ASSIGNMENT-2

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Individual Task: Each student is required to run an interesting set of XPATH and XQuery queries on the data and submit the results along with the plain English description of the queries. Any tools that support these languages can be used for this purpose.

Acknowledgement:

I have used BaseX XML editor for querying.

XQUERY AND XPATH for the XML data our team has submitted.

1. Check for Voting Rights Across All Instruments

   ```
   for $instrument in //instrument
   where $instrument/stock/hasVotingRight = 'Yes'
   return
           <result>
           <name>{$instrument/hasName/text()}</name>
           <votingRights>{$instrument/stock/hasVotingRight/text()}</votingRights>
           </result>
   ```

   Result:
   ```
   <result><name>Reliance Industries</name><votingRights>Yes</votingRights></result>
   <result><name>TCS</name><votingRights>Yes</votingRights></result>
   <result><name>HDFC Bank</name><votingRights>Yes</votingRights></result>
   <result><name>Infosys</name><votingRights>Yes</votingRights></result>
   <result><name>ICICI Bank</name><votingRights>Yes</votingRights></result>
   <result><name>Adani Enterprises</name><votingRights>Yes</votingRights></result>
   <result><name>HUL</name><votingRights>Yes</votingRights></result>
   ```

   XPATH:
   ```
   //instrument[stock/hasVotingRight = 'Yes']/concat(hasName, ' has voting rights: Yes')
   ```

   Result:
   Reliance Industries has voting rights: Yes
   TCS has voting rights: Yes
   HDFC Bank has voting rights: Yes
   Infosys has voting rights: Yes

ICICI Bank has voting rights: Yes
Adani Enterprises has voting rights: Yes
HUL has voting rights: Yes

2. List All Instruments with High PE Type and Their Returns
   This query lists all instruments that have a high PE type and displays their return percentages.

   ```
   for $instrument in //instrument[stock/hasPeType = 'High']
   return
           concat($instrument/hasName, " has a return of ", $instrument/hasReturn)
   ```

   Result:
   Reliance Industries has a return of 18.5
   Adani Enterprises has a return of 19.9

   XPATH:
   ```
   //instrument[stock/hasPeType = 'High']/concat(hasName, ' has a return of ', hasReturn)
   ```

   Result:
   Reliance Industries has a return of 18.5
   Adani Enterprises has a return of 19.9

3. Count the Number of Instruments per Issuer
   This query counts and lists the number of instruments issued by each issuer, providing a summary of the market's offerings by organization.

   XQUERY:
   ```
   for $issuer in distinct-values(//instrument/hasIssuer)
   let $count := count(//instrument[hasIssuer = $issuer])
   return <issuer>
           <name>{$issuer}</name>
           <count>{$count}</count>
           </issuer>
   ```

   RESULT:
   ```
   <issuer><name>Government of India</name><count>4</count></issuer>
   <issuer><name>Tata Steel</name><count>1</count></issuer>
   <issuer><name>Reliance Industries</name><count>1</count></issuer>
   <issuer><name>Municipal Corporation</name><count>2</count></issuer>
   <issuer><name>HDFC Ltd</name><count>1</count></issuer>
   ```

`<issuer><name>Infosys</name><count>1</count></issuer>`

4. **Find Funds with the Highest Return**
   This query finds and displays the funds with the highest return across all categories, highlighting the best-performing investment options.

   XQUERY:
   ```
   let $maxReturn := max(//instrument/hasReturn)
   for $fund in //instrument[hasReturn=$maxReturn]
   return <highest>{$fund/hasName/text()} - {$fund/hasReturn/text()}</highest>
   ```

   RESULT:
   ```
   <highest>HDFC Long-Term Fund - 8.2</highest>
   ```

   XPATH:
   ```
   //instrument[hasReturn=max(//instrument/hasReturn)]/hasName |
   //instrument[hasReturn=max(//instrument/hasReturn)]/hasReturn
   ```

   RESULT:
   ```
   <hasName>HDFC Long-Term Fund</hasName>
   <hasReturn>8.2</hasReturn>
   ```

5. List All Government Money Market Funds
   This query retrieves the names and returns of all government money market funds, focusing on this specific segment of the investment catalog.

