Internet shop “AVON”

Author:

Kuzcjutkomov Daniil

Saint-Petersburg, 2019

Content.

1. Task

First part:

To develop web-application that simulates the work of the online store information system. The application have to perform the required user`s cases.

User cases:

• For clients:

- To view catalog with the possibility of filtering by parameters;
- To view and edit profile (user data, addresses and password);
- To view order (issuing, view order history and repeat order);

• For managers:

- To view clients orders;
- To edit order (delivering) and payment status;
- To view sales statistic (top 10 products, clients, revenue per week, month);
- To add new products;
- To add and manage catalog categories.

Second part:

To develop another one web-application that has to show top products white prices. Data should be loaded when the application starts. Reload happens when the application gets notification from the main web-application.

2. Applications description

First application:

Web-application has two separated type of user: clients and managers.

Clients can view catalog, products, buy them. Clients also can change personal information, add and remove addresses, view order history.

Managers can add products, their categories. Managers also can view list of clients orders and edit their order and payment status. Managers doesn’t have clients options.

There is an authentication mechanism in system that control access to site content. Each user in application has access level that display what information he could get and what couldn`t.

Data of users and their options store in reliable database. Passwords are encoded using BCryptPasswordEncoder class.

Second application:

Web-application has only one page, which includes top 10 products. This application gets notification, when this top list could changed. After that jsf renders new list, which server gets using HttpURLConnection class and parses response using com.google.code.gson.Gson class.

Third application (killer feature):

This is web-application too, which is news portal for main application. It displays news list, allow to view full post text and allow to add news posts. This application is also connected to the internet shop by embedded wildfly active mq. The main application receives new news directly taking away from the queue.

3. Used technologies

First application:

- IDE - IntelliJ IDEA;
- Java 8;
- WildFly 10;
- DB – PostgreSQL;
- Maven;
- JPA (Hibernate);
- Jackson;
- Model mapper;
- Spring Framework;
- JSP;
- JSTL;
- ActiveMQ;
- Ajax;
- Bootstrap;
- JQuery;
- CSS;
- JPA;
- Junit;
- Log4j;
- Mail-api;
- Mockito;
- SonarQube;
- REST.

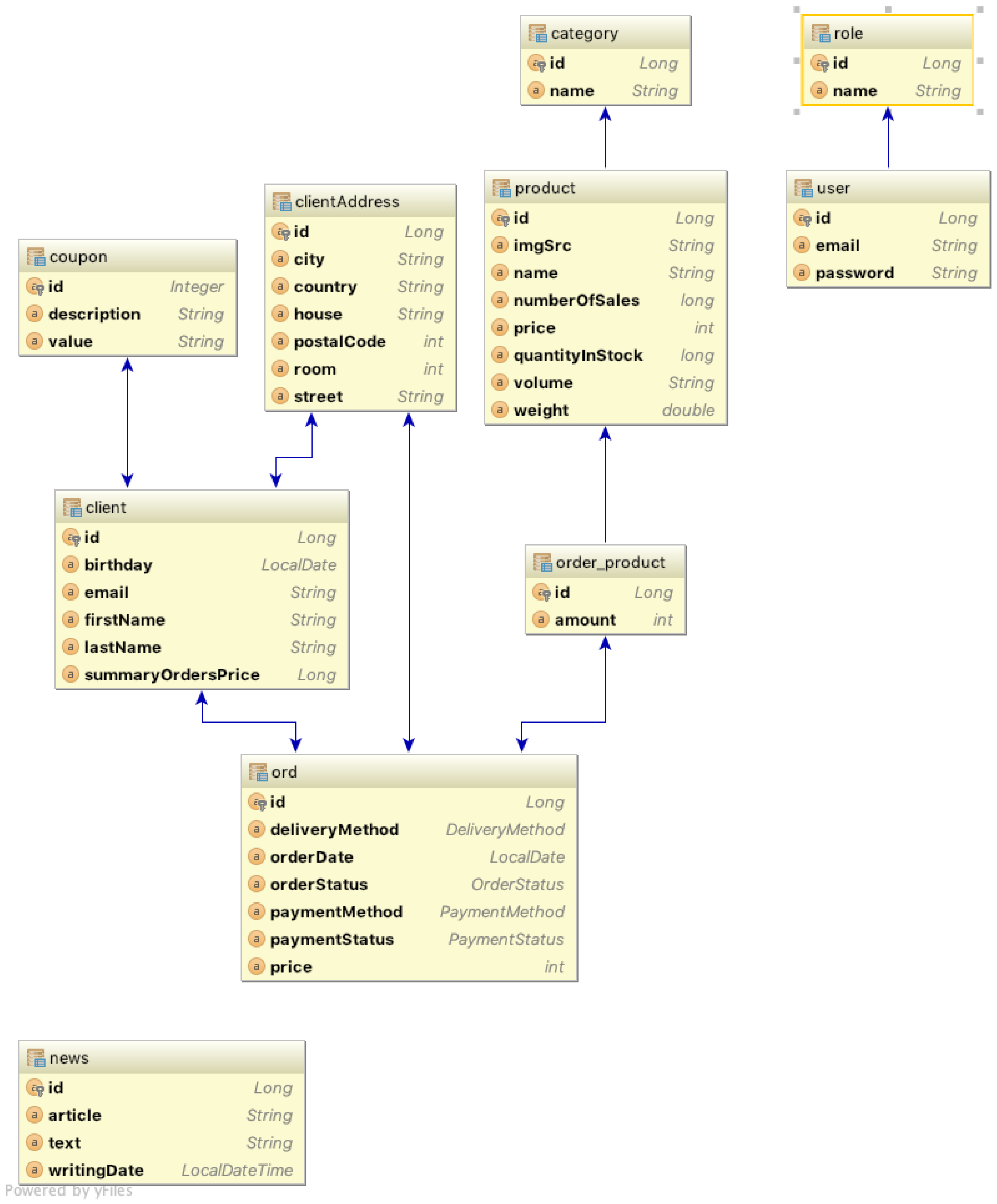
Second application:

- EJB 3;
- Java 8;
- JSF 2.3;
- ActiveMQ;
- REST.

Third application:

- Spring Boot;
- Kotlin 1.3.31;
- Java 8 (a bit);
- Vue JS (vue-cli);
- DB – PostgreSQL;
- Jackson;
- Log4j;
- Axious;
- Vue-router.

4. Database model



5. System infrastructure

First application:

1) Front-end:
- Web-pages - JSP;
- Page-design – CSS;
- Dynamic content – JS, JQuery, Ajax.

2) Back-end:
- Application server – WildFly;
- Database – PostgreSQL;
- Server logic – Spring Framework.

Second application:

1) Front-end:
- Web-pages - XHTML;
- Dynamic content – JSF;

2) Back-end:
- Application server – WildFly;
- Server logic – EJB;
- JMS – ActiveMQ;
- WS – REST.

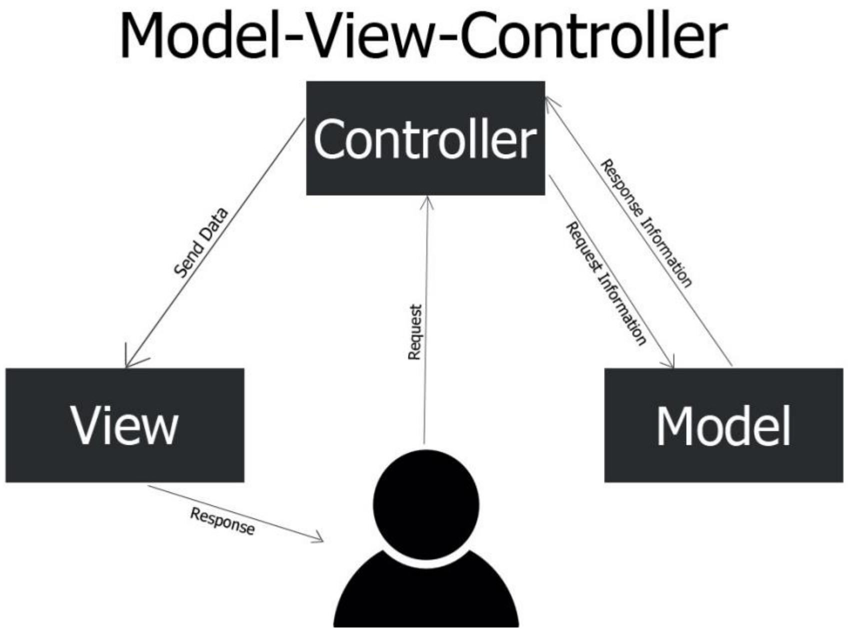
Third application:

1) Front-end:
- Web-pages – Vue components;

2) Back-end:
- Application server – Tomcat (embedded);
- Server logic – Spring Boot;
- JMS – ActiveMQ.

