The Good Pseudocode Checklist

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Recap: Why do we care about pseudocode? **What can you use this for in your real life?**

Pseudocode is worth your time! It is useful for…

- …planning group code.
- …debugging code.
- …explaining how an algorithm works to less technical users.
- …describing how an algorithm should work.
    - It is a blueprint of your process.
    - It can easily be corrected/modified without losing large amounts of time coding an incorrect process.

Examples of programs/codes which used pseudocode FIRST:

- Call of Duty
- ChatGPT
- iOS (Apple operating system)
- Halo
- Bioinformatics programs
    - Monocle (Pseudotime algorithm)
    - scTIGER (scRNA-seq data)
    - Higashi (scHiC data)
    - HiChIP (ChIP-seq data)
- AMAZON
- And many more……

The Checklist

Good pseudocode should meet these requirements:

1. ___ Pseudocode describes the entire process
    a. ___ All major steps are easy to find (i.e. Comment before the section)
    b. ___ All major steps are in a logical order
        i. Is there an easier way to do the same thing?
        ii. Do definitions of functions appear before they are called?

2. ___ The description of each process is easily transferrable to code.
    a. ___ If converted into code, the program will run
    b. ___ All steps are defined in great enough detail to convert. You should only need to look up syntax to convert (i.e., you CANNOT list a major process without defining the minor steps)
    c. ___ Variables are defined
        i. ___ The name relates to what the variable stores
        ii. ___ Every variable has a defined structure (data frame, dictionary, list, single integer, etc.)
        iii. ___ Every variable has a defined data type (integer, float, bool, etc. – can be multiple if using different columns)

3. ___ Input and output of code is clearly defined
    a. ___ Input(s) have a structure
    b. ___ Input(s) have a data type
    c. ___ Output(s) have a structure
    d. ___ Output(s) have a data type
    e. ___ Input(s) have a description of what data they store
    f. ___ Output(s) have a description of what data they store

4. ___ (For group code) Work is clearly divided between group members
    a. ___ Clear definition of where work is handed off
    b. ___ Input for one member is the output of the previous member (i.e., Member 1's output should be Member 2's input)
    c. ___ Input and output of each member are clearly defined (same checklist as #3)