Name: _____ Section: _____

Exam2. Part1

Vocabulary:

Answer the 30 multiple choice questions online. This is open resources as usual, except for search engines and any means of communications with other individual.

Coding: **For credit, only use the knowledge used in class these past few labs and all semester.**

Create the following function and submit the function by the end of the allocated time. Please ZIP your 1 function file before submitting the zip. There should only be 1 function file in the ZIP. **Penalties** will be given if a main code or/and an excel sheet is provided as well. Don't stress at the last minute, allocate enough time to peacefully zip 1 function file.

The function's purpose is to filter data related to various energy sources in various regions of the united states. It will first ask which region the user wants to study (column6) and filter data. It will then ask which fuel type the user wants to study (2nd row, columns 7 to 17). It will filter state names, latitudes, longitudes, and the numerical data related to the chosen fuel types for that state. Different files will be provided, but today you have 2009's data. Name the function file appropriately to represent its purpose (5pts). The REQUIREMENTS for this function:

(5pts) It has 1 parameter: a raw data table, as a cell-array, unfiltered, as is from the original file.
(5pts) It has 6 return-values, specificially:
  - (5pts) the single name of the region selected – as a `char`. NO LONGER A CELL-ARRAY. (5pts)
  - (5pts) The state names associated with that region only – as a cell-array
  - (2pts) The latitudes associated with the states from that region – as a `double` vector. NOT A CELL-ARRAY (1pt)
  - (3pts) longitudes associated with the states from that region – as a `double` vector. NOT A CELL-ARRAY (1pt)
  - (5pts) The list of the names of fuels chosen – as a cell-array
  - (5pts) The numbers associated with the states and fuels chosen only – as a `double` matrix. NOT A CELL-ARRAY
  - (3pts).

The following is a possible algorithm. Feel free to do it slighlty differently, as long as you use NO loops and NO if statements.

Extract the 10 fuel choices possible (3pts) before deleting rows 1 and 2 from the raw table. (5pts) The region is then selected by the user from a `listdlg` (5pts), after each possibility is made unique (3pts). The user should only be able to select one (3pts), and there is a string indicating a prompt to the user (3pts). Filter the state names, the latitude and longitudes of those regions only.

About 4 more LOC! Once that's done, **delete columns 1-6 from the raw data**. Offer the possible fuel choices in another `listdlg` (3pts) This time, DO NOT use unique() (leave as is) and don't prevent multiple selections. When the user selects multiple, it will automatically give you the column numbers you need. From the raw data, slice the rows for that region and the columns associated with the fuel choices. Don't forget to convert those to a matrix! (5pts)

(7pts) The documentation of the function is fully expected, as well as commenting your code (5pts), suppressing all the results (5pts), spacing out the code (5pts), good variable names as usual (5pts), and no unecessary indents (5pts). THERE ARE NO LOOPS OR IFS IN THIS CODE. PREFER HARDCODING A FAKE VALUE INSTEAD AS YOU WILL NOT GET POINTS USING LOOPS OR IF ANYWYAYS – don't waste your time. MATLAB'S MUCH COOLER! ☺

(5pts) At the bottom of your FUNCTION CALL, and as a single line comment, write the function call for this function. Harcode the name of the file as the argument, DO NOT USE UIGETFILE() as for testing, it is longer. 1 line of code only is prefered.

You are of course encouraged to test your function using whatever method you want. However, you will NOT provide me the main code, even if you write one. ☺ For testing purposes, here is what my workspace looks like when I am done testing my function. The raw data (52x22cell) specified as the parameter is the result of uploading the data from the excel sheet directly. (I've hidden my variable names so you're not influenced by them.)

Workspace			
Name ▲	**Value**	**Size**	**Class**
{}	1x3 cell	1x3	cell
⊞	7x3 double	7x3	double
⊞	[41.5909;42.7335;44.9500;...	7x1	double
⊞	[-93.6209;-84.5467;-93.09...	7x1	double
{}	52x22 cell	52x22	cell
abc	'Midwest'	1x7	char
{}	7x1 cell	7x1	cell

{} 1x3 cell

	1	2	3	
1	Biomass	Solar	Hydro	

{} 7x1 cell

	1
1	Iowa
2	Michigan
3	Minnesota
4	Nebraska
5	North Dakota
6	South Dakota
7	Wisconsin
8	

⊞ 7x3 double

	1	2	3
1	1.7526e+05	0	7.3734e+05
2	2.2502		6e+06
3	1.5436		3e+05
4	6.0163		3e+05
5	8.4533		475251
6	5.7748e+03	0	4.3192e+06
7	1.2518e+06	0	1.6054e+06
8			

Numbers for those states and those fuels only

By Wednesday, make sure this works as you will of course call it in a main code. Go ahead and start without me! Create a main, imagine what we could do with the data, code away! ☺
NO use of uigetfile(), NO loading excel IN the function, and NO crash (5pts)