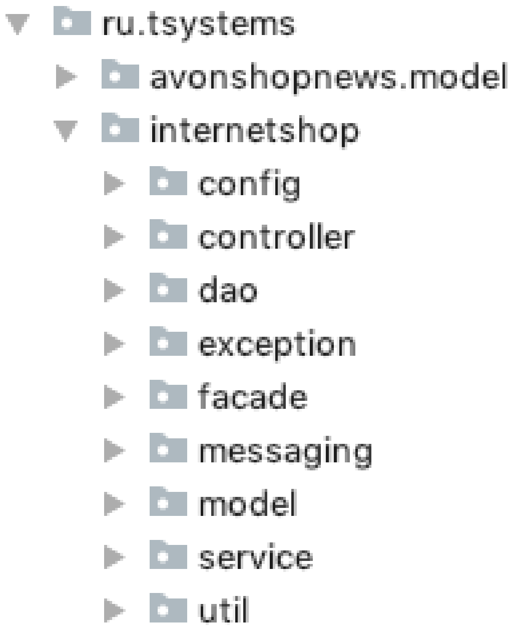
6. System architecture

All 3 web-applications has based on MVC pattern.



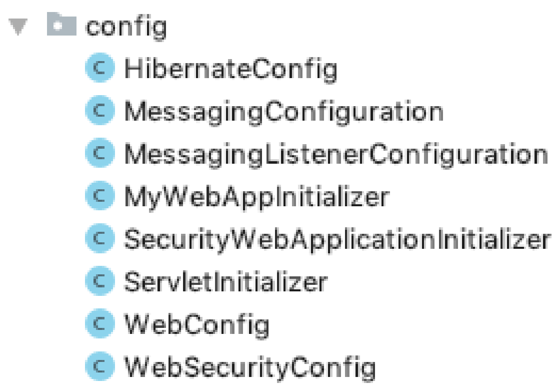
Class structure

First application has next structure:



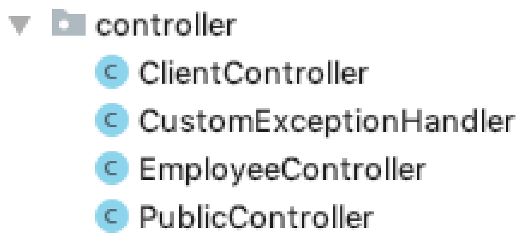
```
▼ ru.tsystems
    ▶ avonshopnews.model
    ▼ internetshop
        ▶ config
        ▶ controller
        ▶ dao
        ▶ exception
        ▶ facade
        ▶ messaging
        ▶ model
        ▶ service
        ▶ util
```

Configuration classes:



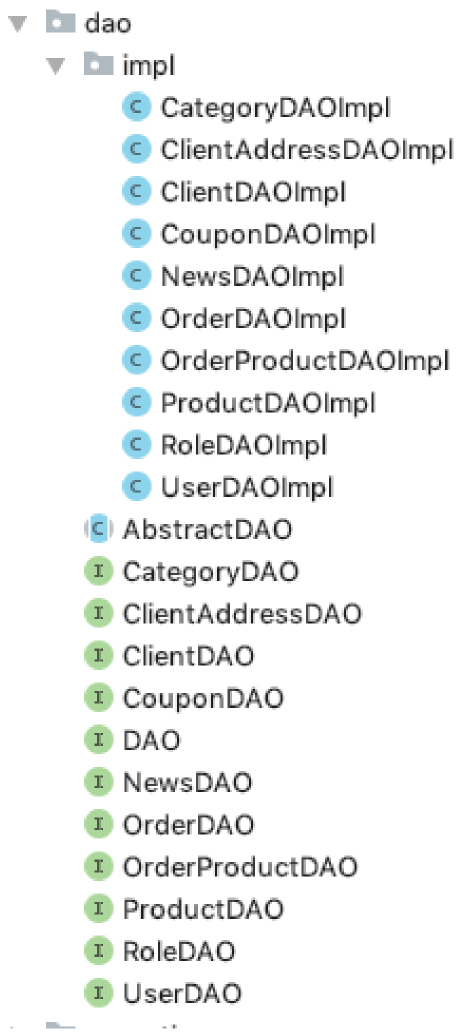
```
config
    HibernateConfig
    MessagingConfiguration
    MessagingListenerConfiguration
    MyWebAppInitializer
    SecurityWebApplicationInitializer
    ServletInitializer
    WebConfig
    WebSecurityConfig
```

Controller level:



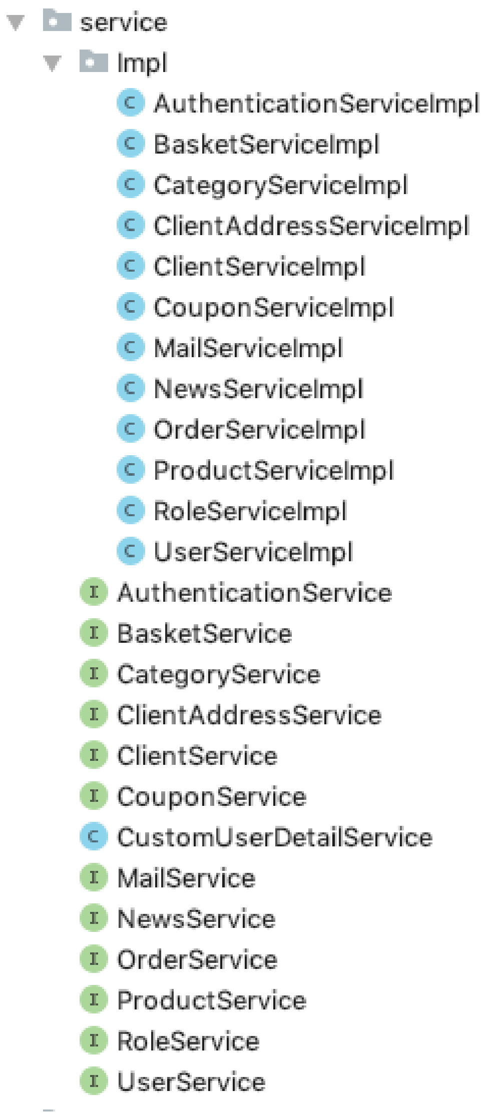
```
controller
    ClientController
    CustomExceptionHandler
    EmployeeController
    PublicController
```

DAO level:



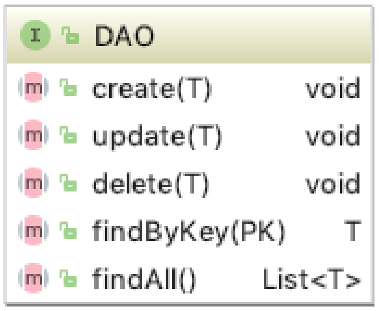
```
dao
    impl
        CategoryDAOImpl
        ClientAddressDAOImpl
        ClientDAOImpl
        CouponDAOImpl
        NewsDAOImpl
        OrderDAOImpl
        OrderProductDAOImpl
        ProductDAOImpl
        RoleDAOImpl
        UserDAOImpl
    AbstractDAO
    CategoryDAO
    ClientAddressDAO
    ClientDAO
    CouponDAO
    DAO
    NewsDAO
    OrderDAO
    OrderProductDAO
    ProductDAO
    RoleDAO
    UserDAO
```

Service level:

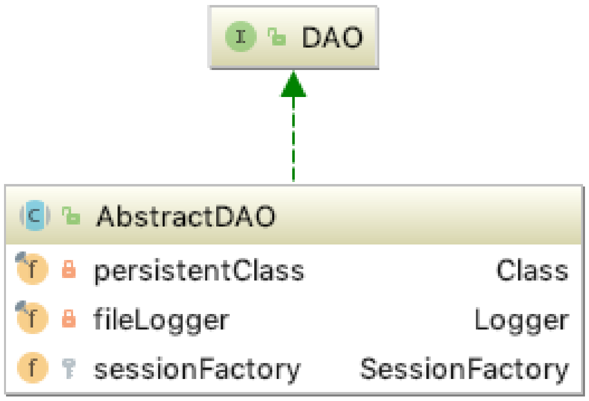


```
service
    Impl
        AuthenticationServiceImpl
        BasketServiceImpl
        CategoryServiceImpl
        ClientAddressServiceImpl
        ClientServiceImpl
        CouponServiceImpl
        MailServiceImpl
        NewsServiceImpl
        OrderServiceImpl
        ProductServiceImpl
        RoleServiceImpl
        UserServiceImpl
    AuthenticationService
    BasketService
    CategoryService
    ClientAddressService
    ClientService
    CouponService
    CustomUserDetailService
    MailService
    NewsService
    OrderService
    ProductService
    RoleService
    UserService
```

