Агро магазин с обект на разработка Склад

Име: Иван Иванов Петров
Факултетен номер: 3MI0700035

Съдържание

1. Версия "XML схема"

Описание на предметната област и на заданието

Целта на проекта е създаване на система за управление на складовото приложение на агро магазин, специализиран в продажбата на селскостопански стоки и оборудване. Основни компоненти на складовата система включват управление на наличните продукти, доставки и контакти с доставчици и собственика. Системата трябва да позволи съхраняване на детайлна информация за всеки склад, като адреси, продукти и детайли за доставка и да осигурява ефективно проследяване на движението на стоки.

Всеки склад съдържа различни продукти, като семена, инструменти, оборудване с допълнителна информация като наличности, срок на годност и характеристики. Доставките включват връзка с доставчици и информация за състоянието на доставката (напр. изпълнена, отказана), както и цена.

Дефиниция на схемата

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <xsd:element name="warehouses">
        <xsd:complexType>
            <xsd:sequence>
```

```xsd
                    <xsd:element name="owner" type="Vendor"/>
                    <xsd:element name="warehouse" minOccurs="1" maxOccurs="unbounded"
 type="Warehouse" />
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>


    <xsd:complexType name="Warehouse">
        <xsd:sequence>
            <xsd:element name="products">
                <xsd:complexType>
                    <xsd:sequence>
                        <xsd:element name="product" type="Product" minOccurs="1"
                            maxOccurs="unbounded" />
                    </xsd:sequence>
                </xsd:complexType>
            </xsd:element>
            <xsd:element name="contact" type="Contact" />
            <xsd:element name="deliveries">
                <xsd:complexType>
                    <xsd:sequence>
                        <xsd:element name="delivery" type="Delivery" minOccurs="0"
                            maxOccurs="unbounded" />
                    </xsd:sequence>
                </xsd:complexType>
            </xsd:element>
        </xsd:sequence>
    </xsd:complexType>

    <xsd:complexType name="Delivery">
        <xsd:sequence>
            <xsd:element name="products">
                <xsd:complexType>
                    <xsd:sequence>
                        <xsd:element name="product" type="Product" minOccurs="1"
                            maxOccurs="unbounded" />
                    </xsd:sequence>
                </xsd:complexType>
            </xsd:element>
            <xsd:element name="vendor" type="Vendor" />
        </xsd:sequence>
        <xsd:attribute name="status" default="pending">
            <xsd:simpleType>
                <xsd:restriction base="xsd:string">
                    <xsd:enumeration value="canceled" />
                    <xsd:enumeration value="returned" />
                    <xsd:enumeration value="pending" />
                    <xsd:enumeration value="finished" />
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
        <xsd:attribute name="cost" type="xsd:double" />
    </xsd:complexType>
```

```xml
    <xsd:complexType name="Vendor">
        <xsd:sequence>
            <xsd:element name="name" type="NonEmptyString" />
            <xsd:element name="contact" type="Contact" />
        </xsd:sequence>
    </xsd:complexType>


    <xsd:complexType name="Contact">
        <xsd:sequence>
            <xsd:element name="location" minOccurs="1" maxOccurs="1"
type="Location" />
            <xsd:choice>
                <xsd:sequence>
                    <xsd:element name="email" type="Email" />
                    <xsd:element name="phone" type="Phone" minOccurs="0" />
                </xsd:sequence>
                <xsd:sequence>
                    <xsd:element name="email" type="Email" minOccurs="0" />
                    <xsd:element name="phone" type="Phone" />
                </xsd:sequence>
            </xsd:choice>
        </xsd:sequence>
    </xsd:complexType>


    <xsd:complexType name="Location">
        <xsd:sequence>
            <xsd:element name="country" type="xsd:string" />
            <xsd:element name="city" type="xsd:string" />
            <xsd:element name="address" type="xsd:string" />
        </xsd:sequence>
    </xsd:complexType>


    <xsd:complexType name="Product">
        <xsd:sequence>
            <xsd:element name="info" type="ContentInfo" />
            <xsd:element name="notes" type="NonEmptyString" minOccurs="0"
maxOccurs="1">
            </xsd:element>
        </xsd:sequence>
        <xsd:attribute name="name" type="NonEmptyString" use="required">
        </xsd:attribute>
        <xsd:attribute name="brand" type="NonEmptyString" use="required" />
    </xsd:complexType>


    <xsd:complexType name="ContentInfo">
        <xsd:sequence>
            <xsd:element name="fragile" type="xsd:boolean" minOccurs="0"
maxOccurs="1"
                default="false" />
            <xsd:element name="price">
                <xsd:complexType>
                    <xsd:simpleContent>
                        <xsd:extension base="xsd:double">
```

```xml
                    <xsd:attribute name="currency" default="BGN">
                        <xsd:simpleType>
                            <xsd:restriction base="xsd:string">
                                <xsd:enumeration value="BGN"/>
                                <xsd:enumeration value="EUR"/>
                                <xsd:enumeration value="USD"/>
                                <xsd:enumeration value="RON"/>
                            </xsd:restriction>
                        </xsd:simpleType>
                    </xsd:attribute>
                </xsd:extension>
            </xsd:simpleContent>
        </xsd:complexType>
    </xsd:element>
    <xsd:element name="quantity" type="xsd:int" />
    <xsd:element name="weight">
        <xsd:complexType>
            <xsd:simpleContent>
                <xsd:extension base="xsd:double">
                    <xsd:attribute name="unit" use="optional" default="g">
                        <xsd:simpleType>
                            <xsd:restriction base="xsd:string">
                                <xsd:enumeration value="g" />
                                <xsd:enumeration value="kg" />
                            </xsd:restriction>
                        </xsd:simpleType>
                    </xsd:attribute>
                </xsd:extension>
            </xsd:simpleContent>
        </xsd:complexType>
    </xsd:element>
    <xsd:element name="expiry_date" type="xsd:date" />
    <xsd:element name="type">
        <xsd:simpleType>
            <xsd:restriction base="xsd:string">
                <xsd:enumeration value="tool" />
                <xsd:enumeration value="seeds" />
                <xsd:enumeration value="clothing" />
                <xsd:enumeration value="equipment" />
                <xsd:enumeration value="structure" />
            </xsd:restriction>
        </xsd:simpleType>
    </xsd:element>
</xsd:sequence>
</xsd:complexType>

