CSLR 51 : DBMS LAB-9

Roll no. : **106119100**

Name : **Rajneesh Pandey**

Section : **CSE-B**

1)

a. Demonstrating DTD:

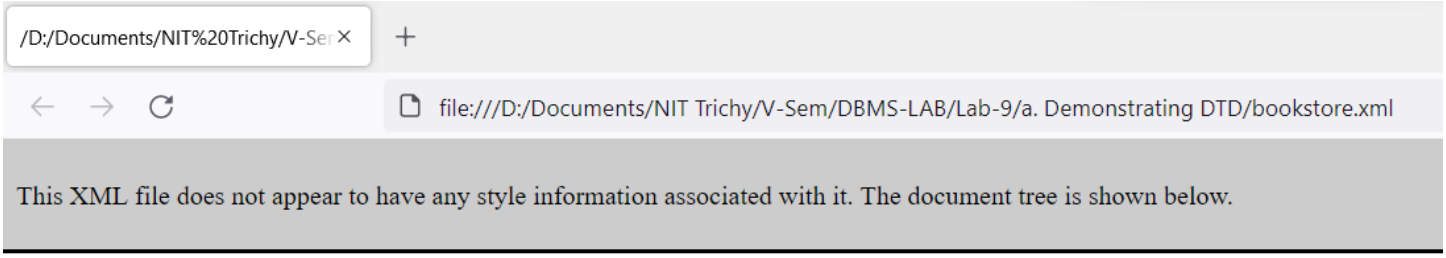
1. filename : *bookstore.dtd*

```
<!ELEMENT bookstore (book+)>
<!ELEMENT book (title,author,category,isbn,publisher,edition,price)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT author (#PCDATA)>
<!ELEMENT category (#PCDATA)>
<!ELEMENT isbn (#PCDATA)>
<!ELEMENT publisher (#PCDATA)>
<!ELEMENT edition (#PCDATA)>
<!ELEMENT price (#PCDATA)>
```

2. filename : *bookstore.xml*

```
<?xml version="1.0"?>
<!DOCTYPE bookstore SYSTEM "bookstore.dtd">
    <bookstore>
            <book>
                <title>XML Developer's Guide</title>
                <author>Gambardella, Matthew</author>
                <category>textbook</category>
                <isbn>111111</isbn>
                <publisher>wiley</publisher>
                <edition>second</edition>
                <price>20.00</price>
            </book>
```

```
        <book>
            <title>Maeve Ascendant</title>
            <author>Corets, Eva</author>
            <category>textbook</category>
            <isbn>222222</isbn>
            <publisher>tata</publisher>
            <edition>second</edition>
            <price>60.00</price>
        </book>
        <book>
            <title>Midnight Rain</title>
            <author>Ralls, Kim</author>
            <category>fiction</category>
            <isbn>333333</isbn>
            <publisher>O'relilly</publisher>
            <edition>second</edition>
            <price>100.00</price>
        </book>
</bookstore>
```




```
−<bookstore>
  −<book>
      <title>XML Developer's Guide</title>
      <author>Gambardella, Matthew</author>
      <category>textbook</category>
      <isbn>111111</isbn>
      <publisher>wiley</publisher>
      <edition>second</edition>
      <price>20.00</price>
    </book>
  −<book>
      <title>Maeve Ascendant</title>
      <author>Corets, Eva</author>
      <category>textbook</category>
      <isbn>222222</isbn>
      <publisher>tata</publisher>
      <edition>second</edition>
      <price>60.00</price>
    </book>
  −<book>
      <title>Midnight Rain</title>
      <author>Ralls, Kim</author>
      <category>fiction</category>
      <isbn>333333</isbn>
      <publisher>O'relilly</publisher>
      <edition>second</edition>
      <price>100.00</price>
    </book>
</bookstore>
```


b. Demonstrating XSD:

