**Question Five: {16 marks}**

Consider the following tabular data (bibliography) and answer the following questions.

(Convert 2 records only).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Books | | | | | |
| Id | Title | Author | Publisher | Category | ISBN |
| 1 | Introduction to computers | Jim Hendler | springer | Computer Sciences | 978-0-12-385965-5 |
| 2 | Essential bioinformatics | JIN XIONG | springer | Bioinformatics | 978-0-470-02001-2 |
| 3 | Pattern discovery in bioinformatics | David L. Olson | springer | Data Mining | 978-3-540-76916-3 |
| 4 | Advanced databases | Borko Furht | springer | Databse | 978-1-4419-6523-3 |
| 5 | Algorithms of bioinformatics | Frédéric Dardel | springer | Bioinformatics | 978-0-470-12321-2 |

1. Convert the tabular data into XML formats where the “id”, “title”, “author”, “publisher”, “category” and “ISBN” are attributes for the element book and the root element is library.

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

<ID> 1 </ID>  
    <title>introduction to computers</title>  
    <author>Jim Hendler</author>  
    <publisher>springer</publisher>  
    <category>Semantic Web</category>

<ISBN>978-0-12-385965-5</ISBN>

  </book>

  <book>

<ID> 2 </ID>  
    <title>Essential Bioinformatics</title>  
    <author>JIN XIONG</author>  
    <publisher>springer</publisher>  
    <category> Bioinformatics</category>

<ISBN>978-0-470-02001-2</ISBN>

  </book>

</library>

1. Convert the tabular data into the RDF representation using the following:
2. The global URI for the rdf namespace is [http://www.w3.org/1999/02/22-rdf-syntax-ns#](http://www.w3.org/1999/02/22-rdf-syntax-ns).
3. “bib” stands for <http://www.amazon.com/books-used-books-textbooks>.

|  |  |  |  |
| --- | --- | --- | --- |
| **<**rdf:RDF  xmlns:bib=“http://www.amazon.com/textbooks#”  xmlns:rdf=”http://www.w3.org/1999/02/22-rdf-syntaxns#”     |  | | --- | | **<**bib:Book rdf:about=“http://www.amazon.com/textbooks#**Book1**”**>**  **<**bib:id**>1<**/bib:id**>**  **<**bib:title**>**introduction to computers**<**/bib:title**>**  **<**bib:author**>** Jim Hendler**<**/bib:author**>**  **<**bib:publisher**>** **springer<**/bib:publisher**>**  **<**bib:category**>** **Semantic Web<**/bib:category**>**  **<**bib:ISBN**>978-0-12-385965-5<**/bib:ISBN**>**  **<**/bib:Book**>** |  |  | | --- | | **<**bib:Book rdf:about=“http://www.amazon.com/textbooks#**Book2**”**>**  <bib:id>**2**</bib:id>  <bib:title>Essential **Bioinformatics**</bib:title >  <bib:author> JIN XIONG</bib:author>  <bib:publisher> **springer**</bib:publisher>  <bib:category> **Bioinformatics** </bib:category>  <bib:ISBN>**978-0-470-02001-2**</bib:ISBN>  **<**/bib:Book**>** |  |  | | --- | |  |   **<**/rdf:RDF**>** |

**Question six: {16 marks}**

By using the tabular data in the question 3 answer the following:

1. By using the graph representation, represent the relation between
2. The publisher and the title of the book (published)
3. The title and the author of the book (wroteby)
4. Merge the two graphs in one graph.
   1. By using the graph representation, represent the relation between
      1. The publisher and the title of the book (published)

published

* + 1. The title and the author of the book (wroteby)

wroteby

* + 1. Merge the two graphs in one graph.

published

wroteby

1. Write SPARQL query to determine the following
2. The books which published by the springer.
3. The publisher of the book “Advanced databases”
4. Write the answer of the following query:

**SELECT** ?who

**WHERE** {:springer :published ?what .

?what :wroteby ?who .}

1. The books which published by the springer.

**Representation:**

**SELECT?what**

**WHERE** {:Springer :Published **?what.**}

1. The publisher of the book “Pattern Recognition”

**SELECT?who**

**WHERE**{: Pattern Recognition:PublishedBy **?who.**}

1. Write the answer of the following query:

**SELECT?who**

**WHERE** {:springer :published**?what**

|  |  |
| --- | --- |
| **Author** | **Title** |
| Jim Hendler | Introduction to computers |
| JIN XIONG | Essential bioinformatics |
| David L. Olson | Pattern recognition |
| Borko Furht | Advanced databases |
| Frédéric Dardel | Algorithms of bioinformatics |

**?what**:WroteBy**?who.**}

**RESULT**