

Problem 1,(10 points) Question 1: (6 pts)

X m(X y, String s) is a function subtype of Object m(X y, String s).
Y m(Object y, Object s) is a function subtype of Object m(X y, String s).
Z m(Y y, String s) is not a function subtype of Object m(X y, String s). Y is a subtype of X, thus stronger.

X m(X y, String s) OVERRIDES
Y m(Object y, Object s) OVERLOADS
Z m(Y y, String s) OVERLOADS

GRADING: Take 1pt off for each incorrect answer.

Problem 1, Question 2: (4 points)

IsoscelesTriangle IS NOT A TRUE SUBTYPE OF Triangle (overriding methods must have a stronger spec. This is similar to Square and Rectangle example from lecture)

Squid IS NOT TRUE SUBTYPE of Vertebrate (squid neckbones() spec is not stronger; i.e Squid return spec doesn't imply Vertebrate return)
Human IS TRUE SUBTYPE of Vertebrate

MountainBike IS TRUE SUBTYPE of Bicycle

ConcurrentAccount IS NOT TRUE SUBTYPE of Account (throws exception that client may not expect. Can't substitute ConcurrentAccount for Account)

No new exceptions should be thrown, unless the exceptions are subtypes of exceptions thrown by the parent. (SubtypePolymorphism slide 27)

GRADING: Take 1 pt off for each incorrect answer.

Changes question (5 points). Give points if they described adequate changes. (Majority of cases.)

Code quality (7 points): Look that they have specs. If they don't have specs, or specs are inadequate, take 3 to 5pts off.
They may or may not have Rep invariants and Abs functions, either way is fine.

Collaboration and Reflection (0.5 pts each)
Give points for reasonable answers.