I'd like you to help me improve my code. I'm sharing a script below that works correctly, but I believe it could be more efficient, readable, and better documented.

Please enhance this code by:
1. Improving efficiency (runtime and memory usage)
2. Adding detailed comments and docstrings
3. Enhancing readability and maintainability
4. Following best practices for the language
5. Adding helpful error handling where appropriate

CRITICAL REQUIREMENT: The improved code MUST produce exactly identical outputs as the original when given the same inputs. To verify this:

1. Please create a test function that compares outputs between the original and your improved version
2. Run this test with several diverse input cases
3. Only suggest changes that maintain perfect functional equivalence
4. Explain your improvements and why they maintain the same behavior

Here's my code:
[paste code here]