<xsd:simpleType name="Email">
    <xsd:restriction base="xsd:string">
        <xsd:maxLength value="254" />
        <xsd:pattern
            value="[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}" />
    </xsd:restriction>
</xsd:simpleType>
```

```xml
    <xsd:simpleType name="Phone">
        <xsd:restriction base="xsd:string">
            <xsd:pattern
                value="(\+\d{1,3}\s?)?\(?\d{1,3}\)?[\s/\-]?\d{2,4}[\s/\-]?\d{2,6}"
/>
        </xsd:restriction>
    </xsd:simpleType>

    <xsd:simpleType name="NonEmptyString">
        <xsd:restriction base="xsd:string">
            <xsd:minLength value="1" />
        </xsd:restriction>
    </xsd:simpleType>
</xsd:schema>
```

Примерно съдържание

```xml
<?xml version="1.0" encoding="UTF-8"?>
<warehouses xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:noNamespaceSchemaLocation="warehouses.xsd">
    <owner>
        <name>Bulgarian Agro Supply</name>
        <contact>
            <location>
                <country>Bulgaria</country>
                <city>Sofia</city>
                <address>15 Tsar Simeon Street</address>
            </location>
            <email>contact@bulgarianagrosupply.bg</email>
            <phone>+359 (888)/123/456</phone>
        </contact>
    </owner>

    <warehouse>
        <products>
            <product name="Garden Shovel" brand="GardenMaster">
                <info>
                    <fragile>false</fragile>
                    <price currency="BGN">12.50</price>
                    <quantity>100</quantity>
                    <weight unit="kg">1.2</weight>
                    <expiry_date>2025-12-31</expiry_date>
                    <type>tool</type>
                </info>
                <notes>Heavy-duty garden shovel for soil work</notes>
            </product>
            <product name="Tomato Seeds" brand="SeedCo">
                <info>
                    <fragile>false</fragile>
                    <price currency="BGN">3.20</price>
                    <quantity>500</quantity>
```

```xml
                <weight unit="g">0.05</weight>
                <expiry_date>2026-04-15</expiry_date>
                <type>seeds</type>
            </info>
            <notes>High yield variety</notes>
        </product>
        <product name="Safety Gloves" brand="SafeHands">
            <info>
                <fragile>false</fragile>
                <price currency="BGN">8.00</price>
                <quantity>200</quantity>
                <weight unit="g">0.15</weight>
                <expiry_date>2025-06-01</expiry_date>
                <type>clothing</type>
            </info>
        </product>
    </products>
    <contact>
        <location>
            <country>Greece</country>
            <city>Thessaloniki</city>
            <address>45 Greenhouse Rd</address>
        </location>
        <email>thess@bulgarianagrosupply.gr</email>
    </contact>
    <deliveries>
        <delivery status="pending" cost="200.50">
            <products>
                <product name="Garden Shovel" brand="GardenMaster">
                    <info>
                        <fragile>false</fragile>
                        <price currency="EUR">12.50</price>
                        <quantity>20</quantity>
                        <weight unit="kg">1.2</weight>
                        <expiry_date>2025-12-31</expiry_date>
                        <type>tool</type>
                    </info>
                </product>
            </products>
            <vendor>
                <name>Greek Distributors</name>
                <contact>
                    <location>
                        <country>Greece</country>
                        <city>Athens</city>
                        <address>88 Market Lane</address>
                    </location>
                    <email>sales@greekdistributors.gr</email>
                </contact>
            </vendor>
        </delivery>
    </deliveries>
</warehouse>
```

```xml
<warehouse>
    <products>
        <product name="Irrigation Pipes" brand="WaterFlow">
            <info>
                <fragile>false</fragile>
                <price currency="BGN">35.00</price>
                <quantity>60</quantity>
                <weight unit="kg">3.5</weight>
                <expiry_date>2026-07-15</expiry_date>
                <type>equipment</type>
            </info>
        </product>
        <product name="Greenhouse Cover" brand="EcoCover">
            <info>
                <fragile>true</fragile>
                <price currency="EUR">75.00</price>
                <quantity>40</quantity>
                <weight unit="kg">5.0</weight>
                <expiry_date>2027-03-01</expiry_date>
                <type>structure</type>
            </info>
        </product>
        <product name="Garden Fork" brand="GreenTools">
            <info>
                <fragile>false</fragile>
                <price currency="BGN">15.00</price>
                <quantity>150</quantity>
                <weight unit="kg">1.5</weight>
                <expiry_date>2025-09-15</expiry_date>
                <type>tool</type>
            </info>
        </product>
    </products>
    <contact>
        <location>
            <country>Bulgaria</country>
            <city>Plovdiv</city>
            <address>33 Warehouse Street</address>
        </location>
        <email>plovdiv@bulgarianagrosupply.bg</email>
        <phone>+359 888 654321</phone>
    </contact>
    <deliveries>
        <delivery status="finished" cost="150.75">
            <products>
                <product name="Irrigation Pipes" brand="WaterFlow">
                    <info>
                        <fragile>false</fragile>
                        <price currency="BGN">35.00</price>
                        <quantity>10</quantity>
                        <weight unit="kg">3.5</weight>
                        <expiry_date>2026-07-15</expiry_date>
                        <type>equipment</type>
                    </info>
```

