

Name: _____ section: ____

Exam3. Fall 2014. Files, Functions, Arrays analysis

DO NOT SHARE information with future sections. If I catch anyone, all people responsible will fail the class. BE SELFISH. ☺

____ / 30pts Multiple Choice. Complete the 30 multiple choice questions online. You have 30 minutes.

____ / 33pts Coding (45minutes) THERE ARE NO LOOPS OR IF IN THIS FUNCTION.

You are provided an excel sheet online, with information about a comet location, and three robots trajectory heading for the comet. However, some bad information got inserted during the 10years of travel! You will have to extract, slice, delete, and filter appropriately!

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Comet X	Comet Y	Comet Z		Beepa X	Beepa Y	Beepa Z	Increment		RobotA X	RobotA Y	RobotA Z		RobotB X	RobotB Y	RobotB Z	Validity
2	-666.5	329.45	0		45.146	21.49	0	4		45.146	21.49	0		45.146	21.49	0	valid
3	-676.8	329.45	0		-335.8	302.96	123.24			59.332	27.65	-25		404.01	101.62	0	invalid
4	-680.3	323.62	0		-558.7	28.06	40.245			-1	-1	-1		91.408	139.88	0	invalid
5	-711.4	323.62	0		-102.8	115.84	8.2226			80.069	20.737	-50		557.27	306.53	0	invalid
6	-721.8	294.46	0		80.069	27.65	35.714			-1	-1	-1		390.96	59.11	0	invalid
7	-742.5	291.55	0		-844.2	294.49	199.53			-1	-1	-1		66.327	25.974	0	valid
8	-752.9	291.55	0		-676.1	356.29	0.9957			-1	-1	-1		474.71	274.98	0	invalid
9	-752.9	279.88	0		-926.1	207.23	170.85			-1	-1	-1		75.603	37.106	0	valid
10	-718.3	262.39	0		97.35	44.931	71.429			90.438	10.369	-75		123.12	258.32	0	invalid
11	-725.2	268.22	0		-442.5	155.25	57.231			100.81	3.4562	-100		75.603	55.659	0	valid
12	-707.9	274.05	0		-738.8	323.79	11.616			121.54	-17.28	-125		35.634	70.494	0	invalid
13	-694.1	262.39	0		-213.4	163.21	239.11			149.19	-55.3	-150		390.7	10.632	0	invalid
14	-676.8	256.56	0		100.81	58.756	107.14			159.56	-93.32	-175		29.127	333.63	0	invalid

Create a programmer-defined function with the following requirements. **SUBMIT THIS FUNCTION FILE AT THE END OF THE CLASS. NO ZIP. NO MAIN. JUST A FUNCTION.**

Requirements for the function `loadSpaceTravel()`

- (3pts) The function has 1 parameter, a name of an excel sheet. (You will have another file on Tuesday, with 3 new robots. The file format will however remain identical.)
- (3pts) The function has 13 return values (12 numerical vectors and 1 scalar): the x,y,z coordinate for each robot and for the comet!
 - xcomet, ycomet, zcomet
 - xBeepa, yBeepa, zBeepa,
 - xRA, yRA, zRA (for robot A)
 - xRB, yRB, zRB (for robot B)
 - the count of invalid rows for robot B
- (3pts) Proper documentation is expected
- (3pts) Comments, spacing, usual presentation, etc..
- (3pts) Load the data correctly from the file
- (3pts) Extract the x,y,z coordinates for the comet.
- (3pts) Extract the x,y,z coordinates for robot Beepa. There has been a virus in those columns. You will notice an increment n in the file. The valid elements are found by slicing every n element, from the first position to the last one. (CAUTION: n will vary with each file.)
- (3pts) Extract the x,y,z coordinates for robot A. On this one, a virus introduced rows of -1. Delete those.
- (3pts) Extract the x,y,z coordinates for robot B. On this one, the valid rows are indicated in the last column, with the keyword 'valid'.
- (3pts) Count the number of rows that were invalid for robot B.

(3pts) In a comment, at the BOTTOM of the function file, indicate the function-call so I can run your file. Hardcode the name of the excel sheet as the argument. OMIT the semi-colon at the end of the comment.

After class ends, and you have submitted, you better fix whatever didn't work. This function is used in the main code of Exam3_Part2. With imagination, you can guess at some part of Exam3_Part2! Practice! Practice! Practice!