**Module 4 – CS 362 – White Box Testing**

* Black box testing gets its name from imagining a black box you can’t look into, so **white box testing** naturally is named from imagining a white box you *can* look into. **White box testing** is also called:
  + **Clear Box Testing**
  + **Open Box Testing**
  + **Glass Box Testing**
* **Advantages of WBT:**
  + Is based on the code so the quality of the tests can be measured objectively
  + Can be used to compare test suites by measuring their quality
  + Can directly test the coded behavior
* **Disadvantages of WBT:**
  + Can’t discover errors due to missing paths (i.e. an unimplemented specification)
  + Large software systems make it difficult to test every facet of the code
  + Tests must be written by the devs
* Whereas black box testing focused on verifying that the software specifications are met, white box testing focuses on verifying that all the code works as intended by trying to have as much of it run as possible during testing. This is done through something called ***coverage***.
* **Statement Coverage** – This is a way of measuring the quality of a testing suite based on the amount of *statements* the tests execute in the program.
* **Branch Coverage –** *branches* occur anywhere in the program where a decision must be made. These decisions generally occur in statements that contain conditionals and we need to ensure each is tested as evaluating as either *true* or *false*
  + All ***if*** statements have 2 branches
* **Condition Coverage** – This coverage requires that we have tests that evaluate each individual condition as both *true* and *false*. With this coverage criteria, we are concerned with *each* condition within the *if* statement
* **Path Coverage –** This is where the tests strive to test every *path* through the code. A path is a unique series of branches. So with path coverage, you will likely have to traverse each branch multiple times.