

EAPLI

Um pouco mais sobre o Domínio

Paulo Gandra de Sousa
pag@isep.ipp.pt

DDD Entity as a JPA managed class

```
@Entity
Class Product{
    // database ID
    @ID
    @GeneratedValue(strategy=GenerationType.AUTO)
    private Long id;
    private void setID(Long id) { ... }
    private Long getID() { ... }

    // domain ID
    private ProductID ref;
    public ProductID getProductID() { ... }
    private void setProductID(ProductID ref) { ... }

    ...
}
```

The need for Value Objects: An example

- Requirement 321:
 - User's passwords must be at least 6 characters long and have at least one digit

To which class should this responsibility be assigned?

Domain invariants

```
@Test
public void ensurePasswordHasAtLeastOneDigitAnd6CharactersLong() {
    new Password("abcdefgh1");
}

@Test(expected = IllegalArgumentException.class)
public void ensurePasswordsSmallerThan6CharactersAreNotAllowed() {
    new Password("ab1c");
}

@Test(expected = IllegalArgumentException.class)
public void ensurePasswordsWithoutDigitsAreNotAllowed() {
    new Password("abcdefgh");
}
```

You are actually
doing design

Domain invariants

```
@Test
public void ensurePasswordHasAtLeastOneDigitAnd6CharactersLong() {
    Password p = Password.valueOf("abcdefgh1");
}

@Test(expected = IllegalArgumentException.class)
public void ensurePasswordsSmallerThan6CharactersAreNotAllowed() {
    Password p = Password.valueOf("ab1c");
}

@Test(expected = IllegalArgumentException.class)
public void ensurePasswordsWithoutDigitsAreNotAllowed() {
    Password p = Password.valueOf("abcdefgh");
}
```

Taking decisions on
how the code will
work

Domain implementation

```
public class Password {  
  
    ...  
  
    public Password(String password) {  
        if (!meetsMinimumRequirements(password)) {  
            throw new IllegalStateException();  
        }  
        thePassword = password;  
    }  
  
    private boolean meetsMinimumRequirements(String password) {  
        if (Strings.isNullOrEmpty(password)  
            || password.length() < 6  
            || !Strings.containsDigit(password))  
        {  
            return false;  
        }  
  
        return true;  
    }  
}
```

DDD Value Objects as JPA components

@Embeddable

```
class Color {  
    private int red;  
    private int green;  
    private int blue;  
    ...  
}
```

@Entity

```
Class Car {  
    ...  
    private Color color;  
    ...  
}
```

DDD Value Objects as JPA managed classes

```
@Entity
class Color {
    // database ID not to be exposed to domain
    @Id
    @GeneratedValue(strategy=GenerationType.AUTO)
    private int id;

    // domain values
    private int red;
    private int green;
    private int blue;
    ...

    // avoid instantiation
    private Color() {...}

    //factory method
    static Color fromRGB(int r, int g, int b) { ... }
}
```

Factory method hides the lookup/write to the DB if necessary.

```
@Entity
class Car {
    ...
    @OneToOne
    private Color color;
    ...
}
```


Domain Layer API

All methods of a domain object should handle domain entities and value objects only; no primitive types.

```
void changeName(String name)
```

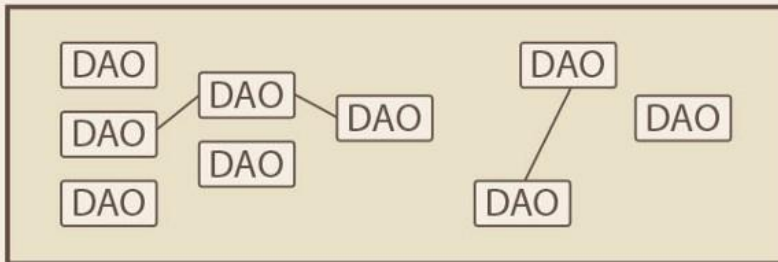
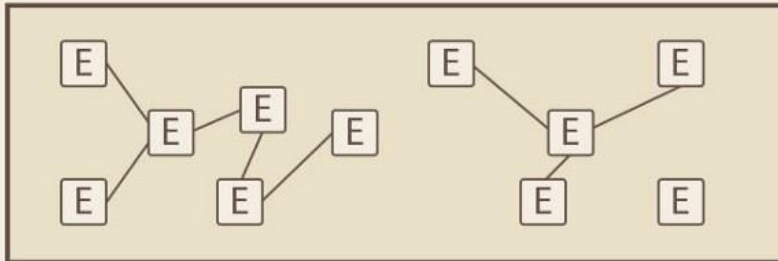
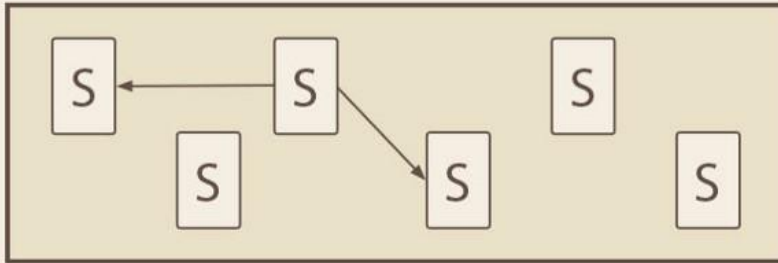
vs.

```
void changeName(Name aName)
```

Provide a convenience valueOf() method to convert from primitives read from the outside (e.g., UI, DB)

```
Class Name {  
    public static Name valueOf(String name) {...}  
}
```

Anemic Domain Model



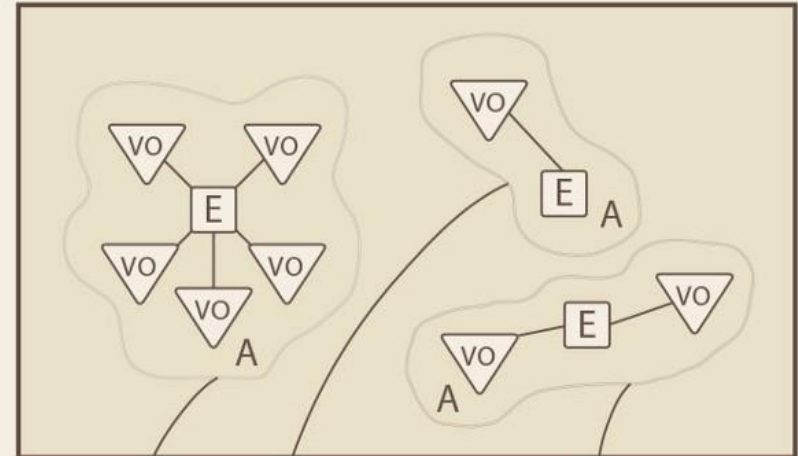
S Service

E Entity

R Repository

A Aggregate

DDD



VO Value Object

DAO Data Access Object