Learning Objectives
1. **Explain** the iterative nature of loops.
2. **Use** loops properly for repetitive processes including the utilization of loop indices as counters and variables.

Textbook Reading
Chapter 6.4.1

Topics
This lecture contains the following topics:
1. Loops - General
   a. A loop allows a group of commands in a program to be repeated.
   b. Each repetition of the loop is called a pass.
   c. Either the number of passes can be fixed or the loop can be terminated after some condition is satisfied.
2. **For-End Loops** (Instructor’s In-class Activity)
   a. A for-end loop repeats a specified number of times and the loop index variable determines when the for-end loop ends.
   b. The for-end loop index variable can also be used to index values from arrays.
   c. The looping increments can be negative.
   d. If the incremental value is omitted, the value is 1 by default.
   e. In the for command, the index value can be assigned a specified value (typed as a vector). Example: `for k=[7 9 -1 3 3 5]`
   f. Each for command in a program must have an end command.
3. **For-End Loops and Calculations (Instructor’s In-class Activity)**
   
   a. For-end loops can be used for calculations.
   
   b. In some situations, the same end result can be obtained by either using for-end loops or using element-by-element operations.
   
   c. In general, element-by-element operations are faster than loops are recommended when either method can be used.

4. **Students will complete Part 1 of the assignment to turn in by the end of class. Once finished, students may start on Part 2 due by the next class. Students will submit Part 1 of the assignment to the Carmen dropbox as a PDF.**