a number from the user.'''

     while True:
          ans = input(prompt)

          if ans.upper().startswith("Q"):
               return "Q"

          if ans.isdigit():
               return int(ans)

          print("Sorry, invalid response. Please try again.")
```

Run the program. Then you can make a call to your function by typing into the console:

```
>>> ask("Guess? ")
```