CSC165 tutorial exercise #1
winter 2013

1. Suppose you have a collection of three python programs q1.py, q2.py, and q3.py that claim to solve the same problem, and three test suites t1.py, t2.py, and t3.py that are supposed to test them. Suppose you know that q1.py passes all three test suites, q2.py fails all three test suites, and that q3.py fails t3.py but passes the other two. You have a colleague who tends to make sweeping statements, without proof (below). For each statement, say whether it is true or false, and which programs would have to be tested with which test suites to verify your claim (the smallest number of combinations possible of program/test suite.). Justify your answer.

   (a) All three python programs pass all three test suites.

   (b) There is one of the three python programs that passes all three test suites.

   (c) None of the three python programs passes all three test suites.

   (d) There is one of the three python programs that fails all three test suites.

2. Now suppose you know nothing about which of the three python programs pass which tests. Let P be the set of all possible python programs, Q be the set of three python programs from the previous question, and T be the set of python programs that pass the three tests from the previous question. For each statement (a)–(d) in the previous question, draw a pair of Venn diagrams, with universe P containing interlocking Q and T, diagramming the situation when the statement is True beside the situation when the statement is False. For each of the four regions in the diagram place a "?" if the region may be empty or occupied, an "X" if the region must not be occupied, and a "O" if the region must be occupied.