

Name: \_\_\_\_\_ Section: \_\_\_\_\_  
Exam2. Part2. Energy data. Let's finish this! 😊

Do NOT share this. As Friday was "open time", who knows who will end up with what version.

In part 2, create a main code AND another function that analyzes the data previously filtered on Friday. Remember we only have 55 minutes today, of which you should save 5 to peacefully & correctly zip and submit. The zip WILL INCLUDE the excel sheets, which you must close before you zip. They're also big files, so the zip will take time to zip AND to upload. **DO NOT MISS THE SUBMISSION OR DO THIS IN THE LAST 5 SECONDS: "You snooze, you loose."** As usual, submit many times if you want for peace of mind. All basic requirements as usual (30pts). No crash (5pts). Fixed Friday (5pts).

Re-download the excel files online. I've cleaned up a little more, and you now have data for 2012 as well.

**The requirements are as follows. NO LOOPS, but you have ONE if statement just for the maps.** 😊

#### MAIN CODE:

A message box welcomes the user (3pts). After the user clicks OK to proceed (2pts), a browser opens to let user pick a file (3pts). The program will upload the raw data from the file chosen (5pts), then pass it to the function you wrote Friday (5pts). This will allow the user to pick a specific region and fuel choice (to select multiple, hold the Control Key while you select multiple ones before hitting OK), which will return the data as specified Friday. Last, call a final programmer-defined (requirements below) function will analyze the data in order to create two figures (5pts).

#### ADDITIONAL PROGRAMMER-FUNCTION (about 32LOC top to bottom)

This function is responsible for visualizing the data selected from Friday. There will be two figures:

- Figure1: will show the names of the states for the region selected, using the latitude and longitude. There will be a dynamic title showing the region selected.
- Figure2: will show a bar graph of the total energy generated for each fuel selected. This will also have a dynamic title showing the year.

Specifically:

- (5pts) this function has NO return values
- (5pts) this function has 7 parameters: the name of the Excel sheet chosen, and all the return-values from Friday
- (7pts) Full documentation expected, (5pts) comments, (5pts) spacing and indenting, (3pts) suppress outputs, (3pts) variables names, (5pts) proper function name

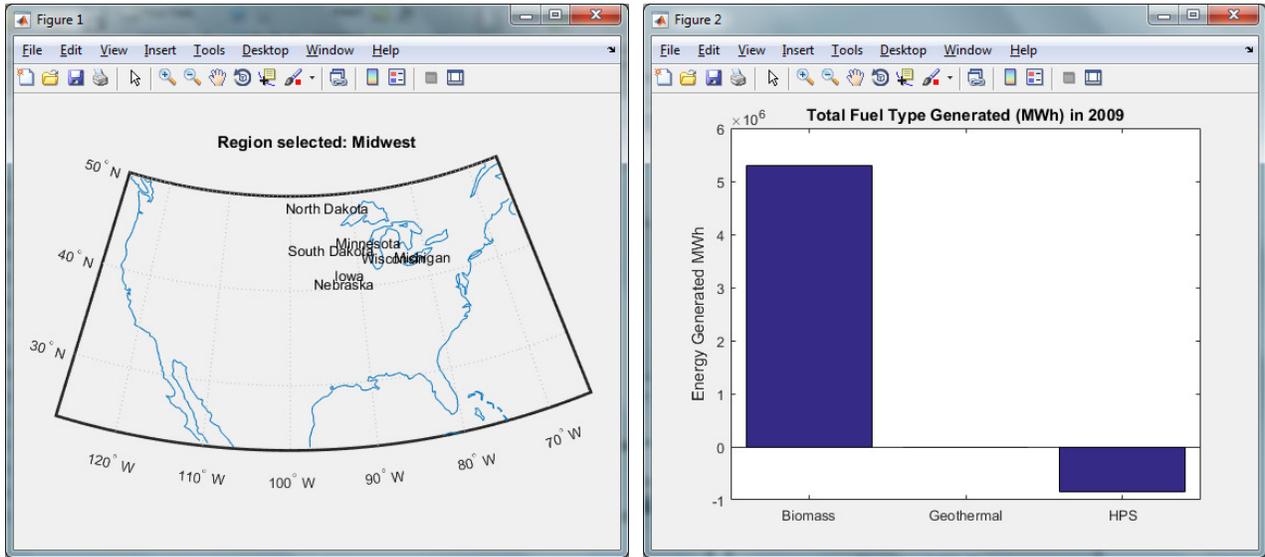
**For figure 1:** The map loaded depends on what region got selected. Determine if the region selected was 'Non-Continental US'. if it was, call `worldmap('USA')`; otherwise only use `usamap('conus')`; (Conus stands for "continental US") (10pts). This will let MATLAB focus only on the specific region studied. Load the 'coast.mat' file (built-in file) so you get the `lat`, `long` variables of the coast of all continents on Earth (3pts). Using `plotm()`, plot the latitudes and longitudes of the coast (3pts) – no need to zoom in on anything, let the map commands do their job. Using `textm()`, plot the state's name at their own latitudes and longitudes (5pts). Create a dynamic title that displays the type of region selected (3pts). AGAIN, NO LOOP ON ANYTHING. KEEP IT SIMPLE.

