Manual coding instructions for Excel

* Learned steps, reverse learned steps and open steps need to be manually coded
* Learned steps will be counted as steps in the forward direction, I.e. towards the dotted end of the guided purple line (Point A in red to point B in red; figure 1)
  + The purple line will always begin in the top right corner and loop around, ending just to the left of the beginning point
  + Direction (forward or reverse) is relative to the starting point in each specific map
* Data from participants, which is coded on maps with a black line, will be interpreted from green starting point to red ending point (Read point C to point D in figure 1)
* If the line does not reach the red ending point (D), the steps must still be counted as is
* Any box where the black line crosses, going towards the dotted end of the guiding purple path will be counted as learned steps
* Any box where the black line crosses, going towards the beginning point of the guiding purple path are counted as reverse learned steps
* Any box where the black line crosses that does not have a purple line in it, will be counted as open steps
  + This includes yellow path only, and no path/empty box
    - In figure 2, Point X and Y are examples of these cases
      * For point X, purple path would take preference in counting
* In the case of a participant turning around in the study, where the black line makes a loop or changes direction, the box in which they turn around in will only be counted once, based on the direction it was entered
  + Overlapping boxes would then be counted again based on the opposite direction

In figure 1, beginning at the green box, the black line is going in the reverse learned direction. At the box labelled 1, the participant started going in the learned step direction. Labelled boxes 1,2,3 would be counted as learned steps. Box 3 was the box in which the participant turned around, but since they entered from the learned direction, it will only be counted as such. Going back, boxes 2 and 1 would then be counted in the reverse learned direction (I.e. they are double counted), and counting continues as normal for all boxes entered once

* classifying the path type: code as either “shortcut” “shortcut liberal” “learned” “learned liberal” “reverse learned” “reverse learned liberal” “wandering” or “uncodeable”
  + learned: code as learned if the participant exclusively followed the purple line in the learned direction
  + learned liberal: code as learned liberal if the participant followed the purple line in the learned direction for a majority of their steps and only took a minority of open or reverse learned steps.
  + reverse learned: code as reverse learned if the participant exclusively followed the purple line in the reverse learned direction
  + reverse learned liberal: code as reverse learned liberal if the participant followed the purple line in the reverse learned direction for a majority of their steps and only took a minority of open or learned steps.
  + shortcut: code as shortcut if the participant followed the yellow line for a majority of their steps.
  + wandering: code as wandering if the participant does not seem to be following the learned route in either direction and does not follow the yellow shortcut path either.
  + uncodeable: code as uncodeable if the experiment did not proceed or finish successfully or if there is no way to code the direction of the steps





Getting Data Output

* The raw data from the behavioral portion of the study will be stored in the Moore folder under Materials > DSP\_Behavioral\_Data > DSP\_RawData. Although there is another folder in DSP\_RawData labeled Script\_Output, nothing needs to be done in this directory. In fact, as indicated, DO NOT TOUCH the documents here. This is a storage for unprocessed data and should not be messed with or edited directly.
* To get the raw data to output processed data that you can edit, you must run the data through a python script found in Google Drive. To do so:
  + Download the script dsp\_dataExtractor.py found in the Moore folder under Materials > DSP\_Behavioral\_Data > DSP\_Analysis\_Code
  + Open this document in Spyder (or any other program that can run Python script).
  + Run the script.
* The processed data will output as a PDF and an excel file for each participant for each environment, meaning each participant will have two PDFs and two excel files. This data will output in a number of places:
  + First, the Scrpit\_Output folder in DSP\_RawData. Again, DO NOT TOUCH THE DATA IN HERE.
  + Second, in the DSP\_ProcessedData folder. Under this directory, there are two more folders: one called PDFs and one called To\_be\_manually\_coded. As you can guess, the PDFs of the maps that you will need to look at will be output in the PDFs folder, and the excel files will be output in the To\_be\_manually\_coded folder. Check here to make sure that all the raw data that you have processed has shown up properly by cross referencing the files names.
* The files in the To\_be\_manually\_coded folder are the ones that should be edited. They are backed up in the Script\_Output folder.
* Now you are ready to begin the manual coding, detailed in the next section.

Editing the Excel Files

* First, open up the excel file for the first participant/environment combination that you will be working on found in the To\_be\_manually\_coded folder. If it makes it easier for you to stay organized, then you can also drag the file you are working on out into the DSP\_ProcessedData folder to separate it.
  + You should notice that columns A-I are filled out in rows 1-21. These cells do not need to be touched; instead you will be adding more columns to fill out.
* Going back into the DSP\_ProcessedData folder, you will see an excel file called DSP\_manual\_coding. Open this.
  + This file is a template for how you will fill out the other sheet.
* There will be two sheets that show up at the bottom of the page, one labeled ‘Coding’ and the other labeled ‘Optimal’.
  + Click on the optimal tab.
  + Copy this entire page by clicking on column A, holding the shift key, and then clicking column G. Everything should be highlighted. Copy this.
  + Go back to the other excel file you are working on and create a new sheet by clicking the plus button on the bottom.
  + Paste this data into the A1 cell so that it all shows up in the correct cells.
  + Go back to the first sheet.
* Go back to the DSP\_manual\_coding file and click back on the sheet labeled ‘Coding’.
  + You will notice that columns A-I will be the same as the file you are working on. Nothing needs to be done with these.
  + Instead, you should focus on columns J-Y.
* Copy columns J-Y and paste them into the sheet you are working on. You only need to copy from cell J1 to Y21. Ignore the data below. Copy all of this, even though it is filled out. The most important thing here is to preserve the functions that are in column O-X.
  + To copy this efficiently, click on cell J1, then hold down the shift key and select cell Y21. This should highlight the entire area. Copy this.
* Paste this into the file you’re working in cell J1 so that all the information ends up in the correct spaces. Once you’ve pasted this, you can close the DSP\_manual\_coding file. Don’t save any of the changes made.
* Going back to the excel file you’re working on, you can delete the data, but do so in a specific way:
  + You’ll notice that columns J-N are labeled in blue. This is the only data you need to delete. The rest of the cells contain functions that will output numbers once the correct cells have been filled out.
  + You can delete this the same way it was copied before, but only from cells J2 to N21. Click on cell J2, hold the shift key, and click on cell N21. Delete this highlighted portion.
* Now you can open up the PDF that matches this participant/environment and fill out the cells according to the Manual Coding Instructions for Excel detailed at the top of this script.
* You should also rename the sheets in the file ‘Coding’ and ‘Optimal’ like in the template sheet.
* Double check that everything is filled out and that the functions are outputting correctly.
* Once you’ve manually coded all the data, save the file and move it into the Already\_manually\_coded folder.