

COEN 45
Winter Quarter, 2011
Homework #6
Due Tues Feb 22

1. Write a function that converts lengths from one kind of units to another.
Inputs:

- (a) Number to convert
- (b) Current units (character string)
- (c) Desired units (character string)

Output: converted value. Pick at least five length units and assign short character strings to each (like “in”). Suggestions:

- (a) Use `switch` to convert the input units and output units to index values (1, 2, ...). Check for bogus units. Make your code case-insensitive (able to accept either upper or lower case characters).
- (b) Create a conversion matrix C set up so you can convert a number in units of type i to units of type j by multiplying by C_{ij} .
- (c) Do the multiplication

Demonstrate your function in a main script. Use `fprintf` (in the main script, not in the function) to show results nicely.

2. Problem 12, Chapter 6.

3. Problem 25, Chapter 6. Hints:

- (a) For part (a), pick a range of times from 0 to 24. Calculate and plot C_p .
- (b) For part (b), start with the dose at 4 hours, create a new concentration that is zero for $t < 4$ and is $C_p(t-4)$ for $t \geq 4$ (i.e., the C_p formula with t replaced by $t - 4$). Add this to the concentration you found in part (a).
- (c) For the dose at 8 hours, do something similar, and for 12 and then 16.
- (d) Plot the total response in red, on the same figure window, as shown on the next page.
- (e) For a nice plot, try `set(gca, 'XTick', 0:2:24)` and `xlim([0 24])`.

Problem 25, p. 214

