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CS 2300/11
Dr. Berisha

1. Why is replicability different from reproducibility according to the paper?
Replicability is fundamentally different from reproducibility as the first involves a one-to-one copy of the experiment while the later emphasizes the results. Replicability focuses on following the same steps as the reference and ensuring the same result is achieved. Since reproducibility is flexible with the steps taken to get the same result, a better method can be found to solve the same problem.

2. Why are most mathematical models not technically "scientific" models?
Note: I'm not entirely sure how to answer this as the author makes several points on why it is considered scientific today. Below is what I think the author is trying to say.

Mathematical models in the past were considered not scientific due being seen as something unworthy of the time of academia. I think this was due to the different mindset needed to convert a textual concept into numbers. This conversion of words to math is tedious and requires knowledge in the field of mathematics, so many scientists opted to forgo the mathematical approach to modeling.

3. Describe what your mental model is of Jupyter Notebooks. Why is it relevant to understand the mental model of a tool used by a scientist?
To me each block in a notebook is a separate method and the ability to run the block is the same as creating a tester class that calls the block. It's important to understand the mental model of a tool used by scientists as being able to understand another's thought process brings better insights on to why the tool was chosen and why a person did what they did. This allows to uncover unknown biases the scientist had when conducting the test thus allowing for better clarity and the possibility to better the experiment/paper.

4. Why does the author argue that focusing on models instead of tools will benefit the scientific community?

5. Identify an argument the author makes that you take issue with. Outline why you think the author's argument(s) are weak or seem like they might not be valid.
As I stated in question 2, I don't understand the argument that mathematical models are not scientific. Given the rules of the universe, all things can be translated to mathematics whether that be in discrete math or hard calculus. I can understand how some would choose not to use a mathematical model as not everyone has a strong background in math, but to state that mathematical models are not up to par to scientific models is incomprehensible to me.