EOSC 211 – Week 08 – Worksheet(2) - Functions

Name

Group #

Exercise 1: We have two input vectors, `x` which is distance and `tpro` which is elevation in kilometers (say, along a survey line).   Both are `1x99` arrays (ie a row vector with 99 entries). Use <u>a loop and an if statement</u> to write out a new variable `tlow` that contains only the values in `tpro` when the elevation is less than -1.8km and `NaN` otherwise. Write your answer in MATLAB code (or as close to it as you can).

What is the length of the new vector `tlow`?

Exercise 2: Turn the code snippet above into a function that returns a vector `tlow2` that is exactly the same as `tlow`, but that takes as input (1) `tproin` and (2) a variable called `cutoff` that contains an arbitrary cut-off for the elevation (ie, I might want to select elevations below -2km or -1.8 km or -1.5km, so make this a variable). Start by writing down what you think the function call from the main script should look like if you want to process `tpro` with a cutoff of -1.8.
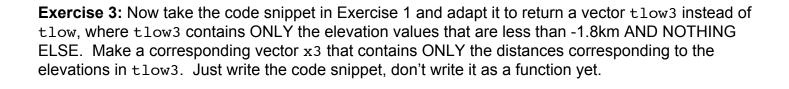
Function Call:

Now write down the function definition line:

Now write the H1 and help lines:

Now write down the body of the function:

Exercise 3: Now take the code snippet in Exercise 1 and adapt it to return a vector `tlow3` instead of `tlow`, where `tlow3` contains ONLY the elevation values that are less than -1.8km AND NOTHING ELSE. Make a corresponding vector `x3` that contains ONLY the distances corresponding to the elevations in `tlow3`. Just write the code snippet, don't write it as a function yet.

Exercise 4: Now turn the code snippet in Exercise 3 into a function that returns a vector `tlow4` that is exactly the same as tlow3 in Ex. 3, and a vector `x4` that is the same as `x3` in Ex. 3.

Input arguments:

Output arguments:

Function Call:

Now write down the function definition line:

Now write down the body of the function:

Exercise 5:   Finally, I need not have used a loop and an "if" statement in the function. How would I rewrite the body of the function in Exercise 4 to use logical indexing? Note that the function call and function definition line don't need to be changed.