```xml
                </product>
            </products>
            <vendor>
                <name>Water Supplies Ltd</name>
                <contact>
                    <location>
                        <country>Romania</country>
                        <city>Bucharest</city>
                        <address>101 Water Rd</address>
                    </location>
                    <email>orders@watersupplies.ro</email>
                </contact>
            </vendor>
        </delivery>
    </deliveries>
</warehouse>

<warehouse>
    <products>
        <product name="Plant Fertilizer" brand="EcoGro">
            <info>
                <fragile>false</fragile>
                <price currency="BGN">25.00</price>
                <quantity>80</quantity>
                <weight unit="kg">1.0</weight>
                <expiry_date>2026-10-01</expiry_date>
                <type>tool</type>
            </info>
        </product>
        <product name="Pruning Shears" brand="SharpCut">
            <info>
                <fragile>true</fragile>
                <price currency="BGN">18.00</price>
                <quantity>50</quantity>
                <weight unit="g">150</weight>
                <expiry_date>2025-08-20</expiry_date>
                <type>tool</type>
            </info>
        </product>
        <product name="Pesticide Spray" brand="SafeGrow">
            <info>
                <fragile>false</fragile>
                <price currency="BGN">30.00</price>
                <quantity>30</quantity>
                <weight unit="kg">0.8</weight>
                <expiry_date>2027-12-01</expiry_date>
                <type>tool</type>
            </info>
        </product>
    </products>
    <contact>
        <location>
            <country>North Macedonia</country>
            <city>Skopje</city>
```

```
                    <address>22 Agriculture Blvd</address>
                </location>
                <email>skopje@bulgarianagrosupply.mk</email>
                <phone>+389 70 123456</phone>
            </contact>
            <deliveries>
                <delivery status="pending" cost="110.00">
                    <products>
                        <product name="Pesticide Spray" brand="SafeGrow">
                            <info>
                                <fragile>false</fragile>
                                <price currency="BGN">30.00</price>
                                <quantity>5</quantity>
                                <weight unit="kg">0.8</weight>
                                <expiry_date>2027-12-01</expiry_date>
                                <type>tool</type>
                            </info>
                        </product>
                    </products>
                    <vendor>
                        <name>Safe Chemicals Ltd</name>
                        <contact>
                            <location>
                                <country>Serbia</country>
                                <city>Belgrade</city>
                                <address>50 Chemical Street</address>
                            </location>
                            <email>orders@safechemicals.rs</email>
                        </contact>
                    </vendor>
                </delivery>
            </deliveries>
        </warehouse>
    </warehouses>
```

2. Версия "Описание на DOM съответстващ на схемата"

Екземпляри на документа

```
<?xml version="1.0" encoding="UTF-8"?>
<warehouses xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="warehouses.xsd">
    <owner>
        <name>Агро магазин Владимир Огнянов</name>
        <contact>
            <location>
                <country>Словения</country>
                <city>Марибор</city>
                <address>ул. Главен площад 4</address>
            </location>
            <email>agro_magazin_vladimir_ognyanov1009@outlook.com</email>
```

```xml
            </contact>
        </owner>
        <warehouse>
            <products>
                <product name="трактор" brand="Машиникс">
                    <info>
                        <fragile>false</fragile>
                        <price currency="USD">150000</price>
                        <quantity>24</quantity>
                        <weight unit="kg">1500</weight>
                        <expiry_date>2032-05-25</expiry_date>
                        <type>equipment</type>
                    </info>
                    <notes>идеален за средни площи</notes>
                </product>
                <product name="лопата" brand="АгроИнструмент">
                    <info>
                        <fragile>false</fragile>
                        <price currency="BGN">25.5</price>
                        <quantity>12</quantity>
                        <weight unit="kg">2.3</weight>
                        <expiry_date>2028-01-15</expiry_date>
                        <type>tool</type>
                    </info>
                    <notes>подходяща за градинска работа</notes>
                </product>
            </products>
            <contact>
                <location>
                    <country>Сърбия</country>
                    <city>Белград</city>
                    <address>бул. Краля Александра 25</address>
                </location>
                <email>warehouse_mariya_todorova1239@yahoo.com</email>
                <phone>+808 422-857-552257</phone>
            </contact>
            <deliveries>
                <delivery status="canceled" cost="7813594.5">
                    <products>
                        <product name="форма за разсад" brand="СеменАгро">
                            <info>
                                <fragile>true</fragile>
                                <price currency="EUR">50</price>
                                <quantity>14</quantity>
                                <weight unit="kg">2.5</weight>
                                <expiry_date>2026-04-18</expiry_date>
                                <type>equipment</type>
                            </info>
                            <notes>за точни и равномерни посеви</notes>
                        </product>
                        <product name="трактор" brand="Машиникс">
                            <info>
                                <fragile>false</fragile>
                                <price currency="USD">150000</price>
```

