

Testing Your Code

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15-441 Recitation

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You cannot do well on
the projects in this
class if you do not
test your code well.

For P2, your implementation should be able to correctly handle a large file transfer between a sender and receiver.

For P2, your implementation should be able to correctly handle a large file transfer between a sender and receiver. **What is correct?**

We learned in class how TCP does connection setup and teardown, flow control, and congestion control.

Tests should define what is the correct behavior of your code/implementation.

The projects in this class are hard but testing your code does not have to be!

Tip #1 - Write tests that define expected behavior and to help you find bugs.

Tip #2 - Automate your tests whenever possible to make them easy to run and re-run as you change your code.

Tip #3 - Tests should test one thing and one thing well.

Tip #4 - Parametrize your tests to reuse test code for different inputs, and expected outputs. Example: `test_GET(get_example1, get_expected1)`,
`test_GET(get_example2, get_expected2)`

Tip #5 - Document what your tests are suppose to do. Verify.

In groups of 2 or 3 discuss (10min):

Brainstorm tests you should write to
test your P2 implementation.

Example functionality you should test:
connection setup, connection tear down,
flow control, congestion control.

Now let's discuss as a group.

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Let's look at the starter code together:

P2 starter code had a few simple starter tests.
What does each test do?

**Let's implement the
unimplemented starter tests together.**

```
def test_basic_reliable_data_transfer():  
    """Basic test: Check that when you run server and client starter code  
    that the input file equals the output file  
    """  
    # Can you think of how you can test this? Give it a try!  
    pass  
  
def test_basic_retransmit():  
    """Basic test: Check that when a packet is lost, it's retransmitted"""  
    # Can you think of how you can test this? Give it a try!  
    pass
```

For P2, `make test` must run your tests.

You need more than just the starter tests.

You can continue to use `pytest` or whatever your favorite testing tool is.

You should also make use of standard C debugging tools `gdb` and `Valgrind`.

**Ask the course staff for help
if you're having trouble testing your code.**