1. filename : *bookstore.xml*

```
<?xml version="1.0" encoding="iso-8859-1"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
    <xs:element name="bookstore">
        <xs:complexType>
```

```
            <xs:sequence>
               <xs:element name="book" minOccurs="1" maxOccurs="unbounded" />
            </xs:sequence>
        </xs:complexType>
    </xs:element>
    <xs:element name="book">
        <xs:complexType>
            <xs:sequence>
                <xs:element ref="title" minOccurs="1" maxOccurs="1" />
                <xs:element ref="author" minOccurs="1" maxOccurs="1" />
                <xs:element ref="category" minOccurs="1" maxOccurs="1" />
                <xs:element ref="isbn" minOccurs="1" maxOccurs="1" />
                <xs:element ref="publisher" minOccurs="1" maxOccurs="1" />
                <xs:element ref="edition" minOccurs="1" maxOccurs="1" />
                <xs:element ref="price" minOccurs="1" maxOccurs="1" />
            </xs:sequence>
        </xs:complexType>
    </xs:element>
    <xs:element name="title" type="xs:string" />
    <xs:element name="author" type="xs:string" />
    <xs:element name="category" type="xs:string" />
    <xs:element name="isbn" type="xs:string" />
    <xs:element name="publisher" type="xs:string" />
    <xs:element name="edition" type="xs:string" />
    <xs:element name="price" type="xs:string" />
</xs:schema>
```

2. filename : *bookstore.css*

```
bookstore {
  color: orange;
}
book {
  color: Red;
}
title {
  color: blue;
  font-weight: bold;
  margin-left: 10pt;
  display: block;
}
author {
  color: red;
  font-weight: bold;
  margin-left: 10pt;
}
category {
  color:grey;
  font-weight: bold;
  margin-left: 10pt;
}
isbn {
  color: green;
  font-weight: bold;
  margin-left: 10pt;
}
edition {
  color: red;
  font-weight: bold;
  margin-left: 10pt;
}
```

```
publisher {
  color: green;
  font-weight: bold;
  margin-left: 10pt;
}
```

3. filename : *bookstore.xsl*

```
<?xml version="1.0"?>
<?xml-stylesheet type="text/css" href="bookstore.css"?>
<bookstore xmlns:xsi="http:www.w3.org/2001/xmlschema-instance"
xsi:noNamespaceSchemaLocation="bookstore.xsd">
    <book>
        <title>XML Developer's Guide</title>
        <author>Gambardella, Matthew</author>
        <category>textbook</category>
        <isbn>111111</isbn>
        <publisher>wiley</publisher>
        <edition>second</edition>
        <price>20.00</price>
    </book>
    <book>
        <title>Maeve Ascendant</title>
        <author>Corets, Eva</author>
        <category>textbook</category>
        <isbn>222222</isbn>
        <publisher>tata</publisher>
        <edition>second</edition>
        <price>60.00</price>
    </book>
    <book>
        <title>Midnight Rain</title>
        <author>Ralls, Kim</author>
```

```
        <category>fiction</category>
        <isbn>333333</isbn>
        <publisher>O'relilly</publisher>
        <edition>second</edition>
        <price>100.00</price>
    </book>
</bookstore>
```

c. Demonstrating XSL:

1. filename : *bookstore.xsl*

```
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
    <xsl:template match="/">
        <html>
            <head>
                <title>bookstore</title>
```

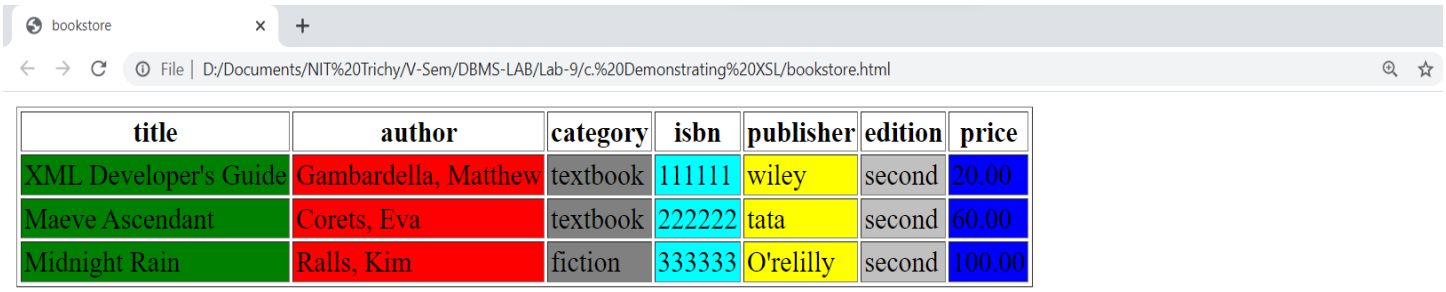
```
</head>
<body>
    <table border="1">
        <tr>
            <th>title</th>
            <th>author</th>
            <th>category</th>
            <th>isbn</th>
            <th>publisher</th>
            <th>edition</th>
            <th>price</th>
        </tr>
        <xsl:for-each select="/bookstore/book">
            <tr>
                <td bgcolor="green">
                    <xsl:value-of select="title" />
                </td>
                <td bgcolor="red">
                    <xsl:value-of select="author" />
                </td>
                <td bgcolor="grey">
                    <xsl:value-of select="category" />
                </td>
                <td bgcolor="cyan">
                    <xsl:value-of select="isbn" />
                </td>
                <td bgcolor="yellow">
                    <xsl:value-of select="publisher" />
                </td>
                <td bgcolor="silver">
                    <xsl:value-of select="edition" />
                </td>
                <td bgcolor="blue">
```

```
                                <xsl:value-of select="price" />
                            </td>
                        </tr>
                    </xsl:for-each>
                </table>
            </body>
        </html>
    </xsl:template>
</xsl:stylesheet>
```

