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# What are good real life Java inheritance (or use of abstract classes) examples?

Posted on June 9, 2015 by Arulkumaran Kumaraswamipillai

We have already looked at Why favor composition over inheritance? with reasoning and code examples. Inheritance still has its use and let's look at some real life examples.

#### **#1. Unit Test Classes**

```
1 import javax.inject.Inject;
2
3 import org.junit.Assert;
4 import org.junit.Test;
5
6 public class EmailAddressDaoTest extends BaseTes
7
```

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```

```
8  @Inject
9  private EmailAddressDao emailAddressDao;
10
11  @Test
12  public void testGetEmailAddressForUserId() {
13    String emailAddress = emailAddressDao.ge
14    Assert.assertEquals("hleibowitz@stateone
15  }
16 }
```

In the base class you can wire up Spring configs, shared logic, etc. For example, you may want to load SQL scripts to test your DAO layer with a HSQLDB embedded database. So, the scripts will get loaded only once into the in memory database and then multiple unit tests can be executed. This is demonstrated in JPA tutorial with unit testing.

```
import static org.junit.Assert.fail;
   import java.lang.reflect.Field;
import java.lang.reflect.Modifier;
3
  import org.junit.runner.RunWith;
   import org.springframework.test.contextC
  import org.springframework.test.context.junit4.S
  import org.springframework.test.context.transact
10 import org.springframework.transaction.annotatio
11
12 /**
    * Base class for all unit tests used in this mo
13
14
15
   @Transactional(readOnly = false)
16 @TransactionConfiguration(defaultRollback = fals
17 @ContextConfiguration(classes = {
18
       DomainTestConfiguration.class, MyAppServiceT
19
       initializers = MyAppApplicationContextTestIn
20
21 @RunWith(SpringJUnit4ClassRunner.class)
22 public abstract class BaseTest {
23
24
        //any common logic shared all test cases go
25 }
```

## **#2.** Hibernate Entity Base classes wiring IDs, Version, and Auditing Fields

```
1 @MappedSuperclass
2 public abstract class AbstractDomainEntity<ID ex
3    private static final long serialVersionUID =
4
5    //for pessimistic concurrency control
6    @Version
7    @Column(name = "lock_version", nullable = fa
private Long version;</pre>
```

```
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```
9
10 @Override
11 public abstract ID getId();
12
13 //setters, getts, equals/hashcode/toString m
14
15 }
```

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#### Mapping for the database audit fields

```
@MappedSuperclass
   @EntityListeners(DomainEntityListener.class)
   public abstract class AbstractAuditableDomainEnt
4
       extends AbstractDomainEntity<ID> {
5
       private static final long serialVersionUID =
6
7
8
       @Column(name = "created_by", nullable = true
9
       private String createdBy;
10
       @Column(name = "created_date", nullable = fa
11
       @Type(type = "org.joda.time.contrib.hibernat
private DateTime createdDate;
12
13
14
15
       @Column(name = "updated_by", nullable = true
       private String lastModifiedBy;
16
17
18
       @Column(name = "updated_date", nullable = fa
       @Type(type = "org.joda.time.contrib.hibernat
19
20
       private DateTime lastModifiedDate;
21
22
       //setters, getts, equals/hashcode/toString m
23
```

The other entity classes can extend AbstractAuditableDomainEntity class.

```
1 @Table(name = "account_tbl")
2 @Entity(name = "Account")
3 public class Account extends AbstractAuditableDom
4
5 //...
6 }
```

### **#3. Template method and Composite design Patterns**

are good examples of using an abstract base class and inheritance. Template and Composite design patterns are covered in Java abstract classes Vs interfaces. **Q11** discusses the template method design pattern — 12 java design patterns interview questions and answers

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In Java API, AbstractStringBuilder, AbstractQueue, AbstractAction, AbstractButton, AbstractSet, AbstractMap, etc provide a skeletal implementation to minimize the effort required to implement the concrete classes.

#### In Java 8, you can define default methods in an interface. Would this make abstract classes not required any more?

With the advent of default methods in Java 8 functional interfaces, the question arises, which one (i.e. abstract classess or interfaces with default methods?) to use in a given situation. Abstract class or Interfaces with default methods. The abstract classes still have their place as

- 1) Default methods are never final.
- 2) Default methods can not be synchronized.
- 3) default methods can not override Object class's methods.
- **4)** Interfaces where default methods are defined cannot hold state. That is, you can't define variables in an interface. Only behvior is allowed in default methods.

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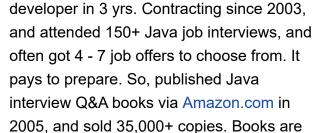
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