Serie 9 - Objects and Types

1 Theoretical Questions

1. How can covariance lead to type errors?
2. How does contravariance support subtyping?
3. What is the difference between subtyping and specialization?
4. Why overloading is practical? Why it is evil?
5. What problems do recursive types pose for subtyping?
6. Why is subtyping a "universal" form of polymorphism?
7. How is a class like a family of types?

2 Types in Java

Integers and floats in Java are primitive data types. Since they do not have a common superclass it is impossible to pass a float where an integer was expected and vice versa. Implement a new class hierarchy in Java for numbers that supports the `times` operation so that the tests in Ex09-2.zip get green. You are not allowed to use `instanceof`.