

Notebook: Computers and Programming I  
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- The purpose if a target variable is to reference each item in a sequence as the loop iterates.
- Target variable can be used in calculations or tasks in the body of the loop:
  - Example: calculate square root of each number in a range
    - `print ('KMH\t MPH')`
    - `print ('_____')`
    - `for kph in range (60,131,10):`
    - `mph = kph*0.6214`
    - `print (kph, '\t', format(mph, '.1f'))`
- Sometimes the programmer does not know exactly how many times the loop will execute
- Program can receive inputs from the user, place them in variables, and call the range function in the for clause using these variables.
  - Be sure to consider the end cases: range does not include the ending limit.
- To make a decrement, try something like this:
  - `range (10,0,-1)`
- Running Total
  - $sum = 1 + 2 + 3 + \dots + n$
  - $(n(n+1))/2$
  - Typically include two elements:
    - A loop that reads each number in series
    - An accumulator variable
  - Knows as the program that keeps a running total: accumulates total and reads in series
  - At end of loop, accumulator will reference the total.
    - `MAX = 5`
    - `total = 0.0`
    - `print ("This program calculates the sum of")`
    - `print (MAX, "numbers that you will enter")`
    - `for counter in range (MAX):`
    - `number = int(input("Enter a number:"))`
    - `total = total + number`
    - `print ("The total is", total)`
  - `MAX = 50`
  - `total = 0.0`
  - `print ("This program calculates the sum of", MAX, "digits")`
  - `print (MAX, "numbers that you will enter")`
  - `for counter in range (1, MAX+1):`
  - `number = int(input("Enter a number:"))`
  - `total = total + counter`
  - `print ("The total is", total)`
- Homework handout was given