## Problem1

## Yihang Wang

## April 2020

```
1. class A{
        Object m(X y,String s);
}
class B extends A{
        X m(X y, String s); // subtype, override
        Y m(Object y, Object s); // not subtype, overload
        Z m(Y y, String s); // not function subtype, overload
}
```

2. IsoscelesTriangle: It is not a true subtype. The reason is following: if I do:

Triangle t = new IsoscelesTriangle()

If I set t.setSide(2, 3, 4), For IsoscelesTriangle the side would be(2, 3, 3), which is different from Triangle. In this way, it surprise the client since IsoscelesTriangle cannot substitute Triangle.

- 3. Squid is not true subtype for Vertebrate.
  - For Vertebrate, its postcondition is irrelevant to Squid. They are in different scope. So, Squid cannot substitute Vertebrate, which means Squid is not true subtype for Vertebrate.
- 4. Human is true subtype for Vertebrate. Human's postcondition is stronger than Vertebrate, which means returning more. So, Human can substitute Vertebrate.
- 5. MountainBike is not true subtype for Bike.

  The constructor of MountainBike requires more than the class Bike. So, it is not true subtype.
- 6. ConcurrentAccount is true subtype for Account.

  ConcurrentAccount returns more in deposit since it really throw an exception.