

# Exercises: XML Processing

This document defines the exercise assignments for the [“Spring Data” course @ SoftUni](#).

## Product Shop Database

In the next exercises you will be required to **use the models** from the [previous exercise for JSON processing](#).

### 1. Seed the Database

**Import** the data from the provided files (**users.xml**, **products.xml**, **categories.xml**).

Import the **users** first. When importing the products, randomly **select the buyer** and **the seller** from the existing users. Leave out some **products** that have **not been sold** (i.e. buyer is null).

Randomly **generate categories** for each product from the existing categories.

### 2. Query and Export Data

Write the below described queries and **export** the returned data to the specified **format**.

#### Query 1 – Products in Range

Get all products in a specified **price range** (e.g. 500 to 1000) which have **no buyer**. Order them by price (from lowest to highest). Select only the **product name**, **the price** and **the full name of the seller**. Export the result to XML.

products-in-range.xml
<pre>&lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;products&gt;   &lt;product name="TRAMADOL HYDROCHLORIDE" price="516.46" seller="Christine Gomez" /&gt;   &lt;product name="Allopurinol" price="518.50" seller="Kathy Gilbert" /&gt;   &lt;product name="Parsley" price="519.06" seller="Jacqueline Perez" /&gt;   ... &lt;/products&gt;</pre>

#### Query 2 – Successfully Sold Products

Get all users, who have **at least 1 item sold** with a **buyer**. Order them by **last name**, then by **first name**. Select the person's **first** and **last name**. For each of the **products sold** (products with buyers), select the product's **name**, **price** and the buyer's **first** and **last name**.

users-sold-products.xml
<pre>&lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;users&gt;   &lt;user first-name="Carl" last-name="Daniels"&gt;     &lt;sold-products&gt;       &lt;product&gt;         &lt;name&gt;Peter Island Continous sunscreen kids&lt;/name&gt;         &lt;price&gt;471.30&lt;/price&gt;         &lt;buyer-first-name&gt;Anna&lt;/buyer-first-name&gt;</pre>

```

        <buyer-last-name>Parker</buyer-last-name>
    </product>
    <product>
        <name>Warfarin Sodium</name>
        <price>1379.79</price>
        <buyer-first-name>Brandon</buyer-first-name>
        <buyer-last-name>Fuller</buyer-last-name>
    </product>
    ...
</sold-products>
</user>
...
</users>

```

### Query 3 – Categories by Products Count

Get **all categories**. Order them by the **number of products** in that category (a product can be in many categories). For each category select its **name**, the **number of products**, the **average price of those products** and the **total revenue** (total price sum) of those products (regardless if they have a buyer or not).

categories-by-products.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;categories&gt;     &lt;category name="Sports"&gt;         &lt;products-count&gt;49&lt;/products-count&gt;         &lt;average-price&gt;754.327755&lt;/average-price&gt;         &lt;total-revenue&gt;36962.06&lt;/total-revenue&gt;     &lt;/category&gt;     &lt;category name="Adult"&gt;         &lt;products-count&gt;46&lt;/products-count&gt;         &lt;average-price&gt;905.283478&lt;/average-price&gt;         &lt;total-revenue&gt;41643.04&lt;/total-revenue&gt;     &lt;/category&gt;     ... &lt;/categories&gt; </pre>

### Query 4 – Users and Products

Get all users, who have **at least 1 product sold**. Order them by the **number of products sold** (from highest to lowest), then by **last name** (ascending). Select only their **first** and **last name**, **age** and for each product - **name** and **price**.

Export the results to **XML**. Follow the format below to better understand how to structure your data.

users-and-products.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; </pre>

```

<users count="35">
  <user first-name="Carl" last-name="Daniels" age="59">
    <sold-products count="10">
      <product name="Finasteride" price="1374.01" />
      <product name="Peter Island Continuous sunscreen kids" price="471.30" />
      <product name="Warfarin Sodium" price="1379.79" />
      <product name="Gilotrif" price="1454.77" />
      <product name="Cold and Cough" price="218.14" />
      ...
    </sold-products>
  </user>
  <user last-name="Harris">
    <sold-products count="9">
      <product name="Clarins Paris Skin Illusion - 114 cappuccino" price="811.42" />
      ...
    </sold-products>
  </user>
  ...
</users>

```

## Car Dealer Database

In the next exercises you will be required to **use the models** from the [previous exercise for JSON processing](#).

### 3. Car Dealer Import Data

Import data from the provided files (**suppliers.xml**, **parts.xml**, **cars.xml**, **customers.xml**).