2. filename : *bookstore.xml*

```
<?xml-stylesheet type="text/xsl"  href="bookstore.xsl"?>
<bookstore>
    <book>
        <title>XML Developer's Guide</title>
        <author>Gambardella, Matthew</author>
        <category>textbook</category>
        <isbn>111111</isbn>
        <publisher>wiley</publisher>
        <edition>second</edition>
        <price>20.00</price>
    </book>
    <book>
        <title>Maeve Ascendant</title>
        <author>Corets, Eva</author>
        <category>textbook</category>
        <isbn>222222</isbn>
        <publisher>tata</publisher>
        <edition>second</edition>
        <price>60.00</price>
    </book>
    <book>
```

```
        <title>Midnight Rain</title>
        <author>Ralls, Kim</author>
        <category>fiction</category>
        <isbn>333333</isbn>
        <publisher>O'relilly</publisher>
        <edition>second</edition>
        <price>100.00</price>
    </book>
</bookstore>
```

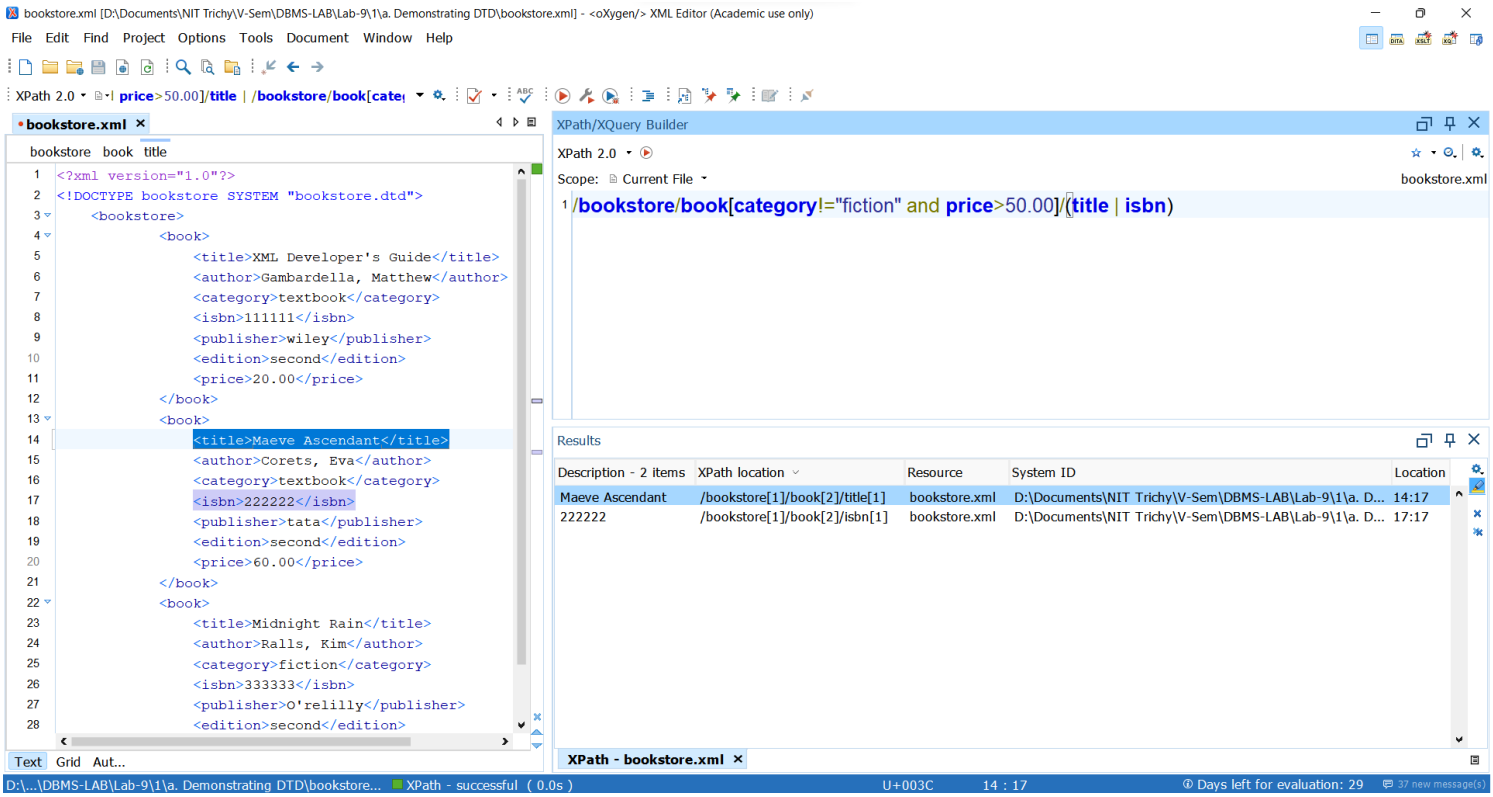


title	author	category	isbn	publisher	edition	price
XML Developer's Guide	Gambardella, Matthew	textbook	111111	wiley	second	20.00
Maeve Ascendant	Corets, Eva	textbook	222222	tata	second	60.00
Midnight Rain	Ralls, Kim	fiction	333333	O'relilly	second	100.00

2) Perform the following queries using XPath :

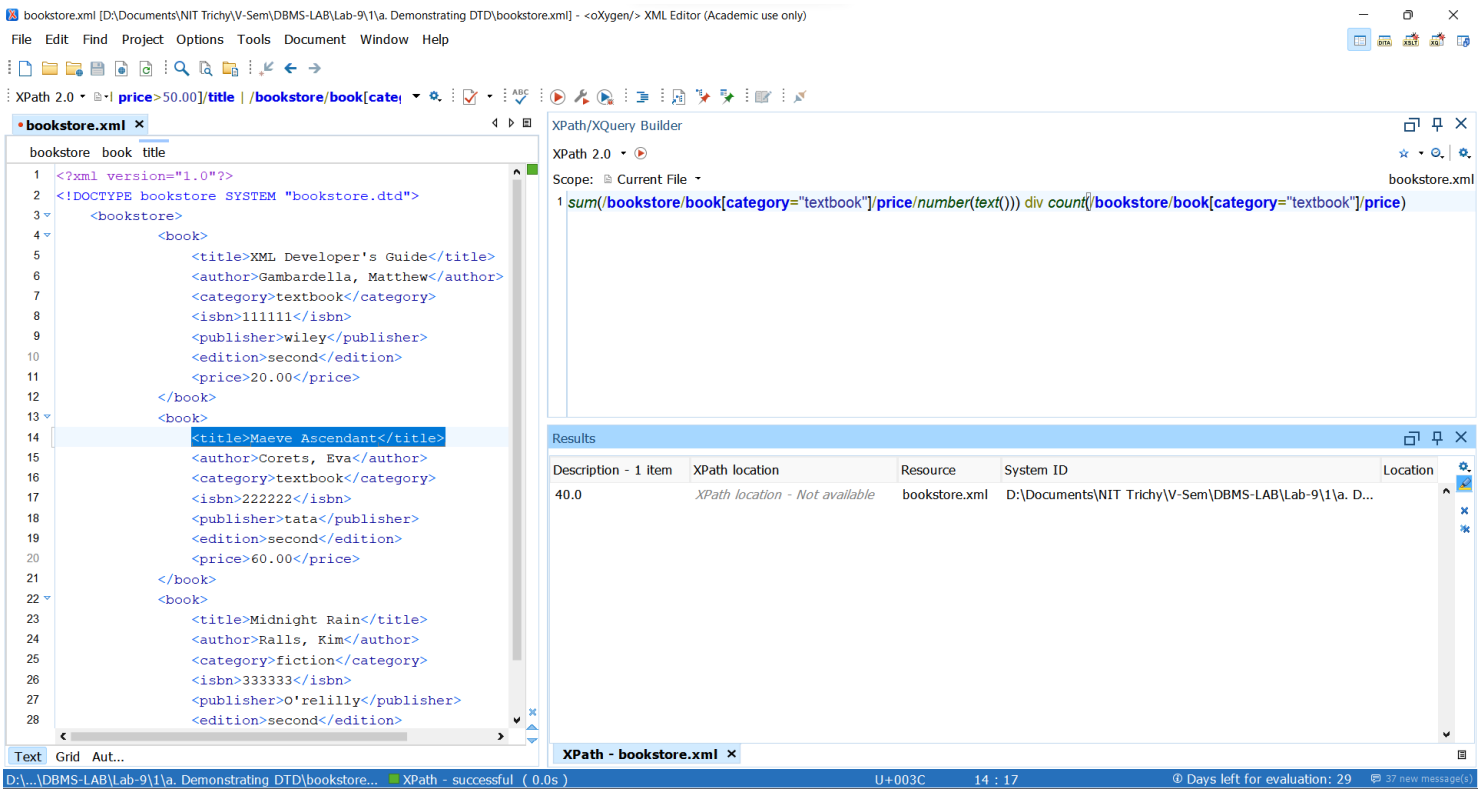
(i) Find the title and price of non-fiction books with a price more than 50 USD

