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**MFRE Python Introduction Workshop Notes**

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At risk of being overly-critical, the average student has little-to-no familiarity with programming and Python workshops need to be adjusted to this reality.

General notes:

1. Students came without doing any preparation and needed to be hand-held through importing the notebooks to Colab. This took 10-15 minutes off the start of class.
2. Students do not ask questions willingly despite being lost.
3. We finished about 2/3 of the actual workbooks.
   1. Workshop 1: We about got to For loops and dictionaries, barely to Functions. Had to skip a lot.
   2. Workshop 2: We got to the second or third data import method, then skipped to some summary statistics
   3. I had to add later parts from WKSHP1 to the beginning of WKSHP2 in order to cover basics like For loops, Dictionaries, and Functions sufficiently.
4. My extra exercises were vastly beyond what they are capable of. Most should be removed.
5. In MacMillan 154 it’s impossible to display two different windows at once without dual-wielding computers. Slides should be given out still but better integrated into the notebooks, so that intuitive (not note-form) explanations can be read there as well.
6. More visuals!
7. **Students had little reason to pay attention since attendance was all they needed to fulfill. Should have a mandatory small assignment to complete.**
   1. Three-ish little questions. One with a for loop, one with a dictionary, one with a function?
8. **About 50% of workshop time is spent “running laps” going between tables and fixing the creative range of errors students contrived.** 
   1. Recruit other staff member to help cut this down.
   2. Pair students up, so it’s two eyes collaborating on one system.
      1. Divide into sections, where one drives and the other comments, flip every 20 minutes.

Specific notes on the workshops:

Workshop 1:

1. For loops are hard to communicate to the students.
   1. They struggle with basic data types, let alone what’s iterable
   2. Core one here
2. Dictionaries are tempting to remove (very rarely used) but too important for database/dataframe understanding to delete
   1. Find good metaphor. Dictionary is like a bookshelf. Keys are the book titles, the values are the books(?)

Workshop 2:

1. Method 1 for data import fails on most Mac devices. Should probably be dropped.
2. Probably want to show conventional directory data import method.
3. Cut down:
   1. Pandas summary statistics taking. They can learn in other workshop. Just reduce to a few examples at the end.
4. What should assignment be?
   1. Students imports pandas, then takes summary statistics?
   2. We tell them some functions and get them to apple them on their own?