

Unit Testing Checklist

This list is a collection of things that commonly make candidates for good tests. It doesn't provide an exhaustive list of all things to test for, but serves as a reminder of the types of things that are often worth verifying. It is useful to take this list and add/remove items for your specific needs.

- Sunny Day Testing
 - Does the function perform the desired operation when given reasonable input?
 - Have you tested all normal valid paths through the code?
 - Is the function repeatable? (does it behave identically given identical inputs)
- Rainy Day Testing
 - What should happen if the inputs to this function are invalid?
 - What should happen if this function receives an error from a function it calls?
 - What should happen if this function cannot claim memory it needs to operate?
 - Are there situations where this function needs to clean up memory after an error?
- Tests for Arguments to a Function
 - If it has numerical arguments:
 - Does the smallest valid number work?
 - Does the largest valid number work?
 - Is the first number *below the smallest* valid is handled properly?
 - Is the first number *above the largest* valid is handled properly?
 - If the number is signed, does it handle negatives properly?
 - Does it work with zero? (may or may not be smallest, but zero is often extra problematic because of divide-by-zero issues, etc).
 - If it has pointer, array, or string arguments
 - Is NULL handled in the desired way?
 - Verify incoming data if pointer is used as an input
 - Verify outgoing data if pointer is used as an output
 - If it points to a string, does it handle invalid characters or series of characters? (example, non-printable ascii or illegal series in UTF-8?)
 - **Important:** If you're using mocks, then you can consider any value that is returned by a mocked function to be an argument, and should check the above.
- Tests for Globals Used by A Function
 - Are there situations where this function needs to handle rollover?
 - Do you really want them to be globals?
- Tests for Macros
 - Does this macro depend on certain types and/or sizes to get passed into it?
 - Is that clearly documented or protected against?