DAO is main interface:

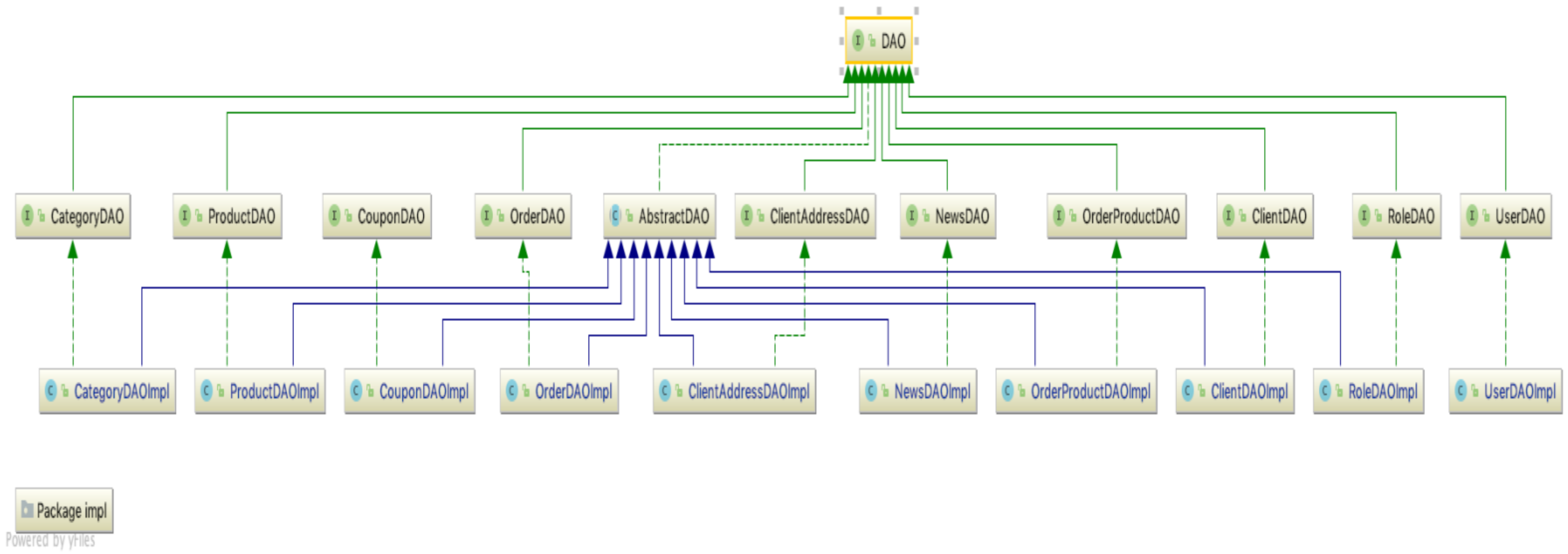


AbstractDAO is abstract class, which implements methods from DAO interface



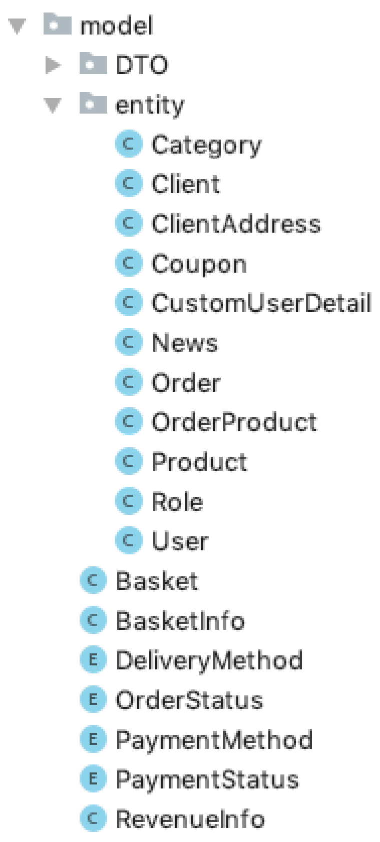
And we have DAO interface and implementation class for this interface for each entity. Also every DAO interface extends main DAO interface and declares only additional methods, which main DAO interface doesn't declare. Every implementation class extends AbstractDAO class and override methods from the necessary DAO.

It looks like this sheme:



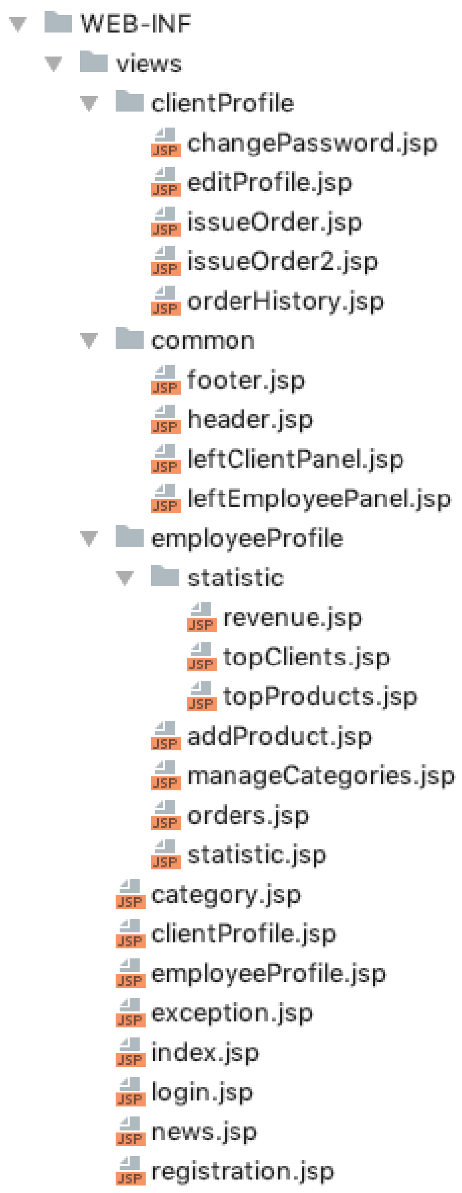
Each DAO class has queries to database. Developer has HQL (Hibernate query language) way to create query.

Model level:



```
▼ model
  ▶ DTO
  ▼ entity
      Category
      Client
      ClientAddress
      Coupon
      CustomUserDetail
      News
      Order
      OrderProduct
      Product
      Role
      User
    Basket
    BasketInfo
    DeliveryMethod
    OrderStatus
    PaymentMethod
    PaymentStatus
    RevenueInfo
```

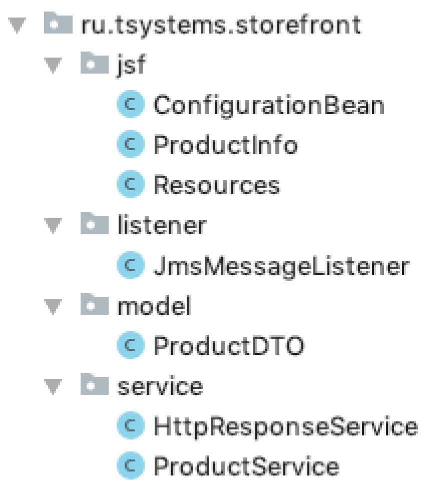
View level:

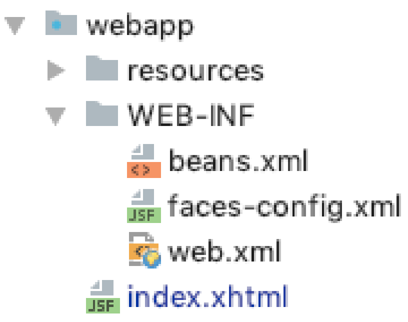


```
▼ WEB-INF
  ▼ views
    ▼ clientProfile
        changePassword.jsp
        editProfile.jsp
        issueOrder.jsp
        issueOrder2.jsp
        orderHistory.jsp
    ▼ common
        footer.jsp
        header.jsp
        leftClientPanel.jsp
        leftEmployeePanel.jsp
    ▼ employeeProfile
      ▼ statistic
          revenue.jsp
          topClients.jsp
          topProducts.jsp
        addProduct.jsp
        manageCategories.jsp
        orders.jsp
        statistic.jsp
      category.jsp
      clientProfile.jsp
      employeeProfile.jsp
      exception.jsp
      index.jsp
      login.jsp
      news.jsp
      registration.jsp
```

DTO package contains dto for each entity class, which allows to win LazyInitializationException.