```xml
                    <quantity>28</quantity>
                    <weight unit="kg">1500</weight>
                    <expiry_date>2032-05-25</expiry_date>
                    <type>equipment</type>
                </info>
                <notes>идеален за средни площи</notes>
            </product>
            <product name="защитни очила" brand="ФермерГард">
                <info>
                    <fragile>true</fragile>
                    <price currency="BGN">10</price>
                    <quantity>9</quantity>
                    <weight unit="g">250</weight>
                    <expiry_date>2032-05-20</expiry_date>
                    <type>clothing</type>
                </info>
                <notes>защита от при пръскане</notes>
            </product>
            <product name="семена пепино пъпеш" brand="Градинар">
                <info>
                    <fragile>false</fragile>
                    <price currency="RON">12.99</price>
                    <quantity>4</quantity>
                    <weight unit="g">0.9</weight>
                    <expiry_date>2030-04-10</expiry_date>
                    <type>seeds</type>
                </info>
                <notes>медено сладък сорт</notes>
            </product>
        </products>
        <vendor>
            <name>Тодор Борисов</name>
            <contact>
                <location>
                    <country>Турция</country>
                    <city>Истанбул</city>
                    <address>пл. Таксим 1</address>
                </location>
                <email>todor_borisov1727@outlook.com</email>
                <phone>+34 501-8411-571</phone>
            </contact>
        </vendor>
    </delivery>
    <delivery status="canceled" cost="673.28">
        <products>
            <product name="семена от домати" brand="СемеАгро">
                <info>
                    <fragile>false</fragile>
                    <price currency="EUR">8.5</price>
                    <quantity>8</quantity>
                    <weight unit="g">3</weight>
                    <expiry_date>2025-10-10</expiry_date>
                    <type>seeds</type>
                </info>
```

```xml
                        <notes>високодобивни сортове</notes>
                    </product>
                    <product name="градски ботуши" brand="ТехноОбувки">
                        <info>
                            <fragile>false</fragile>
                            <price currency="BGN">45</price>
                            <quantity>12</quantity>
                            <weight unit="kg">1.5</weight>
                            <expiry_date>2032-02-20</expiry_date>
                            <type>clothing</type>
                        </info>
                        <notes>удобни и издръжливи при всякакви условия</notes>
                    </product>
                </products>
                <vendor>
                    <name>Тодор Цветков</name>
                    <contact>
                        <location>
                            <country>Румъния</country>
                            <city>Букурещ</city>
                            <address>ул. Липскани 32</address>
                        </location>
                        <email>todor_tsvetkov1308@outlook.com</email>
                        <phone>+240 066-102-55702</phone>
                    </contact>
                </vendor>
            </delivery>
        </deliveries>
    </warehouse>
</warehouses>
```

Конструиране и валидиране на всеки екземпляр чрез DOM

```javascript
//@ts-check

import {
    generateEmail,
    generateFullName,
    generatePhone,
} from "./data-generator";
import { contactLocations, deliveryStatuses, products } from "./types";
import { precision, random } from "./utility";

const namespace = "http://www.w3.org/2001/XMLSchema-instance";
let deliveriesCount = 3;
let productsCount = 3;
let warehousesCount = 3;

/**
 *
 * @param {number} deliveryCnt
```

```javascript
     * @param {number} productsCnt
     * @param {number} warehousesCnt
     * @returns
     */
    export function generateDoc(deliveryCnt, productsCnt, warehousesCnt) {
        deliveriesCount = deliveryCnt;
        productsCount = productsCnt;
        warehousesCount = warehousesCnt;

        const documentImplementation = document.implementation;
        const xmlDoc = documentImplementation.createDocument(null, null);

        const xml = xmlDoc.createProcessingInstruction(
            "xml",
            'version="1.0" encoding="UTF-8"'
        );
        xmlDoc.appendChild(xml);

        let warehousesEl = xmlDoc.createElement("warehouses");
        warehousesEl.setAttribute("xmlns:xsi", namespace);
        warehousesEl.setAttribute(
            "xsi:noNamespaceSchemaLocation",
            "warehouses.xsd"
        );

        let ownerEl = xmlDoc.createElement("owner");
        let fullName = `Агро магазин ${generateFullName()}`;
        let nameEl = xmlDoc.createElement("name");
        nameEl.textContent = fullName;

        ownerEl.appendChild(nameEl);
        ownerEl.appendChild(generateContact(xmlDoc, fullName));
        warehousesEl.appendChild(ownerEl);

        for (let ind = 0; ind < random(warehousesCount) + 1; ind++) {
            warehousesEl.appendChild(generateWarehouse(xmlDoc));
        }

        xmlDoc.appendChild(warehousesEl);
        return xmlDoc;
    }
    /**
     *
     * @param {XMLDocument} xmlDoc
     * @returns {Element} Random warehouse
     */
    function generateWarehouse(xmlDoc) {
        let warehouseEl = xmlDoc.createElement("warehouse");
        let productsEl = xmlDoc.createElement("products");
        let setOfProducts = new Set();

        for (let ind = 0; ind < random(warehousesCount) + 1; ind++) {
            let randProduct;
            while (true) {
```

```javascript
                randProduct = products[random(products.length)];
                if (!setOfProducts.has(randProduct)) {
                    setOfProducts.add(randProduct);
                    break;
                }
            }

            productsEl.appendChild(generateProduct(xmlDoc, randProduct).element);
        }

        let deliveriesEl = xmlDoc.createElement("deliveries");
        for (let ind = 0; ind < random(deliveriesCount) + 1; ind++) {
            deliveriesEl.appendChild(generateDelivery(xmlDoc));
        }

        warehouseEl.appendChild(productsEl);
        warehouseEl.appendChild(
            generateContact(xmlDoc, `Warehouse ${generateFullName()}`)
        );
        warehouseEl.appendChild(deliveriesEl);

        return warehouseEl;
    }

    /**
     *
     * @param {XMLDocument} xmlDoc
     * @returns {Element} Random delivery
     */
    function generateDelivery(xmlDoc) {
        let deliveryEl = xmlDoc.createElement("delivery");
        let setOfProducts = new Set();
        let totalCost = 0;
        let productsEl = xmlDoc.createElement("products");

        for (let ind = 0; ind < random(productsCount) + 1; ind++) {
            let randProduct;
            while (true) {
                randProduct = products[random(products.length)];
                if (!setOfProducts.has(randProduct)) {
                    setOfProducts.add(randProduct);
                    break;
                }
            }
            let result = generateProduct(xmlDoc, randProduct);
            totalCost += result.cost;
            productsEl.appendChild(result.element);
        }
        console.log(totalCost);
        let vendorEl = xmlDoc.createElement("vendor");
        let fullName = generateFullName();
        let nameEl = xmlDoc.createElement("name");
        nameEl.textContent = fullName;
```

