**CS 362 – Module 5 Notes – Random Testing**

* **Random testing** is another black box testing (BBT) technique
* The hardest part of testing is covering the *input domain* (the pool of all possible input that a unit/program can take)
* ***Random testing*** is meant to help automate some of the testing needed so we don’t have to write specified and targeted tests.
* The advantages and disadvantages of *random testing* are the same as those from BBT (See BBT notes in Module 3)
* Random testing is often done outside the normal test suite and can be thought of as a supplemental testing technique. Many times, random tests are run overnight, and the results are inspected in the morning.
  + Truly random tests aren’t repeatable (because they’re random…)
  + Random tests are frequently used during *system tests*, which attempts to verify that the entire piece of software functions as a unit.
  + With random testing, we will often not identify the expected output for the randomly generated output
* When random testing, we need the following:
  + **Random test generator –** This is where we generate random inputs based on our knowledge of the input domain. For example, if our software is supposed to verify credit card numbers, then we know the inputs need to be 16 digit numbers.
  + **Software to test (**aka *the software being tested***) -** This is what we send our randomly generated inputs through. The software will run its code on these inputs and generate output. For random testing to be useful, it is often important that the software under test have some error reporting capabilities that allow the testers to see which random inputs triggered the errors in the code.
  + **Something to monitor for errors (aka an *oracle*) -** The oracle's sole job is to watch for error states in the software and save the random inputs that generated those states for later inspection. An oracle can be as simple as displaying error generating input to the screen or it could be an elaborate piece of software that generates formal bug reports.