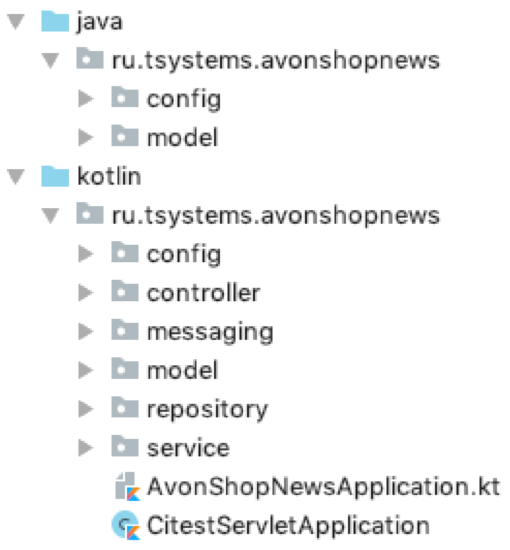
Second application has next structure:


```
▼ ru.tsystems.storefront
  ▼ jsf
      ConfigurationBean
      ProductInfo
      Resources
  ▼ listener
      JmsMessageListener
  ▼ model
      ProductDTO
  ▼ service
      HttpResponseService
      ProductService
```

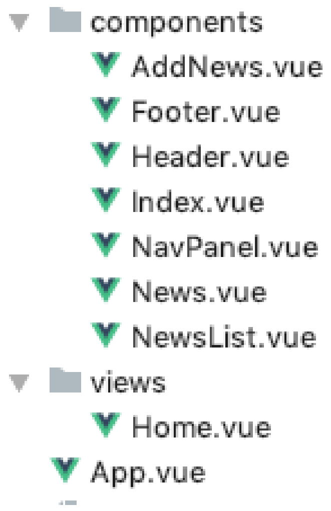

```
▼ webapp
  ▶ resources
  ▼ WEB-INF
      beans.xml
      faces-config.xml
      web.xml
    index.xhtml
```

Third application has 2 maven module: backend and frontend.

Backend module:


```
▼ java
  ▼ ru.tsystems.avonshopnews
    ▶ config
    ▶ model
▼ kotlin
  ▼ ru.tsystems.avonshopnews
    ▶ config
    ▶ controller
    ▶ messaging
    ▶ model
    ▶ repository
    ▶ service
      AvonShopNewsApplication.kt
      CitestServletApplication
```

Frontend Vue components:


```
▼ components
    AddNews.vue
    Footer.vue
    Header.vue
    Index.vue
    NavPanel.vue
    News.vue
    NewsList.vue
▼ views
    Home.vue
  App.vue
```

7. Hurt and killer features

Hurt features:

1. Repeat order.

Client can repeat order. He needs just click on button opposite necessary order and he will be transferred to issueOrder page with issued basket.

2. Adaptive makeup on all pages in all applications.

We can view pages using all types of devices: smartphone, tablet, notebook or desktop.

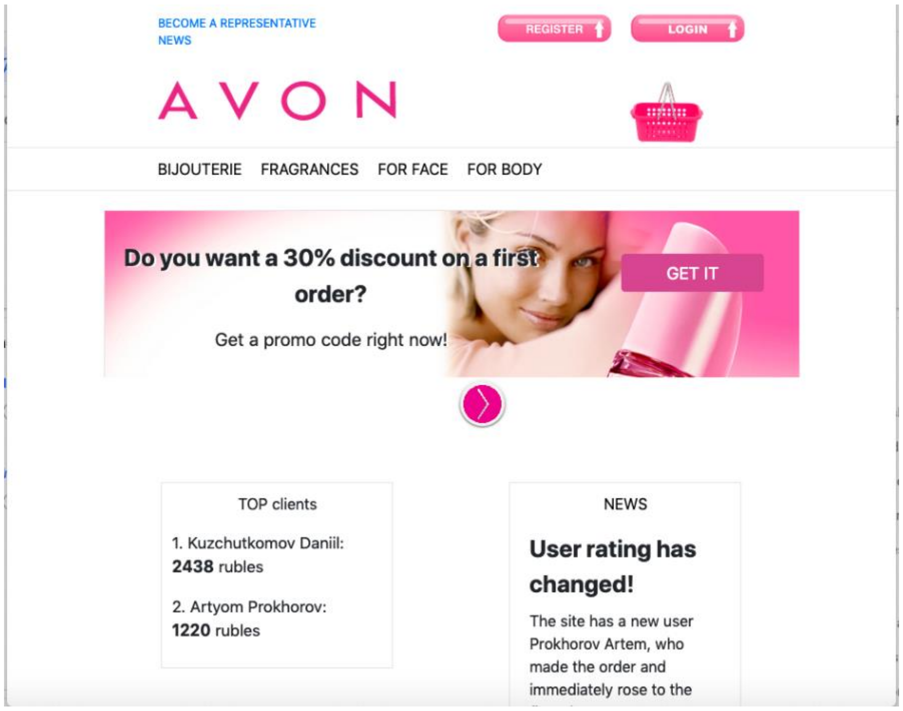
Killer features:

3. Coupon system.
   Client can get some coupons, which gives a discount for some cases. It can be discount on products of a particular category or discount on first order. Client can't use coupon twice.
4. Email notifications.
   Client get to his email letter, when:
   1) Client issues order;
   2) Client want to get a coupon;
   3) Employee changes order (delivery) status;
   4) Employee changes payment status.
5. News portal.
   Third application was written with newest technologies: Kotlin, Vue JS, Spring Boot and Spring Data.

8. UI

First application:

Main page:


BECOME A REPRESENTATIVE
NEWS

REGISTER LOGIN

AVON

BIJOUTERIE FRAGRANCES FOR FACE FOR BODY

Do you want a 30% discount on a first order?

Get a promo code right now!

GET IT

TOP clients

1. Kuzchutkomov Daniil: **2438** rubles

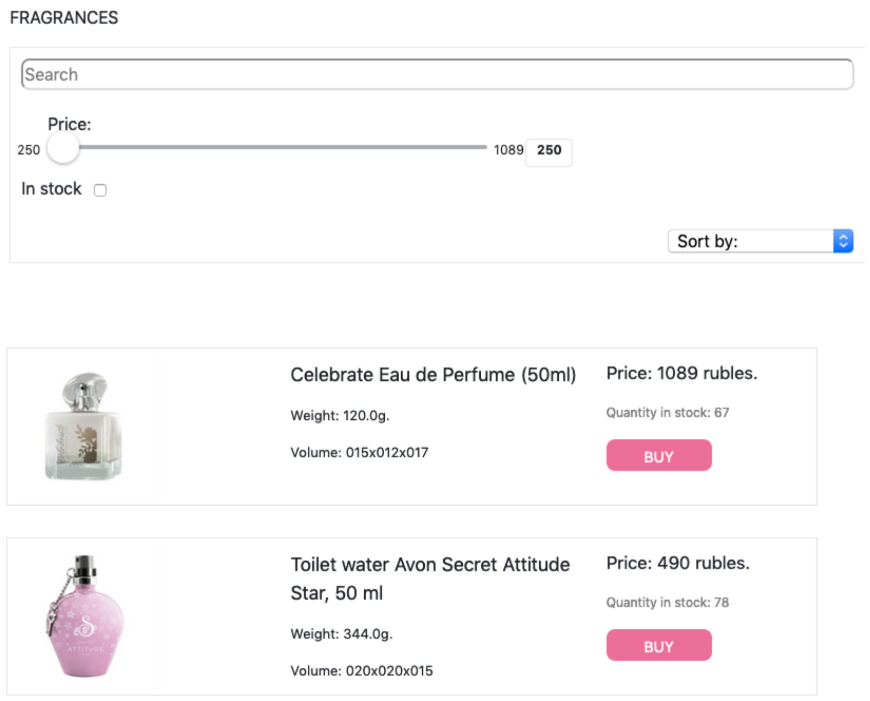
2. Artyom Prokhorov: **1220** rubles

NEWS

User rating has changed!

