Effective Programming Practices for Economists

Debugging

Avoiding debugging

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How editors avoid debugging

- Code highlighting shows differences between
  - variables / functions
  - built-in statements
  - string literals
  - comments
- Syntax checkers flag
  - spelling errors
  - undefined variables
  - syntax errors

How unit tests avoid debugging

- If your function is thoroughly tested:
    - It will produce correct outputs given valid inputs
    - You can skip it while debugging (at least initially)
- Careful
    - Having one test per function is usually not enough
    - Need at least make sure to cover all lines
    - Also think about difficult edge cases and test them

How error handling avoids debugging

- If your function does thorough error handling
    - It will complain when called with invalid inputs
    - You can locate easily where things go wrong
- Careful
    - You do not want to add error handling to private helper functions
    - To be useful, the error messages need to be good

How readability avoids debugging

- If you write readable modular code
    - All functions have a clear purpose, so it is easy to see whether they do what they should
    - Variable names are informative about content
    - You can easily simulate in your head what the code does
- Problem:
    - This is hard and takes practice!