**For Figure2:** Create a new figure (3pts). Add up each column of the fuel data selected to determine the total for each fuel type (6pts). Use a `bar()` graph to show all together (5pts). Slice the year's four letters from the filename – they will always be located at the end of the filename (3pts). Create a dynamic title that shows the year (3pts). Finally, change the x tick labels so they shows words instead of 1, 2 and 3. This can be done using the `set()` function, called below the `bar()` graph as follows: `set(gca, 'xticklabel', _____)`; the last argument is the cell array of strings that has your fuel names (3pts).

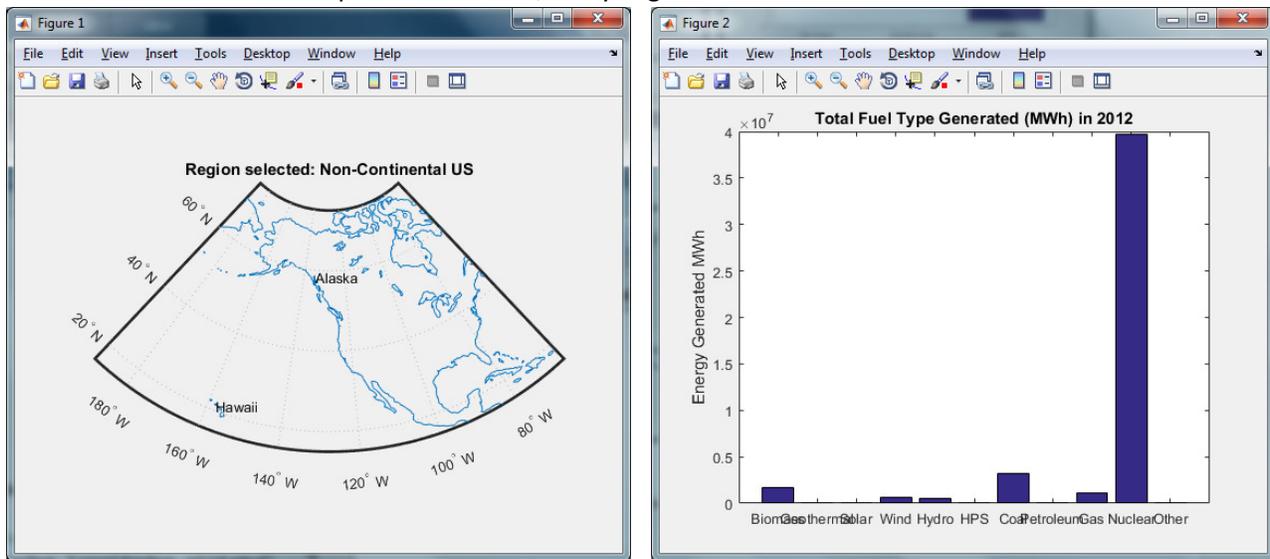
Between the two figures, create a `pause()` of 2 seconds (2pts).

The next page shows my two figures. Feel free to modify slightly as usual your titles, etc.. The state's names do overlap, as well as the tick labels, and we are good with that for today!

Example: File for 2009, analyzing the Midwest: Biomass, Geothermal, and HPS. (Negative is acceptable!)



Example: File for 2012, analyzing non-Continental-US: All fuels



\*Disclaimer: while all the 2009 data is real, from data.gov, part of the 2012 data was randomly generated...