The site has a new user Prokhorov Artem, who made the order and immediately rose to the

Catalog:


FRAGRANCES

Search

Price:

250 1089 250

In stock

Sort by:

Celebrate Eau de Perfume (50ml)

Weight: 120.0g.

Volume: 015x012x017

Price: 1089 rubles.

Quantity in stock: 67

BUY

Toilet water Avon Secret Attitude Star, 50 ml

Weight: 344.0g.

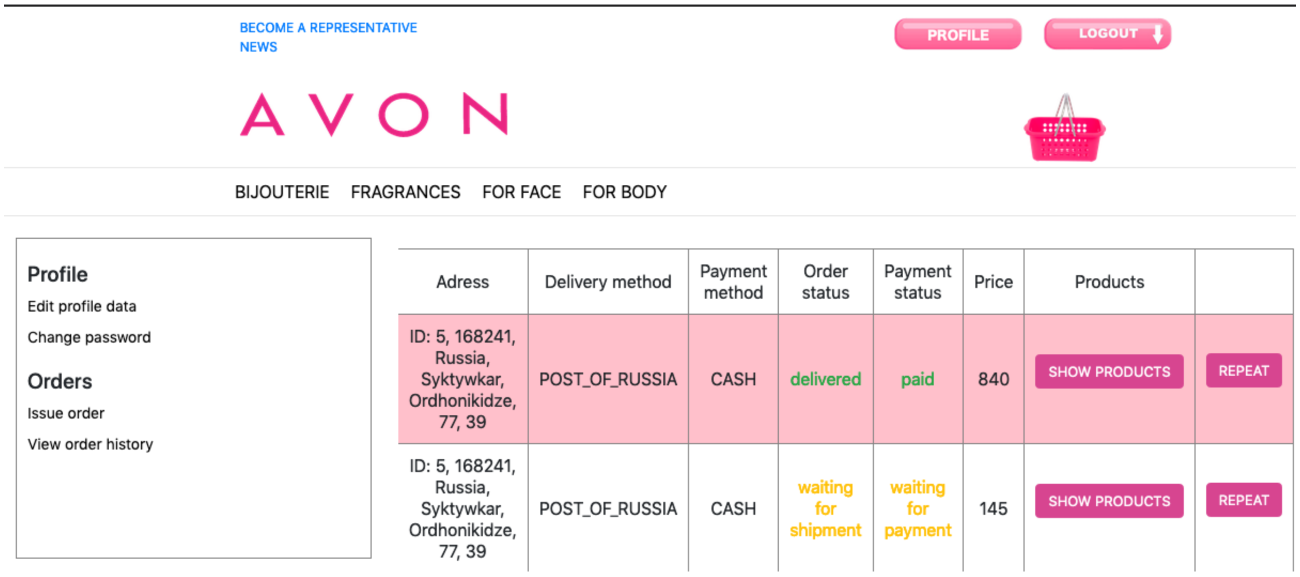
Volume: 020x020x015

Price: 490 rubles.

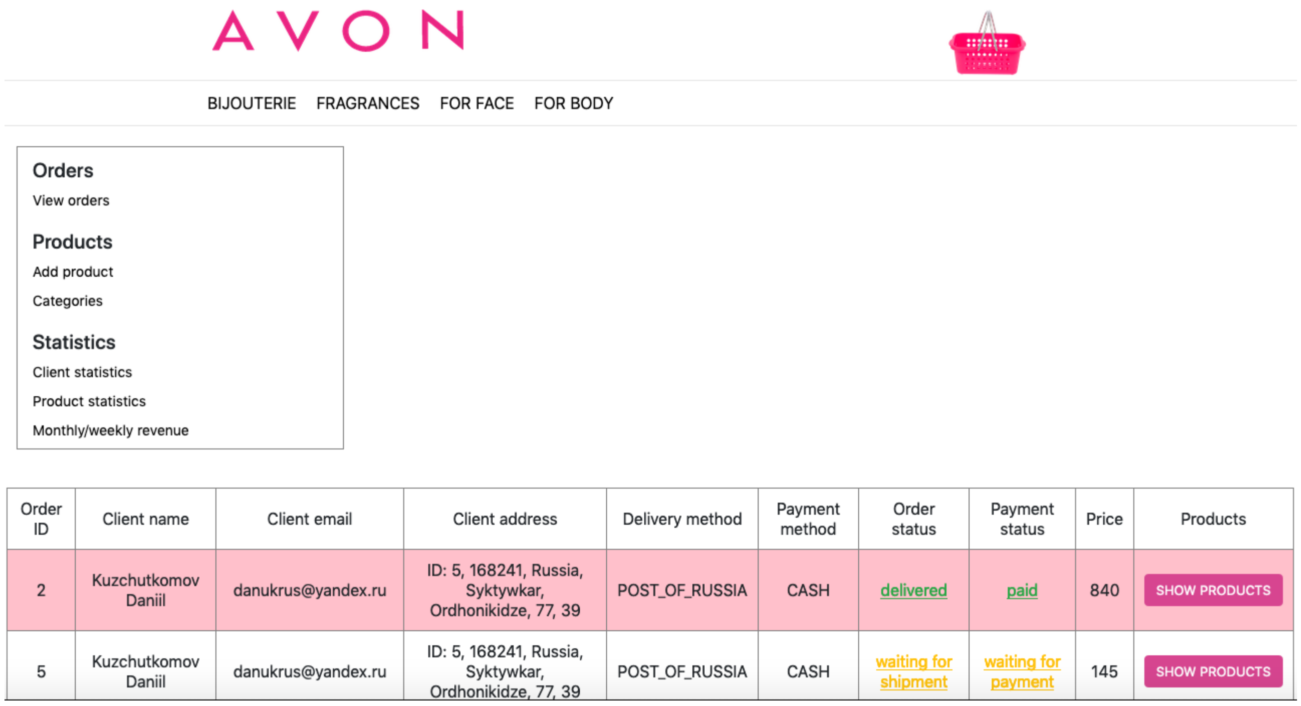
Quantity in stock: 78

BUY

Client and employee profile pages:

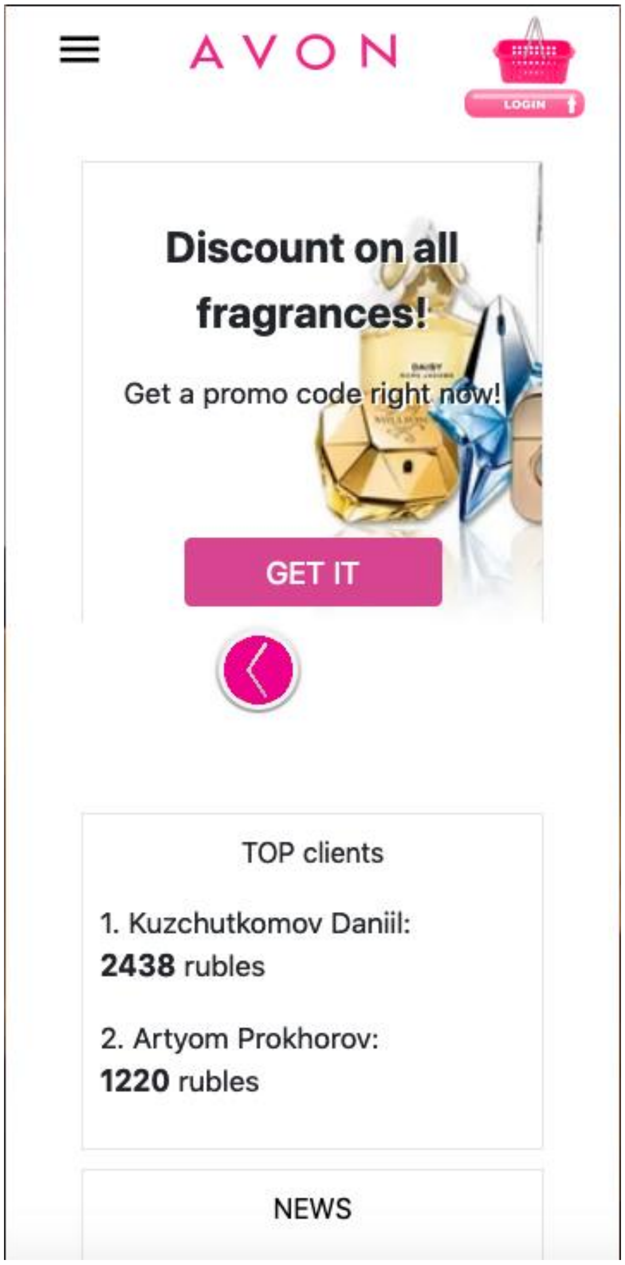


Adress	Delivery method	Payment method	Order status	Payment status	Price	Products	
ID: 5, 168241, Russia, Syktywkar, Ordhonikidze, 77, 39	POST_OF_RUSSIA	CASH	delivered	paid	840	SHOW PRODUCTS	REPEAT
ID: 5, 168241, Russia, Syktywkar, Ordhonikidze, 77, 39	POST_OF_RUSSIA	CASH	waiting for shipment	waiting for payment	145	SHOW PRODUCTS	REPEAT



