CS 6340 – Spring 2013 – Assignment 8 **Name**_____
Assigned: March 27, 2013
Due: April 3, 2013 **Name**_____

At the beginning of class on the due date, submit your neatly presented solution with this page stapled to the front (100 points).

Part 1: Random Test-data Generation

a. Rewrite the **tritype** program so that it contains only single conditions (no multiple conditions) but has the same functionality as the original program. Call this new program **tritype_single_conditions.**
b. Write (implement) a **random_test_data_generator** that will generate sets of three integers (the inputs to **tritype_single_conditions**).
c. Using your **random_test_data_generator,** generate 15 test cases for **tritype-_single_conditions.** Present these test cases in the same format you used for Problem Set 6—e.g., if you have two test cases
   Test Case 1: isosceles 2 2 3 isosceles
   Test Case 2: equilateral 4 4 4 equilateral
   the file should contain
   "isosceles" 2 2 3 isosceles
   "equilateral" 4 4 4 equilateral
d. Determine the branch coverage adequacy of the test suite you generated in (c).

For Part 1, submit

- the listing (typed) of **tritype_single_conditions** (from a)
- the listing of your **random_test_data_generator** (from b)
- your test suite (typed) (from c)
- branch coverage adequacy of your test suite, along with how you got it (from d).

Part 2: Goal-oriented or Path-oriented Test-data Generation

Select one of the test-data generation methods we discussed (symbolic execution, concolic execution, search-based (genetic algorithms) generation)—call it **my_test_data_generation,** and use it for the following:

a. Select one of the uncovered branches in **tritype_single_conditions** that requires the traversal of at least three branches to reach it—this will be the **target_branch** for your test-data generation.
b. Apply **my_test_data_generation** to generate test input to cover **target_branch.** Although there may be tools available for **my_test_data_generation,** you are not to use them. Instead do the work yourself, and show all steps, so that it will be easy for the reader to understand your approach.

For Part 2, submit

- The **target_branch** location in the program, along with the branches required to reach it.
- The description of how you used **my_test_data_generation** to generate test input for **target_branch**