Xpath query : **/bookstore/book**[**category**!="fiction" and **price**>50.00]/(**title** | **isbn**)



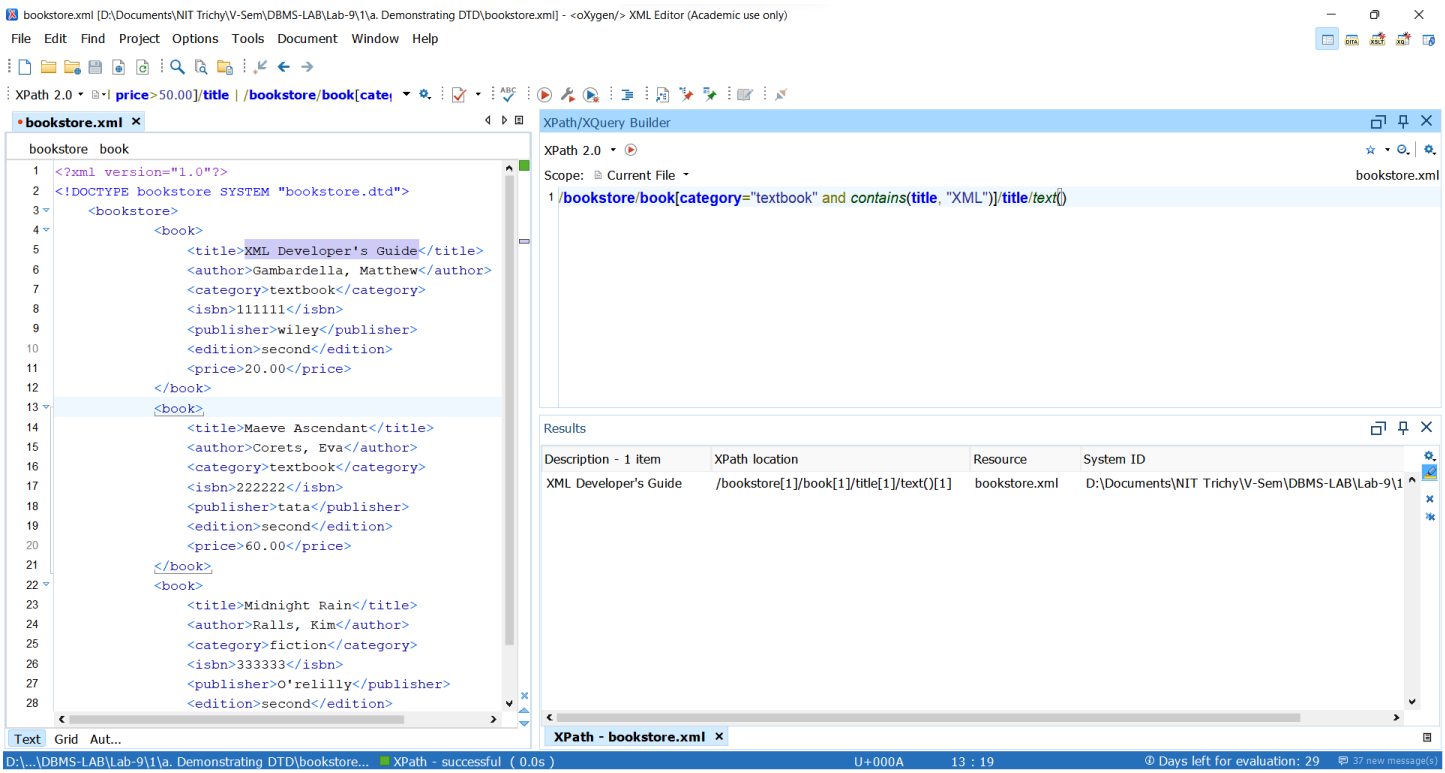
(ii) Find average price of textbooks

Xpath query : *sum*(/**bookstore**/**book**[**category**="textbook"]/**price**/*number*(*text*())) div *count*(/**bookstore**/**book**[**category**="textbook"]/**price**)



(iii) Find the titles of textbooks on XML

Xpath query : **/bookstore/book[category**="textbook" and *contains*(**title**, "XML")]/**title**/*text*()

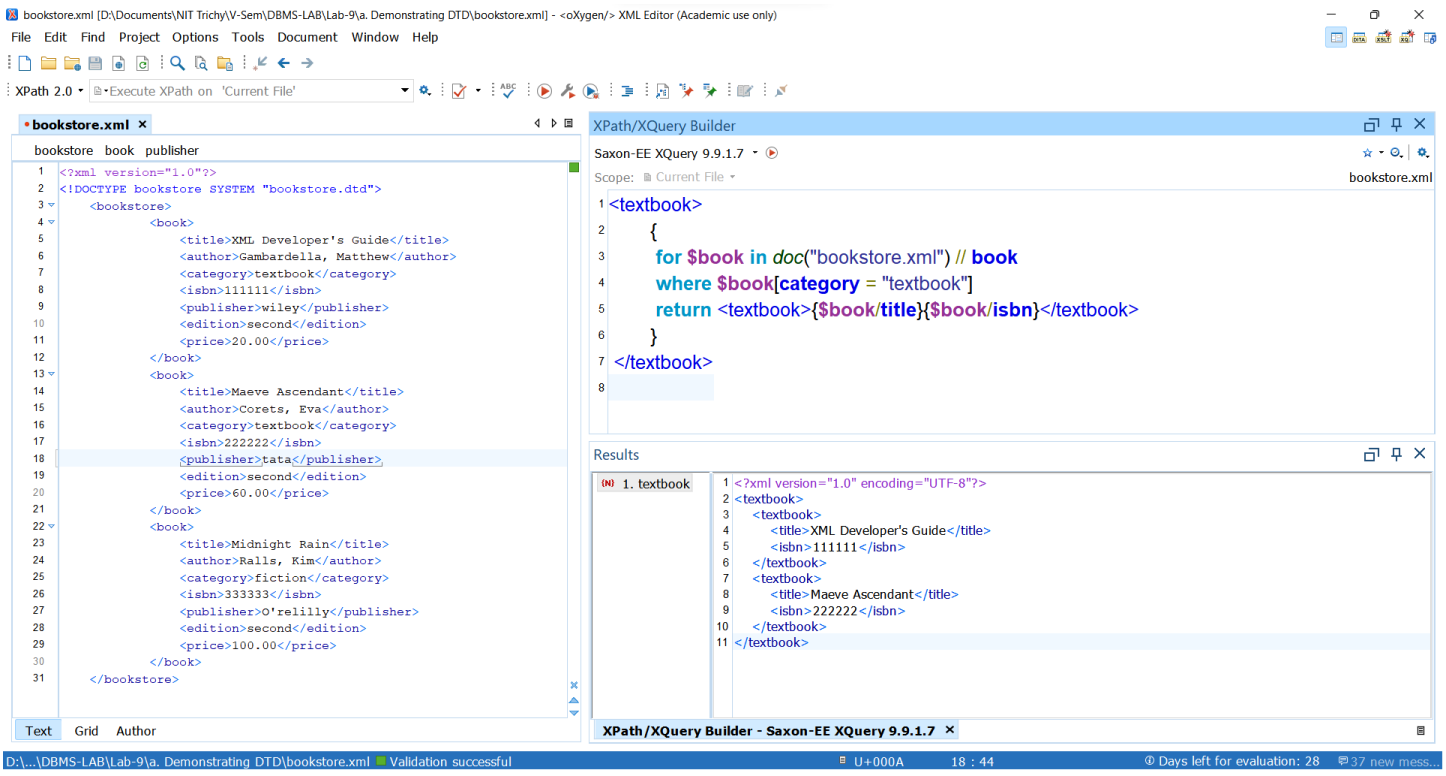


1) Perform the following queries using XQuery:

(i) Create a new document which contain only the isbn and title of textbooks

XQuery

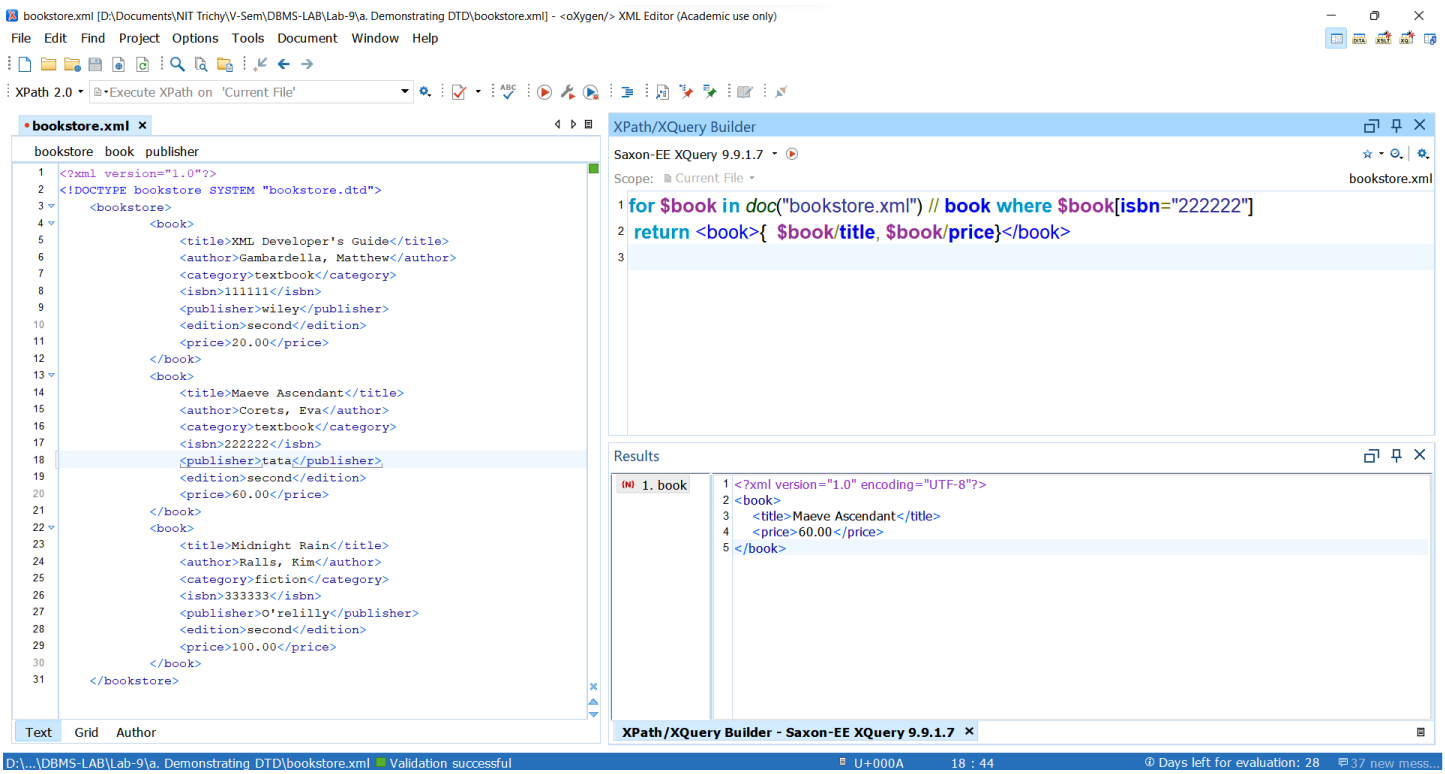
```
<textbook>
    {
    for $book in doc("bookstore.xml") // book
    where $book[category = "textbook"]
    return <textbook>{$book/title}{$book/isbn}</textbook>
    }
</textbook>
```



(ii) Find the title and price of the book with isbn “222222”.

