# XQuery Assignment

## Case Study Assignment: Inventory Stock Analysis (XML → XQuery)

### Background

Your retail client maintains real‑time inventory snapshots in XML, exported from their warehouse management system every night. Each <item> record includes product code, name, category, quantity on hand, reorder level, and unit cost.

The **Supply Chain Team** needs to run analytics on this XML data to:

* Identify which products are **below reorder threshold**.
* Calculate **total inventory value** by category.
* Generate **restock alerts** and **top‑10 most valuable items**.

### 🧾 Sample Input XML (inventory.xml)

<?xml version="1.0" encoding="UTF-8"?>

<warehouse date="2025-07-07">

<item>

<productCode>P1001</productCode>

<name>Wireless Mouse</name>

<category>Accessories</category>

<quantity>25</quantity>

<reorderLevel>20</reorderLevel>

<unitCost>500</unitCost>

</item>

<item>

<productCode>P1002</productCode>

<name>USB-C Cable</name>

<category>Cables</category>

<quantity>15</quantity>

<reorderLevel>30</reorderLevel>

<unitCost>200</unitCost>

</item>

<item>

<productCode>P1003</productCode>

<name>HDMI Adapter</name>

<category>Adapters</category>

<quantity>50</quantity>

<reorderLevel>10</reorderLevel>

<unitCost>750</unitCost>

</item>

<!-- …more items… -->

</warehouse>

### Assignment Tasks

1. **Low‑Stock Report**  
   Write an XQuery that lists all <item> where quantity < reorderLevel, returning elements:

xml

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<restockAlert>

<code>…</code>

<name>…</name>

<onHand>…</onHand>

<reorder>…</reorder>

</restockAlert>

1. **Category Value Calculation**  
   For each distinct category, calculate **total value** = sum(quantity \* unitCost), and output:

xml

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<categoryValue name="…">123456</categoryValue>

1. **Top‑10 Most Valuable Items**  
   Compute value per item (quantity \* unitCost), sort descending, and return the top 10 as:

xml

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<topItem rank="1">

<code>…</code>

<name>…</name>

<value>…</value>

</topItem>

1. **Full Warehouse Snapshot in HTML**  
   Using XQuery’s HTML serialization, produce a table view of all items with columns: Code, Name, Category, Qty, UnitCost, Value.