**CHAPTER 3 “lab gems”**

* Decision structure: specific action(s) performed only if a condition exists
  + Also known as selection structure
* In flowchart, diamond represents true/false condition that must be tested
* Actions can be *conditionally executed*
  + Performed only when a condition is true
* Single alternative decision structure: provides only one alternative path of execution
  + If condition is not true, exit the 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
* Relational operator: determines whether a specific relationship exists between two values
  + Example: greater than (>)
  + >= and <= operators test more than one relationship
    - It is enough for one of the relationships to exist for the expression to be true
  + == operator determines whether the two operands are equal to one another
    - Do not confuse with assignment operator (=)
  + != operator determines whether the two operands are not equal
  + Any relational operator can be used in a decision block
    - Example: if balance == 0
    - Example: if payment != balance
  + 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
    - f shorter word is substring of longer word, longer word is greater than shorter word
* It is possible to have a block inside another block
  + Example: if statement inside a function
  + Statements in inner block must be indented with respect to the outer block
* Dual alternative decision structure: two possible paths of execution
  + One is taken if the condition is true, and the other if the condition is false
  + Syntax: if *condition*:

*statements*

else:

*other statements*

* + if clause and else clause must be aligned
  + Statements must be consistently indented