

Honor Pledge

On my honor, I have neither given nor received any unauthorized aid on this quiz.

By typing your first and last name in the space provided below you are electronically signing to indicate that:

- (1) You are the person who is taking this quiz.
- (2) You read and understood the Honor Pledge and you agree to be bound by it.

Question 1. (6 pts) Given the following classes and variable declarations:

```
class A {  
    void m(A a) { System.out.println("AA"); }  
    void m(C a) { System.out.println("AC"); }  
}  
class B extends A {  
    void m(A a) { System.out.println("BA"); }  
    void m(B a) { System.out.println("BB"); }  
}  
class C extends B {  
    void m(A a) { System.out.println("CA"); }  
    void m(B a) { System.out.println("CB"); }  
    void m(C a) { System.out.println("CC"); }  
}
```

```
A a1 = new A();  
A a2 = new B();  
A a3 = new C();  
B b1 = new B();  
B b2 = new C();  
C c1 = new C();
```

What is printed by the following method calls?

- (a) a1.m(b2);
- (b) a2.m(b1);
- (c) a3.m(c1);
- (d) a1.m(a3);
- (e) c1.m(a3);
- (f) a2.m(c1);

Write your response below so that each line contains a letter for the option and its output, like in this example: “(a) YY”.

Question 2. (2 pts) In Java, Double is a subtype of Number. Is Double f(String) a true function subtype of Number f(Object)?

Question 3. (1 pt) If there are non-null x , y , and z such that $x.equals(y)$ returns `true`, $y.equals(z)$ returns `false`, and $x.equals(z)$ returns `false`, then does it follow that `equals` is not transitive? Note that you may not assume that any other properties hold for `equals`.

Question 4. (1 pt) In Java, HashSet is a subtype of AbstractSet. Is AbstractSet<HashSet> a subtype of AbstractSet<AbstractSet>?