```javascript
        vendorEl.appendChild(nameEl);
        vendorEl.appendChild(generateContact(xmlDoc, fullName));

        deliveryEl.setAttribute(
            "status",
            deliveryStatuses[random(deliveryStatuses.length)]
        );

        deliveryEl.setAttribute("cost", precision(totalCost, 2).toString());

        deliveryEl.appendChild(productsEl);
        deliveryEl.appendChild(vendorEl);
        return deliveryEl;
}

/**
 *
 * @param {XMLDocument} xmlDoc
 * @param {import("./types").Product} product
 * @returns {{element:Element,cost:number}}
 */
function generateProduct(xmlDoc, product) {
        let productEl = xmlDoc.createElement("product");
        productEl.setAttribute("name", product.name);
        productEl.setAttribute("brand", product.brand);

        let notesEl = xmlDoc.createElement("notes");
        notesEl.textContent = product.notes;

        let contentInfoEl = xmlDoc.createElement("info");
        let fragileEl = xmlDoc.createElement("fragile");
        fragileEl.textContent = product.contentInfo.isFragile.toString();
        contentInfoEl.appendChild(fragileEl);

        let priceEl = xmlDoc.createElement("price");
        priceEl.textContent = product.contentInfo.price.toString();
        priceEl.setAttribute("currency", product.contentInfo.currency);
        contentInfoEl.appendChild(priceEl);

        let quantityEl = xmlDoc.createElement("quantity");
        const quantity = random(30) + 1;
        quantityEl.textContent = quantity.toString();
        contentInfoEl.appendChild(quantityEl);

        let weightEl = xmlDoc.createElement("weight");
        weightEl.textContent = product.contentInfo.weight.toString();
        weightEl.setAttribute("unit", product.contentInfo.unit);
        contentInfoEl.appendChild(weightEl);

        let expireDateEl = xmlDoc.createElement("expiry_date");
        expireDateEl.textContent = product.contentInfo.expiryDate;
        contentInfoEl.appendChild(expireDateEl);

        let typeEl = xmlDoc.createElement("type");
```

```
        typeEl.textContent = product.contentInfo.type;
        contentInfoEl.appendChild(typeEl);

        productEl.appendChild(contentInfoEl);
        productEl.appendChild(notesEl);

        let currencyCoeff = 1;
        if (product.contentInfo.currency === "EUR") {
            currencyCoeff = 1.96;
        } else if (product.contentInfo.currency === "USD") {
            currencyCoeff = 1.86;
        } else if (product.contentInfo.currency === "RON") {
            currencyCoeff = 2.55;
        }
        return {
            element: productEl,
            cost: quantity * product.contentInfo.price * currencyCoeff,
        };
    }

    /**
     *
     * @param {XMLDocument} xmlDoc
     * @param {string} fullname
     * @returns {Element}
     */
    function generateContact(xmlDoc, fullname = generateFullName()) {
        let contactEl = xmlDoc.createElement("contact");
        let locationEl = xmlDoc.createElement("location");

        let randomLocation = contactLocations[random(contactLocations.length)];
        let countryEl = xmlDoc.createElement("country");
        countryEl.textContent = randomLocation.country;
        let cityEl = xmlDoc.createElement("city");
        cityEl.textContent = randomLocation.city;
        let addressEl = xmlDoc.createElement("address");
        addressEl.textContent = randomLocation.address;

        locationEl.appendChild(countryEl);
        locationEl.appendChild(cityEl);
        locationEl.appendChild(addressEl);

        contactEl.appendChild(locationEl);

        let choice = random(3);
        if (choice < 1) {
            let emailEl = xmlDoc.createElement("email");
            emailEl.textContent = generateEmail(fullname);
            contactEl.appendChild(emailEl);
        } else if (choice === 1) {
            let phoneEl = xmlDoc.createElement("phone");
            phoneEl.textContent = generatePhone();
            contactEl.appendChild(phoneEl);
        } else {
```

```
        let emailEl = xmlDoc.createElement("email");
        emailEl.textContent = generateEmail(fullname);
        let phoneEl = xmlDoc.createElement("phone");
        phoneEl.textContent = generatePhone();
        contactEl.appendChild(emailEl);
        contactEl.appendChild(phoneEl);
    }

