Advanced XPath Task

Task Description

You are provided with an XML file containing a list of books in a bookstore. Your task is to write XPath queries to extract detailed information from this XML file.

XML File Structure

```
<bookstore>
  <book category="cooking">
    <title lang="en">Everyday Italian</title>
    <author>Giada De Laurentiis</author>
    <year>2005</year>
    <price>30.00</price>
  </book>
  <book category="children">
    <title lang="en">Harry Potter</title>
    <author>J K. Rowling</author>
    <year>2005</year>
    <price>29.99</price>
  </book>
  <book category="web">
    <title lang="en">XQuery Kick Start</title>
    <author>James McGovern</author>
    <author>Per Bothner</author>
    <author>Kurt Cagle</author>
    <author>James Linn</author>
    <author>Vaidyanathan Nagarajan</author>
    <year>2003</year>
    <price>49.99</price>
  </book>
  <book category="web">
    <title lang="en">Learning XML</title>
    <author>Erik T. Ray</author>
    <year>2003</year>
    <price>39.95</price>
  </book>
  <book category="fiction">
    <title lang="en">The Hobbit</title>
```

```xml
    <author>J.R.R. Tolkien</author>
    <year>1937</year>
    <price>22.99</price>
  </book>
  <book category="fiction">
    <title lang="en">The Great Gatsby</title>
    <author>F. Scott Fitzgerald</author>
    <year>1925</year>
    <price>10.99</price>
  </book>
  <book category="cooking">
    <title lang="en">Mastering the Art of French Cooking</title>
    <author>Julia Child</author>
    <author>Louisette Bertholle</author>
    <author>Simone Beck</author>
    <year>1961</year>
    <price>45.00</price>
  </book>
</bookstore>
```

Requirements

1. Extract Titles: Write an XPath query to extract all book titles.

2. Extract Authors: Write an XPath query to extract all authors' names.

3. Books Published After 2004: Write an XPath query to extract titles of books published after the year 2004.

4. Books by Category: Write an XPath query to list titles of all books in the "web" category.

5. Books with Multiple Authors: Write an XPath query to list titles of books that have more than one author.

6. Books Priced Above $30: Write an XPath query to extract titles of books priced above $30.

7. Titles and Prices of Fiction Books: Write an XPath query to extract titles and prices of all fiction books.

8. Books with Specific Language: Write an XPath query to list titles of books written in English

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(lang="en").

9. Authors of Cooking Books: Write an XPath query to list all authors of cooking books.

10. Books Published Between 2000 and 2010: Write an XPath query to extract titles of books published between the years 2000 and 2010.

11. Most Expensive Book: Write an XPath query to find the title and price of the most expensive book.

12. Books Sorted by Year: Write an XPath query to list titles of books sorted by their publication year in ascending order.

Resources

- *XPath Syntax: https://www.w3schools.com/xml/xpath_syntax.asp*

- *XPath Functions: https://www.w3schools.com/xml/xpath_functions.asp*

- *XPath Axes: https://www.w3schools.com/xml/xpath_axes.asp*

- *XPath Tutorial: https://www.tutorialspoint.com/xpath/index.htm*

- *XPath 1.0 Spec: https://www.w3.org/TR/1999/REC-xpath-19991116/*

Additional Instructions

- Ensure your XPath queries are correct by testing them with an appropriate XML parser or tool.

- Provide comments or documentation explaining your XPath queries and logic used.

- Submit your solution in a well-documented format, ideally in an XML or plain text file with clear labels for each query.

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Feel free to use these resources to help you complete the task. Good luck with your interview preparation!