Order ID	Client name	Client email	Client address	Delivery method	Payment method	Order status	Payment status	Price	Products
2	Kuzchutkomov Daniil	danukrus@yandex.ru	ID: 5, 168241, Russia, Syktywkar, Ordhonikidze, 77, 39	POST_OF_RUSSIA	CASH	delivered	paid	840	SHOW PRODUCTS
5	Kuzchutkomov Daniil	danukrus@yandex.ru	ID: 5, 168241, Russia, Syktywkar, Ordhonikidze, 77, 39	POST_OF_RUSSIA	CASH	waiting for shipment	waiting for payment	145	SHOW PRODUCTS

Mobile version:



Discount on all fragrances!

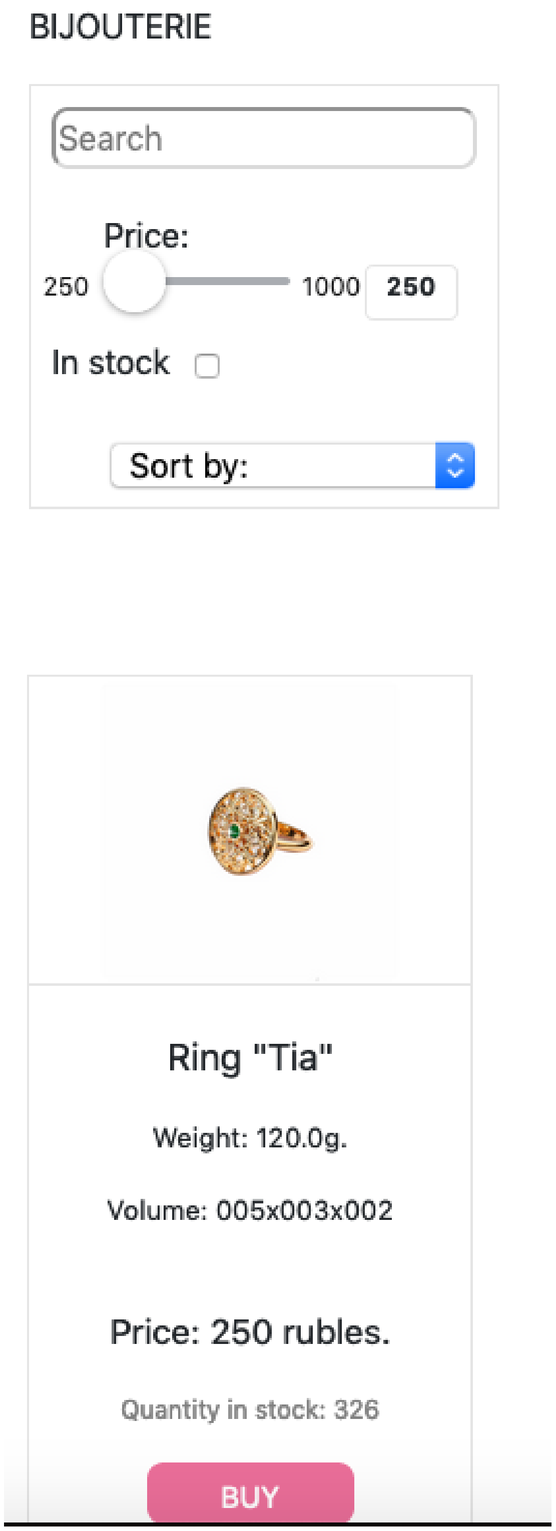
Get a promo code right now!

TOP clients

1. Kuzchutkomov Daniil: **2438** rubles

2. Artyom Prokhorov: **1220** rubles

NEWS



Price:

250 1000 **250**

In stock

Sort by:

Ring "Tia"

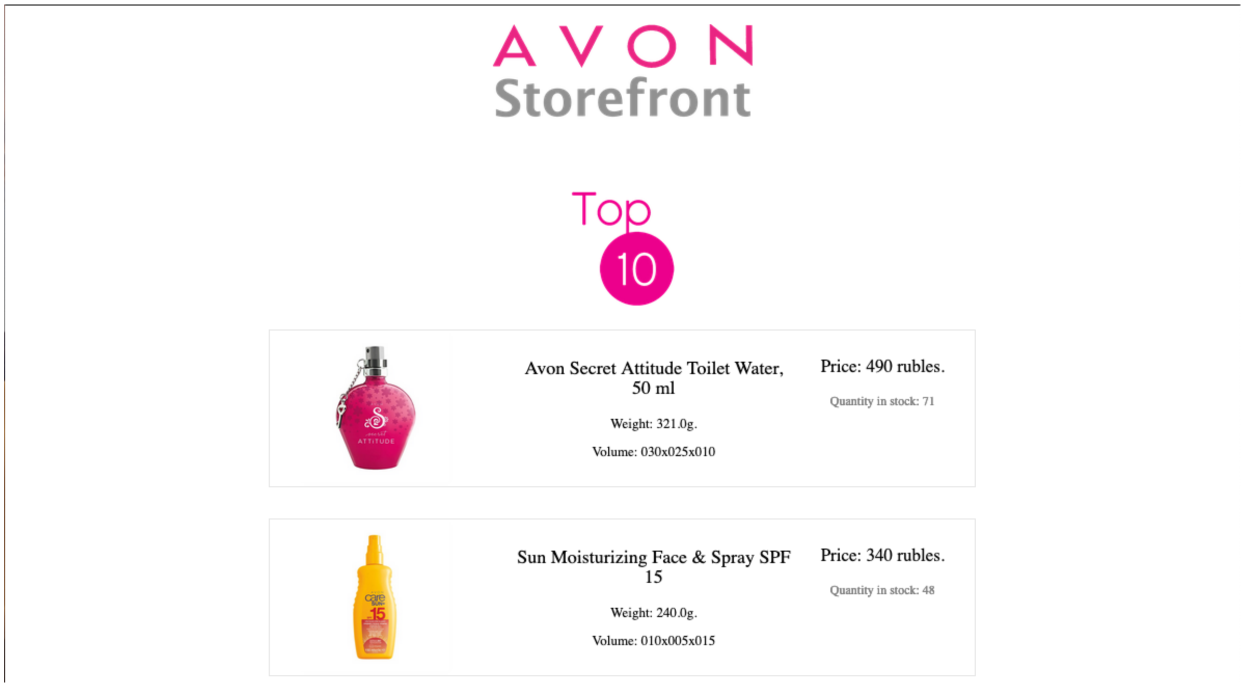
Weight: 120.0g.

Volume: 005x003x002

Price: 250 rubles.

Quantity in stock: 326

Second application:


AVON
Storefront

Top 10

Avon Secret Attitude Toilet Water, 50 ml

Weight: 321.0g.

Volume: 030x025x010

Price: 490 rubles.

Quantity in stock: 71

Sun Moisturizing Face & Spray SPF 15

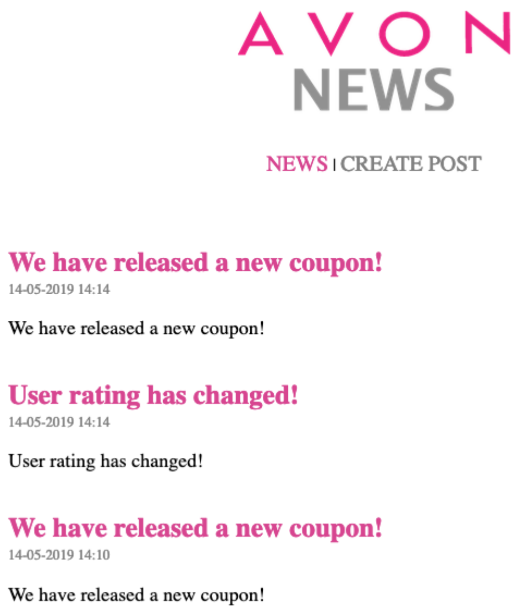
Weight: 240.0g.