    return contactEl;
}
```

3. Версия "Набор от XSLT трансформации"

Трансформации XML към XML

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">
    <xsl:output method="xml" encoding="UTF-8" indent="yes"/>

    <xsl:template match="/">
        <warehouses>
            <xsl:apply-templates select="warehouses"/>
        </warehouses>
    </xsl:template>

    <xsl:template match="warehouses">
        <xsl:element name="owner">
            <xsl:apply-templates select="owner"/>
        </xsl:element>
        <xsl:for-each select="warehouse">
            <xsl:element name="warehouse">
                <contact>
                    <xsl:apply-templates select="contact"/>
                </contact>
                <xsl:if test="deliveries">
                    <deliveries>
                        <xsl:apply-templates select="deliveries/delivery"/>
                    </deliveries>
                </xsl:if>
            </xsl:element>
        </xsl:for-each>
    </xsl:template>

    <xsl:template match="owner|vendor">
        <xsl:element name="name">
            <xsl:value-of select="name"/>
        </xsl:element>
        <xsl:element name="contact">
            <xsl:apply-templates select="contact"/>
        </xsl:element>
    </xsl:template>
```

```xml
    <xsl:template match="delivery">
        <delivery>
            <xsl:attribute name="status">
                <xsl:value-of select="@status"/>
            </xsl:attribute>
            <xsl:attribute name="cost">
                <xsl:value-of select="@cost"/>
            </xsl:attribute>
            <vendor>
                <xsl:apply-templates select="vendor"/>
            </vendor>
        </delivery>
    </xsl:template>

    <xsl:template match="contact">
        <location>
            <country>
                <xsl:value-of select="location/country"/>
            </country>
            <city>
                <xsl:value-of select="location/city"/>
            </city>
            <address>
                <xsl:value-of select="location/address"/>
            </address>
        </location>
        <xsl:if test="email">
            <email>
                <xsl:value-of select="email"/>
            </email>
        </xsl:if>

        <xsl:if test="phone">
            <phone>
                <xsl:value-of select="phone"/>
            </phone>
        </xsl:if>
    </xsl:template>
</xsl:stylesheet>
```

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">
    <xsl:output method="xml" encoding="UTF-8" indent="yes"/>

    <xsl:template match="/">
        <warehouses xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                    xsi:noNamespaceSchemaLocation="../public/warehouses.xsd">
            <xsl:apply-templates select="warehouses"/>
        </warehouses>
```

```xml
        </xsl:template>

        <xsl:template match="warehouses">
            <xsl:element name="owner">
                <xsl:apply-templates select="owner"/>
            </xsl:element>
            <xsl:for-each select="warehouse[1]">
                <xsl:element name="warehouse">
                    <products>
                        <xsl:apply-templates select="products/product"/>
                    </products>
                    <contact>
                        <xsl:apply-templates select="contact"/>
                    </contact>
                    <deliveries/>
                </xsl:element>
            </xsl:for-each>
        </xsl:template>

        <xsl:template match="owner|vendor">
            <xsl:element name="name">
                <xsl:value-of select="name"/>
            </xsl:element>
            <xsl:element name="contact">
                <xsl:apply-templates select="contact"/>
            </xsl:element>
        </xsl:template>

        <xsl:template match="product">
            <product>
                <xsl:attribute name="name">
                    <xsl:value-of select="@name"/>
                </xsl:attribute>
                <xsl:attribute name="brand">
                    <xsl:value-of select="@brand"/>
                </xsl:attribute>
                <info>
                    <xsl:apply-templates select="info"/>
                </info>
            </product>
        </xsl:template>

        <xsl:template match="info">
            <price>
                <xsl:attribute name="currency">
                    <xsl:value-of select="price/@currency"/>
                </xsl:attribute>
                <xsl:value-of select="price"/>
            </price>
            <quantity>
                <xsl:value-of select="quantity"/>
            </quantity>
            <weight>
                <xsl:attribute name="unit">
```

```
                <xsl:value-of select="weight/@unit"/>
            </xsl:attribute>
            <xsl:value-of select="weight"/>
        </weight>
        <expiry_date>
            <xsl:value-of select="expiry_date"/>
        </expiry_date>
        <type>
            <xsl:value-of select="type"/>
        </type>
    </xsl:template>

