

Name: _____ Section: _____

Practice for Exam2: Fire Hazards

REALISTICALLY – to speed up grading
Is an A realistic? Yes no

My advices:

- Open notes, open labs, open book, open solutions, open ANYTHING but cheating and search engines.
- Testing: not all needs to work to test and prove it. Copy/Paste testing AS YOU GO. Piece by piece. 5pts!
- Code what you can. Skip what you forgot. COMMENT what crashes and hardcode a value instead. Don't stay stuck on something more than 5 minutes. MOVE on, then come back.
- START with the easy stuff... maybe the labels on the plot for example.. COMMENT THEM OUT until ready.
- The wording does NOT have to match mine, but the user needs to understand what's going on.
- RULE: If I didn't teach it, I don't want to see it, no points will be awarded.

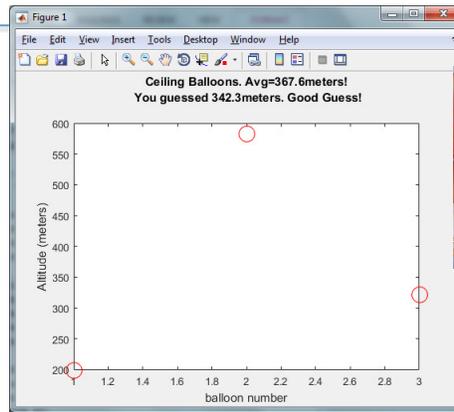
“A ceiling balloon is a small, usually red, (fluted) rubber balloon After inflation the balloon is taken outside and released. By timing the balloon from release until it enters the cloud, a ceiling height can be obtained. The bases of clouds are very rarely flat and solid, so the ceiling height is not when the balloon disappears but when the color begins to fade.” Wikipedia.

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    ** So how high are those clouds ???? **

At what altitude do you think the clouds are (>100meters): 0
ERROR: >100 only. Try again: 100
ERROR: >100 only. Try again:
ERROR: >100 only. Try again: 342.34

How many ceiling balloons will you release (whole>=3): 0
ERROR: (whole>=3). Try again: -2
ERROR: (whole>=3). Try again:
ERROR: (whole>=3). Try again: 4.4
ERROR: (whole>=3). Try again: 3

CEILING BALLOON #1:
    Balloon ascending at 132.78 meters per minutes.
    When did the color start fading? (time>1min): 1.5
CEILING BALLOON #2:
    Balloon ascending at 135.47 meters per minutes.
    When did the color start fading? (time>1min): 4.3
CEILING BALLOON #3:
    Balloon ascending at 139.58 meters per minutes.
    When did the color start fading? (time>1min): 2.3
```



Requirements: the basics from all the labs are expected:
56pts – see page2
The altitude entered by the user (3pts) must be strictly greater than 100meters. The code must trap when invalid, as well as empty. (3+2+2pts).

The number of balloons entered by the user (3pts) must be a whole number greater than or equal to 3. The code must trap the user when invalid, including empty inputs, and decimals (3+2+2+2pts).

(10pts) Loop to analyze each balloon (Use the loop of your choice).

- (3pts)The balloon's number must display each time
- (5pts) The ascending rate is a decimal generated randomly by MATLAB each time. This is a decimal between 130 and 140 meters per minute, both excluded. (Real balloon seem to fly close to 140m/min). Display with 2 decimals (3pts).
- (3pts) Prompt the user how long it took for the balloon to fade. This should be greater than 1minute but ASSUME USER WILL NOT ENTER INVALID DATA. (You don't have time to do this. No credit given anyways).
- (3pts) Calculate the ceiling height each time (i.e time*ascending rate), and store it in a vector (5pts) so you can create a plot.

Calculate the average ceiling height: you can use the function `mean()` or you can do algebra with running totals (5pts). Using the syntax `plot(y,...)`, plot the balloons as shown above with all the formatting shown (5+2+4pts). Use markers 'o' for circle, no line type, and red. (If you want to make the circle markers bigger, use the pair of arguments `'markersize',6`);)

(10pts) Determine if the guessed ceiling height was within + or – 10% of the calculated average ceiling height. (i.e. $0.9 * \text{average ceiling height} < \text{altitude entered} < 1.1 * \text{average ceiling height}$). The title shows the altitude entered, the actual average, using 1 decimals (5pts) with the message “good guess” or “bad guess”!

Name, section, description	3pts
Clean up Commands	3pts
Spacing of code – skip lines	5pts
PROPER indenting	5pts (you can use Ctrl+A+I to indent according to conventions)
Comments/algorithm	5pts
Good variables names	5pts
NO CRASH	5pts
No useless parentheses	5pts
All semi-colons on ALL non-blue lines	5pts
Introduction that the user can read	5pts
HUMAN FACTOR aspect of the output	5pts
Proof of Testing	5pts

All other points within the directions. Please go through and double check. I give partial points on this, NOT EVERYTHING has to work (i.e. comments), but it must run.

BONUS: Science News: Who just got back to earth last night? Why is this important?