   XQUERY:
   ```
   for $fund in //instrument[moneyMarketFund/hasTermType='Government']
   return <governmentFund>{$fund/hasName/text()} -
   {$fund/hasReturn/text()}</governmentFund>
   ```

   RESULT:
   ```
   <governmentFund>ICICI Government Money Market Fund - 4.2</governmentFund>
   <governmentFund>SBI Government Money Market Fund - 4.1</governmentFund>
   <governmentFund>HDFC Government Money Market Fund - 4.3</governmentFund>
   <governmentFund>Axis Government Money Market Fund - 4.0</governmentFund>
   <governmentFund>Kotak Government Money Market Fund - 4.4</governmentFund>
   ```

   XPATH:
   ```
   //instrument[moneyMarketFund/hasTermType='Government']/hasName |
   //instrument[moneyMarketFund/hasTermType='Government']/hasReturn
   ```

RESULT:
<hasName>ICICI Government Money Market Fund</hasName>
<hasReturn>4.2</hasReturn>
<hasName>SBI Government Money Market Fund</hasName>
<hasReturn>4.1</hasReturn>
<hasName>HDFC Government Money Market Fund</hasName>
<hasReturn>4.3</hasReturn>
<hasName>Axis Government Money Market Fund</hasName>
<hasReturn>4.0</hasReturn>
<hasName>Kotak Government Money Market Fund</hasName>
<hasReturn>4.4</hasReturn>

6. **List all instruments that belong to "Commodity Index Fund"**
   This query fetches the names of instruments that are categorized as "Commodity Index Fund".

   XQUERY:
   for $instrument in //instrument[indexFund/type = 'Commodity Index Fund']
   return $instrument/hasName

   RESULT:
   <hasName>ICICI Prudential Gold Index Fund</hasName>
   <hasName>SBI Gold Index Fund</hasName>
   <hasName>HDFC Gold Index Fund</hasName>
   <hasName>Kotak Silver Index Fund</hasName>
   <hasName>Axis Gold Index Fund</hasName>

   XPATH:
   //instrument[indexFund/type = 'Commodity Index Fund']/hasName

   RESULT:
   <hasName>ICICI Prudential Gold Index Fund</hasName>
   <hasName>SBI Gold Index Fund</hasName>
   <hasName>HDFC Gold Index Fund</hasName>
   <hasName>Kotak Silver Index Fund</hasName>
   <hasName>Axis Gold Index Fund</hasName>

7. Find the return and risk of all small-cap funds
   This query retrieves the name, return, and risk of all small-cap equity funds.

   XQUERY:

```
for $instrument in //instrument[mutualFund/type = 'Small-Cap Equity Fund']
return <fund>
    <name>{$instrument/hasName/text()}</name>
    <return>{$instrument/hasReturn/text()}</return>
    <risk>{$instrument/mutualFund/hasRisk/text()}</risk>
</fund>
```

RESULT:
```
<fund><name>SBI Small Cap
Fund</name><return>19.2</return><risk>High</risk></fund>
<fund><name>Axis Small Cap
Fund</name><return>21.0</return><risk>High</risk></fund>
<fund><name>HDFC Small Cap
Fund</name><return>18.9</return><risk>High</risk></fund>
<fund><name>ICICI Prudential Small
Cap</name><return>20.4</return><risk>High</risk></fund>
<fund><name>Franklin India Smaller
Cos</name><return>19.7</return><risk>High</risk></fund>
```

XPATH:
```
//instrument[mutualFund/type = 'Small-Cap Equity Fund']
    /concat(hasName, ',', hasReturn, ',', mutualFund/hasRisk)
```

RESULT:
```
SBI Small Cap Fund,19.2,High
Axis Small Cap Fund,21.0,High
HDFC Small Cap Fund,18.9,High
ICICI Prudential Small Cap,20.4,High
Franklin India Smaller Cos,19.7,High
```