

Name: _____ Section: _____

Do you think an A is realistic?

Yes

no

maybe

Practice for Exam2.

As an engineer, you've been tasked to hang a very delicate and breakable weight from the ceiling. However, you were not provided with strings. You were provided with 7 springs.... Why not attach those together! The downfall is that some springs weren't meant to handle much of any weight! If the weight is too much, the spring will overstretch past its limit, possibly hitting the floor and breaking. Develop a code to help the engineer figure out if the setup s/he's planning on using will work or not.

Here is an example. While I expect similar spacing in the output, the words can be your own.

```
*** Springs instead of strings?? ***

Your mission is to hold a weight of 9.39 (Newton)!!!

How many springs will you attach (3<= x <=7): 0
ERROR: (3<= x <=7). Try again: 9
ERROR: (3<= x <=7). Try again: 3

Up to what tension (Newton) can spring #1 handle? 0
ERROR: (>0). Try again: -1
ERROR: (>0). Try again: 4.5
Up to what tension (Newton) can spring #2 handle? 6.7
Up to what tension (Newton) can spring #3 handle? 2

The limiting tension of combining those springs is
2.00 (Newton). Since your weight is 9.39 (Newton),
oh no! It will overstretch...
```



In about 40 lines total + testing.....

After a brief intro to the user (3pts), MATLAB should generate a random weight to be attached to the ceiling, strictly between 4 and 9.9 Newton (5pts) and display it with 2 decimals (5pts). It should then prompt for the number of springs (5pts), and validate it knowing that the number of springs needs to be between 3 and 7 both included (5pts) – (do not worry about me entering decimals. I will do what I'm told to enter a whole value.). Proceed to asking the user what tension each spring can hold (10pts), showing the spring's number (#1, #2, #3...) each time (5pts). Validate again, since again weights must be strictly positive (5pts). Store in a vector (5pts) so it is easier later to determine and display the limiting tension (which is the minimum of all tensions entered) using 2 decimals (5pts). Indicate whether the setup will overstretch, or not. If there is equality of the weight with the limiting tension, indicate it is 50/50 and tell the engineer to proceed at their own risk. (10pts).

Intro (5pts), cleaning up (5pts), testing 1 case for each scenario (stretch, no stretch, 50/50), showing loops work on at least one of the cases (7pts), algorithm (5pts), spacing/indent of code (5pts), spacing of output to user (3pts).

(7pts) leeway of random things that should NOT be there, that were NOT taught... etc...

PLEASE all get an A, so we can sleep in on Thursday... This is an EASY exam. ☺ You will traverse on Thursday though...

Extra Credit: make sure the number of springs is a whole value only using what was taught (+3pts) – everything else must be completed/attempted.