First import the **suppliers**. When importing the **parts** set to each part a **random supplier** from the already imported suppliers. Then, when importing the cars add **between 10 and 20 random parts** to each car. Then import **all customers**. Finally, import the **sales records** by **randomly** selecting a **car**, a **customer** and the amount of **discount to be applied** (discounts can be 0%, 5%, 10%, 15%, 20%, 30%, 40% or 50%).

### 4. Car Dealer Query and Export Data

Write the below described queries and **export** the returned data to the specified **format**.

#### Query 1 – Ordered Customers

Get all **customers** ordered by their **birthdate in ascending order**. If two customers are born on the same date, **first print those, who are not young drivers** (e.g. print experienced drivers first). **Export** the list of customers to **XML** in the format provided below.

ordered-customers.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;customers&gt;   &lt;customer&gt;     &lt;id&gt;29&lt;/id&gt; </pre>

```

    <name>Louann Holzworth</name>
    <birth-date>1960-10-01T00:00:00</birth-date>
    <is-young-driver>false</is-young-driver>
  </customer>
</customer>
  <id>28</id>
  <name>Donnetta Soliz</name>
  <birth-date>1963-10-01T00:00:00</birth-date>
  <is-young-driver>false</is-young-driver>
</customer>
...
</customers>

```

## Query 2 – Cars from Make Toyota

Get all **cars** from make **Toyota** and **order them by model alphabetically** and by **travelled distance in descending order**. **Export** the list of **cars to XML** in the format provided below.

toyota-cars.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;cars&gt;   &lt;car id="117" make="Toyota" model="Camry Hybrid" travelled-distance="954775807" /&gt;   &lt;car id="112" make="Toyota" model="Camry Hybrid" travelled-distance="92275807" /&gt;   ... &lt;/cars&gt; </pre>

## Query 3 – Local Suppliers

Get all **suppliers** that **do not import parts from abroad**. Get their **id**, **name** and the **number of parts they can offer to supply**. **Export** the list of **suppliers to XML** in the format provided below.

local-suppliers.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;suppliers&gt;   &lt;supplier id="2" name="Agway Inc." parts-count="6" /&gt;   &lt;supplier id="4" name="Airgas, Inc." parts-count="5" /&gt;   ... &lt;/suppliers&gt; </pre>

## Query 4 – Cars with Their List of Parts

Get all **cars along with their list of parts**. For the **car** get only **make**, **model** and **travelled distance** and for the **parts** get only **name** and **price**. **Export** the list of **cars and their parts to XML** in the format provided below.

cars-and-parts.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;cars&gt; </pre>

```

<car make="Opel" model="Omega" travelled-distance="2147483647" />
  <parts>
    <part name="Front Left Side Outer door handle" price="999.99" />
    <part name="Gudgeon pin" price="44.99" />
    <part name="Oil pump" price="100.19" />
    <part name="Transmission pan" price="106.99" />
  </parts>
</car>
<car make="Opel" model="Astra" travelled-distance="9223372036854775807" />
  <parts>
    <part name="Overflow tank" price="1200.99" />
    ...
  </parts>
</car>
...
</cars>

```

### Query 5 – Total Sales by Customer

Get all **customers** that have bought **at least 1 car** and get their **names**, **count of cars bought** and **total money spent** on cars. **Order** the result **by total money spent in descending order** and then by **total amount of cars bought** again in **descending order**. **Export** the list of customers **to XML** in the format provided below.

customers-total-sales.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;customers&gt;   &lt;customer full-name="Hipolito Lamoreaux" bought-cars="5" spent-money="8360.48" /&gt;   &lt;customer full-name="Francis Mckim" bought-cars="4" spent-money="7115.50" /&gt;   &lt;customer full-name="Johnette Derryberry" bought-cars="4" spent-money="5337.72" /&gt;   ... &lt;/customer&gt; </pre>

### Query 6 – Sales with Applied Discount

Get all **sales** with information about the **car**, the **customer** and the **price** of the sale **with and without discount**. **Export** the list of sales **to XML** in the format provided below.

sales-discounts.xml
<pre> &lt;?xml version="1.0" encoding="utf-8"?&gt; &lt;sales&gt;   &lt;sale&gt;     &lt;car make="Peugeot" model="405" travelled-distance="92036854775807" /&gt;     &lt;customer-name&gt;Donnetta Soliz&lt;/customer-name&gt;     &lt;discount&gt;0.3&lt;/discount&gt;   &lt;/sale&gt; </pre>

```
<price>1402.53</price>
<price-with-discount>981.771</price-with-discount>
</sale>
<sale>
  <car make="Mercedes" model="W124" travelled-distance="2147647" />
  <customer-name>Carri Knapik</customer-name>
  <discount>0.2</discount>
  <price>254.96999999999997</price>
  <price-with-discount>203.97599999999997</price-with-discount>
</sale>
...
</sales>
```