Volume: 010x005x015

Price: 340 rubles.

Quantity in stock: 48

Third application:


AVON
NEWS

NEWS | CREATE POST

We have released a new coupon!
14-05-2019 14:14

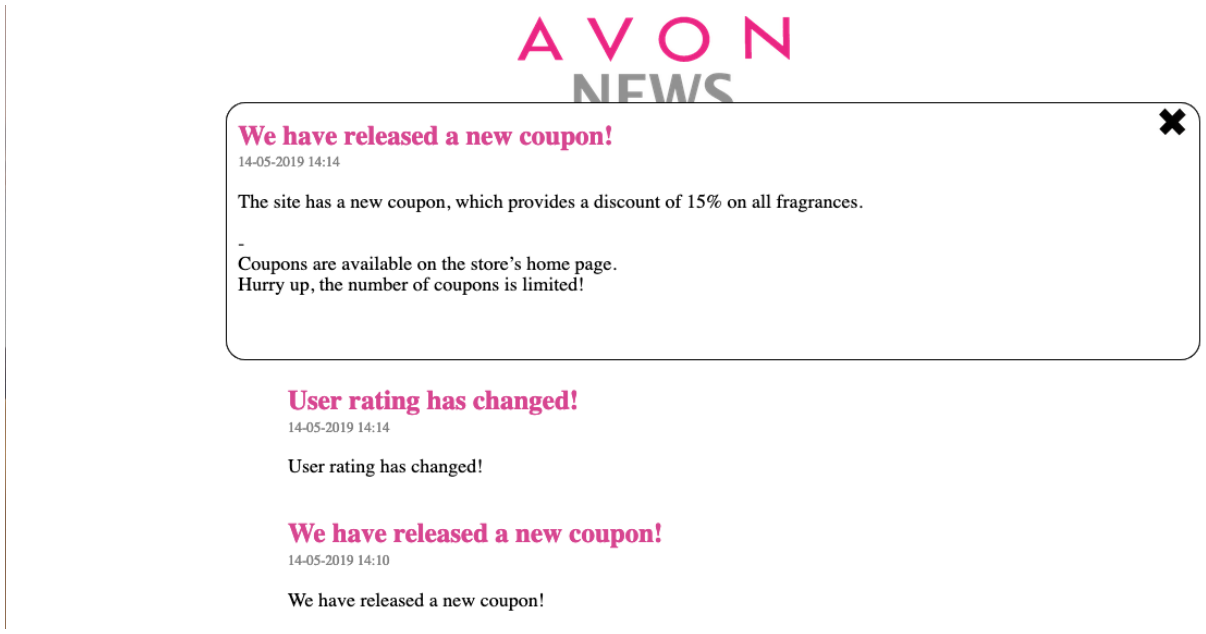
We have released a new coupon!

User rating has changed!
14-05-2019 14:14

User rating has changed!

We have released a new coupon!
14-05-2019 14:10

We have released a new coupon!



We have released a new coupon!
14-05-2019 14:14

The site has a new coupon, which provides a discount of 15% on all fragrances.

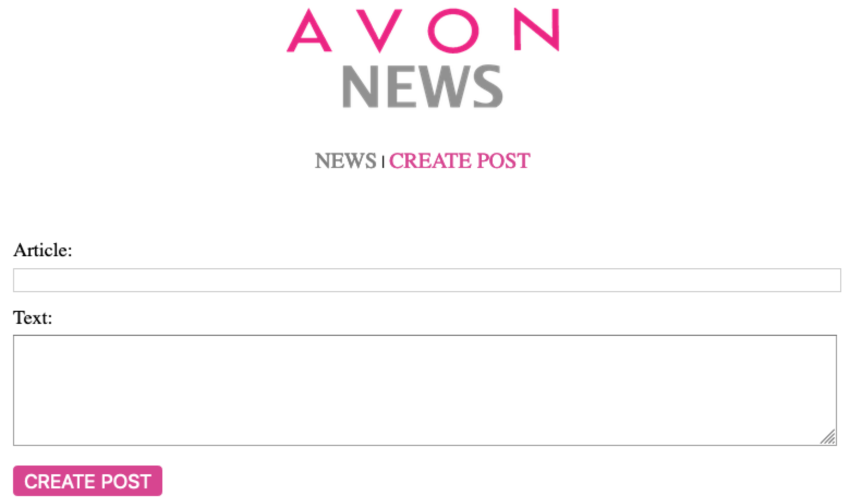
-
Coupons are available on the store’s home page.
Hurry up, the number of coupons is limited!

User rating has changed!
14-05-2019 14:14

User rating has changed!

We have released a new coupon!
14-05-2019 14:10

We have released a new coupon!



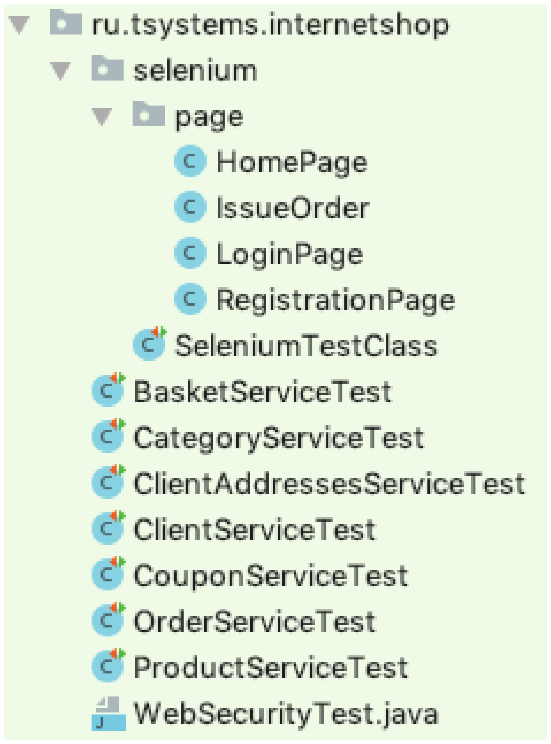
Article:

Text:

9. Code quality

Tests

Test structure:

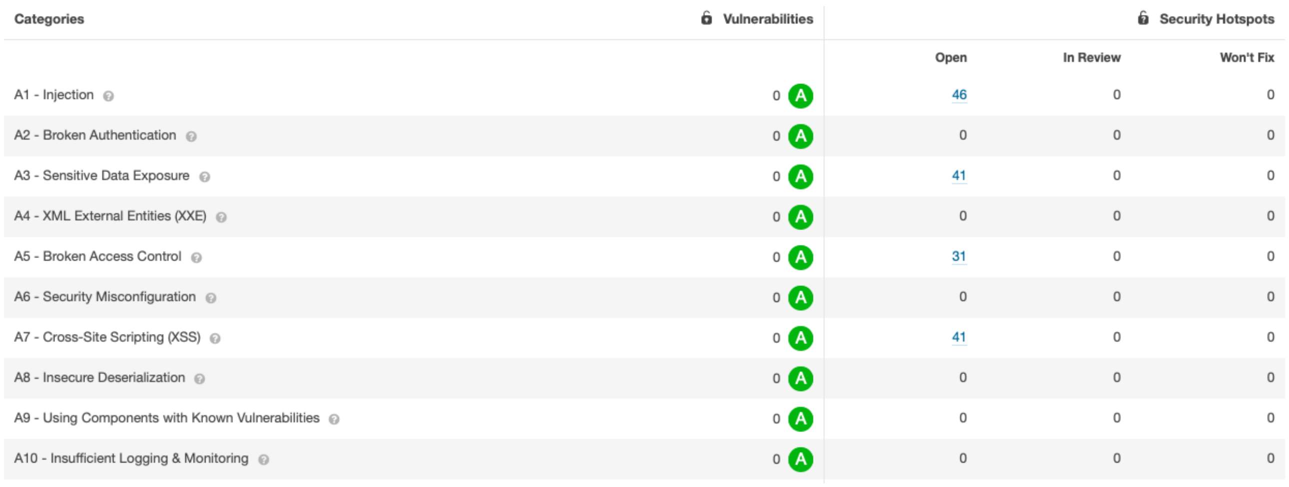


```
▼ ru.tsystems.internetshop
    ▼ selenium
        ▼ page
            HomePage
            IssueOrder
            LoginPage
            RegistrationPage
        SeleniumTestClass
    BasketServiceTest
    CategoryServiceTest
    ClientAddressesServiceTest
    ClientServiceTest
    CouponServiceTest
    OrderServiceTest
    ProductServiceTest
    WebSecurityTest.java
```

