Worksheet: Implementation of clone()

In this week's project on the active directory you find in the package `patterns.clone.company` the classes `Employee`, `Company` and `PartTimeEmployee`, which all provide an implementation of method `equals`. The `clone` method however is empty. Additionally, a JUnit test class (`CloningTest`) is provided. Use this test in the following tasks.
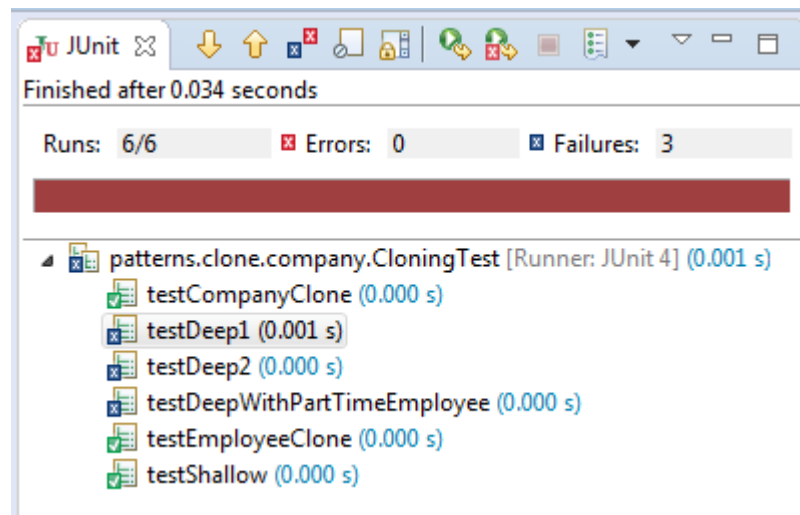
Tasks:
1. Implement method `clone()` in class `Employee`.

2. Implement method `clone()` in class `Company` so that (for now) a shallow copy is created.

   After having resolved these two tasks, the three tests
   - `testEmployeeClone`
   - `testCompanyClone`
   - `testShallow`
   defined in the test class should terminate successfully.

3. Extend the implementation of method `clone()` in class `Company` so that a deep-copy is created.

4. Up to which depth do the two test methods `testDeep1()` and `testDeep2()` compare the created clone? Explain the difference!

5. How do the two test methods `testDeep1()` and `testDeep2()` test whether correct copies have been created?

6. Finally one remaining test should fail: `testDeepWithPartTimeEmployee`. The reason for this failure is that method `clone` in class `PartTimeEmployee` (a sub class of `Employee`) is not implemented correctly. Provide a correct implementation for this method as well.