

Assignment 2 Report

Software Verification and Validation

2019–2020

João David
49448

09/06/2020

1 HTML Unit

While defining the HTML Unit tests, some adaptations where made to the JSP files. The *name* property was added to some HTML elements, in order to be able to get them using HTML Unit's API, those adaptations were made to the following files:

- CustomerInfo.jsp
- SalesInfo.jsp
- ShowSalesDelivery.jsp
- addSaleDelivery.jsp

2 DB Setup

2.1 Sales Behavior

The first Junit test verifies that it is not possible to add a sale to an non existent customer.

```
public void extraSaleBehaviour1() throws
    ApplicationException {
    int vat = 503183504;
    assertFalse(hasClient(vat));
    assertThrows(ApplicationException.class, () -> {
        SaleService.INSTANCE.addSale(vat);
    });
}
```

All new sales created for a new customer must have its date the same as of creation, a total of 0.0, an open status and it needs to be associated to the right vat.

```
public void extraSaleBehaviour2() throws
    ApplicationException {
    int vat = 503183504;
    assertFalse(hasClient(vat));
    CustomerService.INSTANCE.addCustomer(vat, "FCUL",
        217500000);
    assertTrue(hasClient(vat));
    SaleService.INSTANCE.addSale(vat);
    List<SaleDTO> sales =
        SaleService.INSTANCE.getSaleByCustomerVat(vat).sales;
    SimpleDateFormat dateFormat = new
        SimpleDateFormat("yyyy-MM-dd");
    for (SaleDTO curr : sales) {
        assertEquals(dateFormat.format(new Date()),
            curr.data.toString());
        assertEquals(new Double(0.0), curr.total);
        assertEquals("O", curr.statusId);
        assertEquals(vat, curr.customerVat);
    }
}
```

2.2 Sale Deliveries Behavior

After a sale has been closed, it should not be possible to add a delivery for that sale

```
public void extraSaleDeliveryBehaviour1() throws
    ApplicationException {
    int vat = 197672337;
    assertTrue(hasClient(vat));
    SaleService.INSTANCE.addSale(vat);
    assertEquals("O",
        SaleService.INSTANCE.getSaleById(1).statusId);
    SaleService.INSTANCE.updateSale(1);
    assertEquals("C",
        SaleService.INSTANCE.getSaleById(1).statusId);
    assertThrows(ApplicationException.class, () -> {
        SaleService.INSTANCE.addSaleDelivery(1, 1);
    });
}
```

After removing a customer, its sale deliveries should be removed as well

```
public void extraSaleDeliveryBehaviour2() throws
    ApplicationException {
    int vat = 197672337;
    assertTrue(hasClient(vat));
    SaleService.INSTANCE.addSaleDelivery(1, 1);
    assertNotEquals(0, SaleService.INSTANCE
        .getSalesDeliveryByVat(vat).sales_delivery.size());
    CustomerService.INSTANCE.removeCustomer(vat);
    assertFalse(hasClient(vat));
    assertEquals(0, SaleService.INSTANCE
        .getSalesDeliveryByVat(vat).sales_delivery.size());
}
```

3 Mockito

4 Bugs found

4.1 Customer Removal

After removing a registered customer from the system, its addresses, sales and sale deliveries were still kept in the database.

4.1.1 Reproduction

1. Create e new customer
2. Add an address
3. Insert a new sale
4. Insert a new sale delivery using the previous two information
5. Remove the customer
6. Use the customer's vat number to search for sales/sale deliveries

4.1.2 Solution

First implement in the Address, Sale and SaleDelivery RDGW classes, the methods responsible for deleting all addresses, sales and sale deliveries, respectively, given a customer VAT number. Then, use them to delete the information in the *removeCustomer* method in the *CustomerService* Java class.

4.2 Insert new sales for non-existent customers

The system allows the creation of new sales associated to VAT numbers that do not belong to any customer registered in the system.

4.2.1 Reproduction

1. Click on "Enter new sale"
2. Enter a VAT number that is not registered to any customer

4.2.2 Solution

Within the *addSale* method from the *SaleService* class, use the method *getCustomerByVATNumber* from the *CustomerRDGW* class, to query the Customer's DB table, using his VAT number. If such customer does not exist, the system should raise an exception.