    <xsl:template match="contact">
        <location>
            <country>
                <xsl:value-of select="location/country"/>
            </country>
            <city>
                <xsl:value-of select="location/city"/>
            </city>
            <address>
                <xsl:value-of select="location/address"/>
            </address>
        </location>
        <xsl:choose>
            <xsl:when test="email">
                <email>
                    <xsl:value-of select="email"/>
                </email>
            </xsl:when>
            <xsl:otherwise>
                <phone>
                    <xsl:value-of select="phone"/>
                </phone>
            </xsl:otherwise>
        </xsl:choose>
    </xsl:template>
</xsl:stylesheet>
```

Трансформации XML към Текст

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">
    <xsl:output method="text" encoding="UTF-8"/>

    <xsl:template match="/warehouses">
        Собственик:
        <xsl:value-of select="owner/name"/>
        <xsl:text>&#10;Контакт:</xsl:text>
        <xsl:apply-templates select="owner/contact"/>
        <xsl:text>&#10;====================&#10;</xsl:text>
```

```xml
        <xsl:for-each select="warehouse">
            <xsl:text>Склад&#10;</xsl:text>
            <xsl:apply-templates select="contact"/>
            <xsl:text>&#10;Продукти в склада:&#10;</xsl:text>
            <xsl:apply-templates select="products/product"/>
            <xsl:text>Доставки:&#10;</xsl:text>
            <xsl:apply-templates select="deliveries/delivery"/>
            <xsl:text>====================&#10;</xsl:text>
        </xsl:for-each>
    </xsl:template>

    <xsl:template match="contact">
        <xsl:text>Местоположение: </xsl:text>
        <xsl:value-of select="location/country"/>
        <xsl:text>, </xsl:text>
        <xsl:value-of select="location/city"/>
        <xsl:text>, </xsl:text>
        <xsl:value-of select="location/address"/>
        <xsl:text>&#10;Имейл: </xsl:text>
        <xsl:value-of select="email"/>
        <xsl:text>&#10;Телефон: </xsl:text>
        <xsl:value-of select="phone"/>
    </xsl:template>

    <xsl:template match="product">
        <xsl:text>- Продукт: </xsl:text>
        <xsl:value-of select="@name"/>
        <xsl:text> (Марка: </xsl:text>
        <xsl:value-of select="@brand"/>
        <xsl:text>)&#10;</xsl:text>
        <xsl:text>  Цена: </xsl:text>
        <xsl:value-of select="info/price"/>
        <xsl:text> </xsl:text>
        <xsl:value-of select="info/price/@currency"/>
        <xsl:text>, Количество: </xsl:text>
        <xsl:value-of select="info/quantity"/>
        <xsl:text>, Тип: </xsl:text>
        <xsl:value-of select="info/type"/>
        <xsl:text>&#10;</xsl:text>
    </xsl:template>

    <xsl:template match="delivery">
        <xsl:text>- Доставка (Статус: </xsl:text>
        <xsl:value-of select="@status"/>
        <xsl:text>, Цена: </xsl:text>
        <xsl:value-of select="@cost"/>
        <xsl:text>):&#10;</xsl:text>
        <xsl:text>  Продукти:&#10;</xsl:text>
        <xsl:apply-templates select="products/product"/>
        <xsl:text>  Доставчик: </xsl:text>
        <xsl:value-of select="vendor/name"/>
        <xsl:text>&#10;</xsl:text>
```

```
    </xsl:template>
</xsl:stylesheet>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">
    <xsl:output method="text" encoding="UTF-8"/>

    <xsl:template match="/warehouses">
        <xsl:text>===== ДОКЛАД ЗА СКЛАДОВЕТЕ =====&#10;&#10;</xsl:text>

        Собственик: <xsl:value-of select="owner/name"/>&#10;
        Контакти:
        <xsl:apply-templates select="owner/contact"/>
        <xsl:text>&#10;&#10;</xsl:text>

        <xsl:for-each select="warehouse">
            <xsl:text>--- СКЛАД ---&#10;</xsl:text>
            <xsl:apply-templates select="contact"/>
            <xsl:text>&#10;Продукти:&#10;</xsl:text>
            <xsl:apply-templates select="products/product"/>
            <xsl:text>Доставки:&#10;</xsl:text>
            <xsl:apply-templates select="deliveries/delivery"/>
            <xsl:text>====================&#10;&#10;</xsl:text>
        </xsl:for-each>
    </xsl:template>

    <xsl:template match="contact">
        <xsl:text>    Локация: </xsl:text>
        <xsl:value-of select="location/country"/>
        <xsl:text>, </xsl:text>
        <xsl:value-of select="location/city"/>
        <xsl:text>, </xsl:text>
        <xsl:value-of select="location/address"/>
        <xsl:text>&#10;    Имейл: </xsl:text>
        <xsl:value-of select="email"/>
        <xsl:text>&#10;    Телефон: </xsl:text>
        <xsl:value-of select="phone"/>
    </xsl:template>

    <xsl:template match="product">
        <xsl:text>    - </xsl:text>
        <xsl:value-of select="@name"/>
        <xsl:text> (Марка: </xsl:text>
        <xsl:value-of select="@brand"/>
        <xsl:text>, Цена: </xsl:text>
        <xsl:value-of select="info/price"/>
        <xsl:text> </xsl:text>
        <xsl:value-of select="info/price/@currency"/>
        <xsl:text>, Количество: </xsl:text>
        <xsl:value-of select="info/quantity"/>
```

```
            <xsl:text>)&#10;</xsl:text>
    </xsl:template>

    <xsl:template match="delivery">
        <xsl:text>    - Доставка (Статус: </xsl:text>
        <xsl:value-of select="@status"/>
        <xsl:text>, Цена: </xsl:text>
        <xsl:value-of select="@cost"/>
        <xsl:text>)&#10;</xsl:text>
        <xsl:text>        Продукти:&#10;</xsl:text>
        <xsl:apply-templates select="products/product"/>
        <xsl:text>        Доставчик: </xsl:text>
        <xsl:value-of select="vendor/name"/>
        <xsl:text>&#10;</xsl:text>
    </xsl:template>
</xsl:stylesheet>
```

Трансформации XML към HTML

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">
    <xsl:output method="html" encoding="UTF-8" indent="yes"/>

    <xsl:template match="/">
        <html lang="bg">
            <head>
                <meta charset="UTF-8"/>
                <meta name="viewport" content="width=device-width, initial-
scale=1.0"/>
                <title>Складове</title>
                <script src="https://cdn.tailwindcss.com"/>
            </head>
            <body class="bg-gray-100 text-gray-800">
                <div class="container mx-auto p-4">
                    <h1 class="text-2xl font-bold mb-4">Списък на складовете</h1>
                    <xsl:apply-templates/>
                </div>
            </body>
        </html>
    </xsl:template>

    <xsl:template match="warehouses">
        <div class="space-y-6">
            <div class="bg-white shadow rounded-lg p-6">
                <h2 class="text-xl font-semibold mb-2">Собственик</h2>
                <xsl:apply-templates select="owner"/>
            </div>
            <xsl:for-each select="warehouse">
                <div class="bg-white shadow rounded-lg p-6">
                    <h2 class="text-xl font-semibold mb-2">Склад</h2>
                    <xsl:apply-templates select="*"/>
```

```
                </div>
            </xsl:for-each>
        </div>
    </xsl:template>

    <xsl:template match="owner">
        <p class="text-gray-600">
            <strong>Име:</strong>
            <xsl:value-of select="name"/>
        </p>
        <xsl:apply-templates select="contact"/>
    </xsl:template>

    <xsl:template match="warehouse">
        <div class="space-y-4">
            <xsl:apply-templates select="products"/>
            <xsl:apply-templates select="contact"/>
            <xsl:apply-templates select="deliveries"/>
        </div>
    </xsl:template>