XQuery :

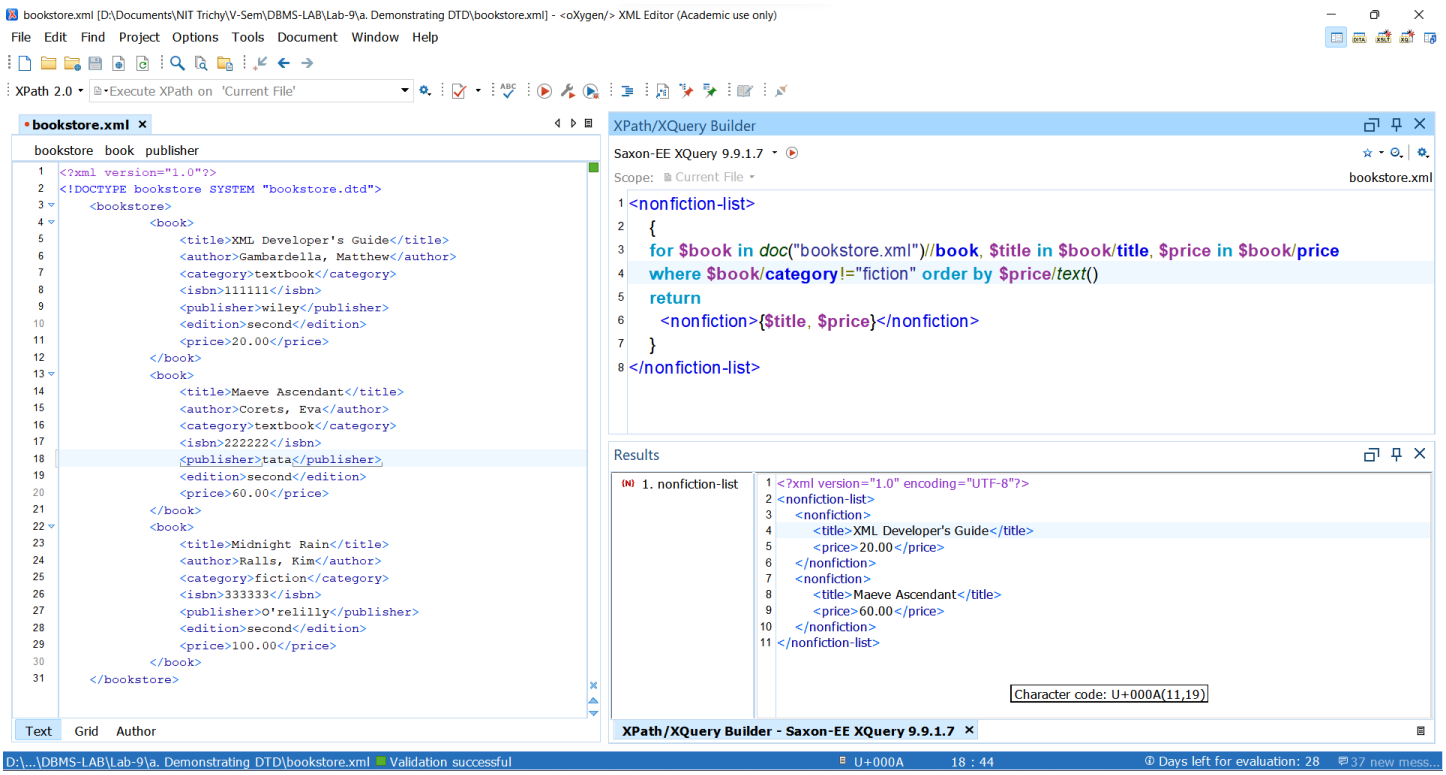
```
for $book in doc("bookstore.xml") // book where $book[isbn="222222"]
 return <book>{  $book/title, $book/price}</book>
```



(iii) Produce a list of non-fictions with their title and price, sorted by price

XQuery :

```
<nonfiction-list>
   {
   for $book in doc("bookstore.xml")//book, $title in $book/title, $price in $book/price
   where $book/category!="fiction" order by $price/text()
   return
     <nonfiction>{$title, $price}</nonfiction>
   }
</nonfiction-list>
```



(iv) Find title of the textbook with highest price

XQuery :

```
<textbooks>
   { let $prices := doc("bookstore.xml")// book[category="textbook"]/price let $max := max($prices)
     return
     <max-price-textbook price="{$max}">
       {for $book in doc("bookstore.xml")// book where $book/price = $max return $book/title}
     </max-price-textbook>
   }
</textbooks>
```