

07-120
**Introduction to
Software
Construction**

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Michael Hilton and Mayank Goel

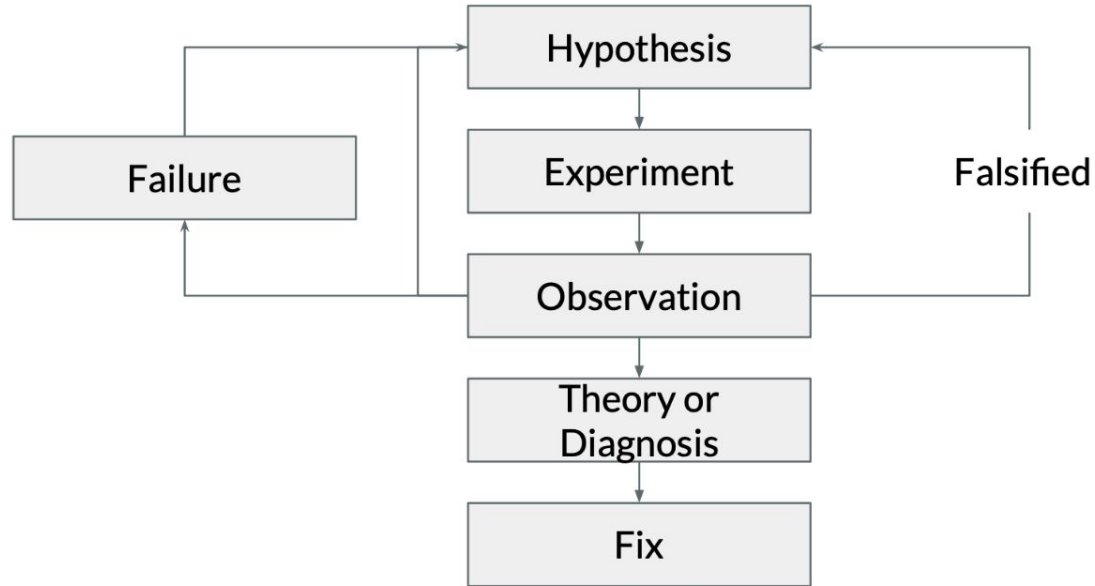
Administrivia

HW2 in progress

5 bonus points for doing 1 bug write-up by tonight

Last time...

Scientific Debugging



Document your process

Hypothesis	
Prediction	
Experiment	
Observation	
Conclusion	

Example

OBSERVATION:

Continually having to re-observe
past behavior takes time.

Testing

What if, instead of making observations manually, we could have our code run many many observations incredibly fast?

How much more efficient would we be?

How do we decide ahead of time what observations we should make?

How do we decide ahead of time what values the observations should have?

Testing

Testing

Testing can only show the presence of errors – not their absence. (Dijkstra 1972)



What are the goals of testing?

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Reveal Failures

Access quality

Clarify the Specification

Learn about the program

Document the behavior

How do you feel
about testing?

What sort of values should we test?

Suppose we were going to test a function that

The ideal test suite

Uncovers all errors in code that are detectable through testing

Uncovers all errors in requirements capture

All scenarios covered

Is of minimum size and complexity

Uncovers errors early in the process, ideally when code is being written (“test cases first”)



Typical test suite