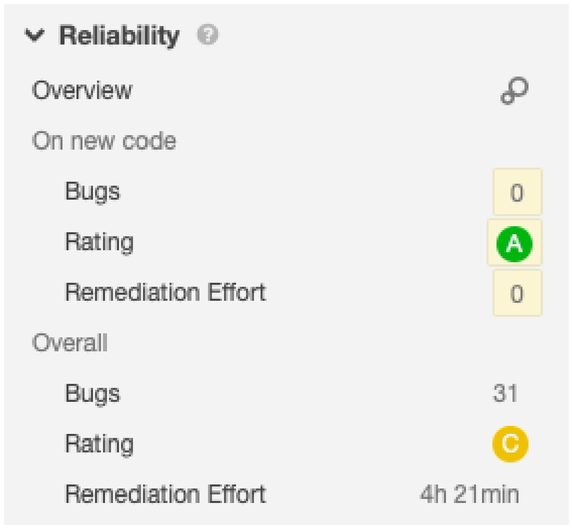
Junit tests:

```
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 1.379 sec
Running ru.tsystems.internetshop.ProductServiceTest
Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.284 sec
Running ru.tsystems.internetshop.CategoryServiceTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.057 sec
Running ru.tsystems.internetshop.ClientAddressesServiceTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.162 sec
Running ru.tsystems.internetshop.OrderServiceTest
Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.219 sec
Running ru.tsystems.internetshop.CouponServiceTest
Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.064 sec
Running ru.tsystems.internetshop.ClientServiceTest
Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.064 sec

Results :

Tests run: 13, Failures: 0, Errors: 0, Skipped: 0
```

Sonar report

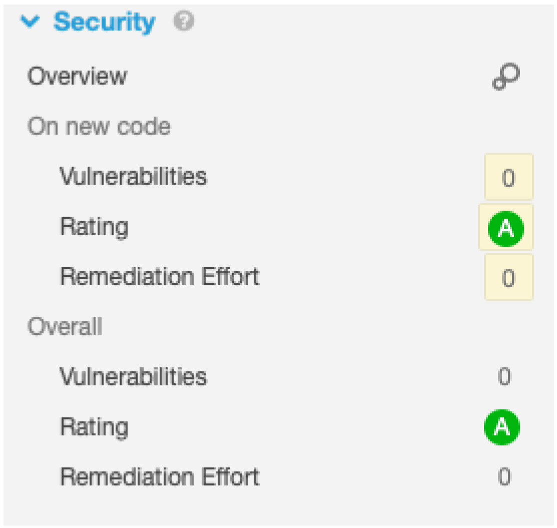


Categories	Vulnerabilities	Security Hotspots		
		Open	In Review	Won't Fix
A1 - Injection	0 A	46	0	0
A2 - Broken Authentication	0 A	0	0	0
A3 - Sensitive Data Exposure	0 A	41	0	0
A4 - XML External Entities (XXE)	0 A	0	0	0
A5 - Broken Access Control	0 A	31	0	0
A6 - Security Misconfiguration	0 A	0	0	0
A7 - Cross-Site Scripting (XSS)	0 A	41	0	0
A8 - Insecure Deserialization	0 A	0	0	0
A9 - Using Components with Known Vulnerabilities	0 A	0	0	0
A10 - Insufficient Logging & Monitoring	0 A	0	0	0



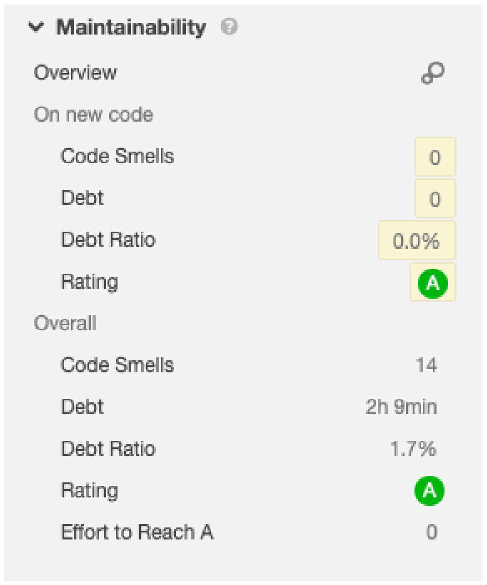
Reliability

Overview	
On new code	
Bugs	0
Rating	A
Remediation Effort	0
Overall	
Bugs	31
Rating	C
Remediation Effort	4h 21min



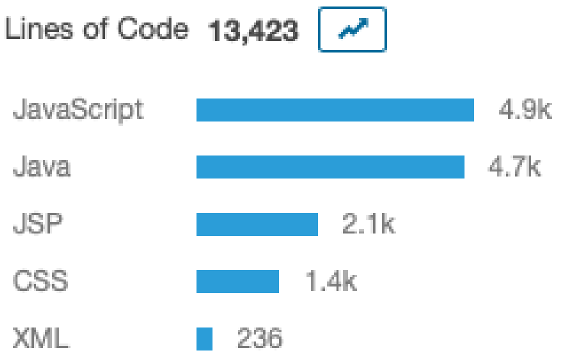
Security

Overview	
On new code	
Vulnerabilities	0
Rating	A
Remediation Effort	0
Overall	
Vulnerabilities	0
Rating	A
Remediation Effort	0



Maintainability

Overview	
On new code	
Code Smells	0
Debt	0
Debt Ratio	0.0%
Rating	A
Overall	
Code Smells	14
Debt	2h 9min
Debt Ratio	1.7%
Rating	A
Effort to Reach A	0

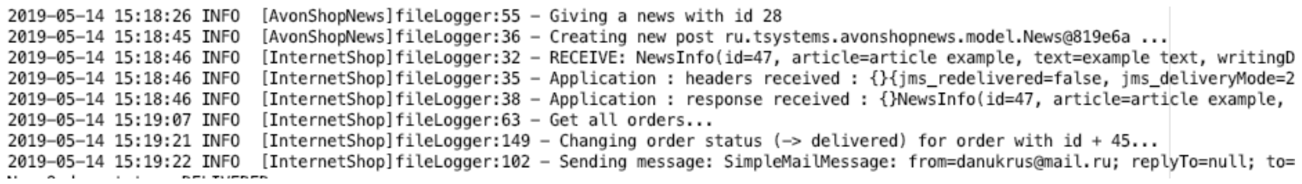


Lines of Code 13,423

JavaScript	4.9k
Java	4.7k
JSP	2.1k
CSS	1.4k
XML	236

Logging

log_file.log



```
2019-05-14 15:18:26 INFO  [AvonShopNews]fileLogger:55 - Giving a news with id 28
2019-05-14 15:18:45 INFO  [AvonShopNews]fileLogger:36 - Creating new post ru.tsystems.avonshopnews.model.News@819e6a ...
2019-05-14 15:18:46 INFO  [InternetShop]fileLogger:32 - RECEIVE: NewsInfo(id=47, article=article example, text=example text, writingD
2019-05-14 15:18:46 INFO  [InternetShop]fileLogger:35 - Application : headers received : {}{jms_redelivered=false, jms_deliveryMode=2
2019-05-14 15:18:46 INFO  [InternetShop]fileLogger:38 - Application : response received : {}NewsInfo(id=47, article=article example,
2019-05-14 15:19:07 INFO  [InternetShop]fileLogger:63 - Get all orders...
2019-05-14 15:19:21 INFO  [InternetShop]fileLogger:149 - Changing order status (-> delivered) for order with id + 45...
2019-05-14 15:19:22 INFO  [InternetShop]fileLogger:102 - Sending message: SimpleMailMessage: from=danukrus@mail.ru; replyTo=null; to=
```

10. Build and deploy

Start WildFly application server:

```
standalone.sh -c standalone-full.xml
```

First application installation (in InternetShop directory):

```
mvn clean package wildfly:deploy
```

Second application installation (in Storefront directory):

```
mvn clean package wildfly:deploy
```

Third application installation (in AvonShopNews directory):

```
mvn clean install

--projects backend spring-boot:run
```

Third application will not deploy until first application is deployed (because of remoting factory for queue).

11. Future improvement

1. Adding map for choosing delivery place (avon delivery centers);

2. Adding admin panel for third application and opportunities to remove and edit news;

3. Cleanup code.