    <xsl:template match="products">
        <h3 class="text-lg font-semibold">Продукти</h3>
        <ul class="flex gap-1 list-disc list-inside m-2">
            <xsl:for-each select="product">
                <li class="border p-2">
                    <strong>Име:</strong>
                    <xsl:value-of select="@name"/>
                    <br/>
                    <strong>Марка:</strong>
                    <xsl:value-of select="@brand"/>
                    <br/>
                    <xsl:apply-templates select="info"/>
                </li>
            </xsl:for-each>
        </ul>
    </xsl:template>

    <xsl:template match="info">
        <p>
            <strong>Цена:</strong>
            <xsl:value-of select="price"/>
            <xsl:value-of select="price/@currency"/>
        </p>
        <p>
            <strong>Количество:</strong>
            <xsl:value-of select="quantity"/>
        </p>
        <p>
            <strong>Тегло:</strong>
            <xsl:value-of select="weight"/>
            <xsl:value-of select="weight/@unit"/>
        </p>
        <p>
```

```xml
        <strong>Тип:</strong>
        <xsl:value-of select="type"/>
    </p>
</xsl:template>

<xsl:template match="contact">
    <h3 class="text-lg font-semibold">Контакт</h3>
    <p>
        <strong>Локация:</strong>
        <xsl:value-of select="location/country"/>, <xsl:value-of
select="location/city"/>,
        <xsl:value-of select="location/address"/>
    </p>
    <p>
        <strong>Email:</strong>
        <xsl:value-of select="email"/>
    </p>
    <p>
        <strong>Телефон:</strong>
        <xsl:value-of select="phone"/>
    </p>
</xsl:template>

<xsl:template match="deliveries">
    <h3 class="text-lg font-semibold">Доставки</h3>
    <ul class="list-disc list-inside">
        <xsl:for-each select="delivery">
            <li>
                <strong>Статус:</strong>
                <xsl:value-of select="@status"/>
                <br/>
                <strong>Цена:</strong>
                <xsl:value-of select="@cost"/>
                <br/>
                <xsl:apply-templates select="products"/>
                <xsl:apply-templates select="vendor"/>
            </li>
        </xsl:for-each>
    </ul>
</xsl:template>

<xsl:template match="vendor">
    <h4 class="text-md font-medium">Доставчик</h4>
    <p>
        <strong>Име:</strong>
        <xsl:value-of select="name"/>
    </p>
    <xsl:apply-templates select="contact"/>
</xsl:template>
</xsl:stylesheet>
```

Списък на складовете

Собственик

Име:Агро магазин Любо Цветков
Контакт
Локация:Черна гора, Подгорица, ул. Независимост 12
Email:
Телефон:+502 33-141-382

Склад

Продукти

- **Име:**трактор
Марка:Машиникс
Цена:150000USD
Количество:5
Тегло:1500kg
Тип:equipment

- **Име:**косачка за трева
Марка:ТехноФермер
Цена:150USD
Количество:25
Тегло:10kg
Тип:equipment

Контакт
Локация:Северна Македония, Скопие, бул. Македония 15
Email:warehouse_lyubo_zlatev824@gmail.com
Телефон:+004 30-483-45203
Доставки
- **Статус:**canceled
Цена:5867.51
Продукти

- **Име:**семена пепино пъпеш
Марка:Градинар
Цена:12.99RON
Количество:14
Тегло:0.9g

- **Име:**ръкавици за градинарство
Марка:ГрадинаПро
Цена:7.99BGN
Количество:23
Тегло:0.2kg

- **Име:**поливна система
Марка:Водаградин
Цена:180BGN
Количество:29
Тегло:10kg

4. Заключения

Подобрения

1. Добавяне на линк за снимка към продуктите

С цел графично представяне на продуктите в HTML

```
...
<xsd:complexType name="Product">
    <xsd:sequence>
        <xsd:element name="info" type="ContentInfo" />
        <xsd:element name="notes" type="NonEmptyString" minOccurs="0"
maxOccurs="1"/>
        <!-- <xsd:element name="img" type="NonEmptyString" minOccurs="0"
```

```
        maxOccurs="1"/> -->
    </xsd:sequence>
    <xsd:attribute name="name" type="NonEmptyString" use="required">
    </xsd:attribute>
    <xsd:attribute name="brand" type="NonEmptyString" use="required" />
</xsd:complexType>
...
```

2. Добавяне на линк за точна локация на доставката

С цел подобряване проследяването на доставените продукти

```
...
<xsd:complexType name="Delivery">
    <xsd:sequence>
        ...
    </xsd:sequence>
    <xsd:attribute name="status" default="pending">
        <xsd:simpleType>
            <xsd:restriction base="xsd:string">
                <xsd:enumeration value="canceled" />
                <xsd:enumeration value="returned" />
                <xsd:enumeration value="pending" />
                <xsd:enumeration value="finished" />
            </xsd:restriction>
        </xsd:simpleType>
    </xsd:attribute>
    <xsd:attribute name="cost" type="xsd:double" />
    <!-- <xsd:attribute name="live_location" type="xsd:string"/> -->
</xsd:complexType>
...
```

3. Добавяне на трансформация за генериране на касови бележки базирани на доставките

Трансформация от вида XML към текст, за автоматично генериране на касови бележки за всяка доставка. Така от събраните данни ще можем да трансформираме до стандартен формат касова бележка.

4. Добавяне на трансформация за лесна статистика

Трансформация от вида XML към HTML, където ще се репрезентират данните под формата на статистика. С графики на най-поръчаните продукти, и кои продукти имаме най-много в наличност. Така ще знаем, ако даден продукт застоява твърде дълго по складовете.