**Exercise 5: Metadata as Linked Data: ANSWER KEY**

**Exercise Submission Deadline:** Sunday, March 5, 2017, 11:59 pm (US Central Time).

**Exercise Description:** This exercise helps develop understanding of an important component of Linked Data – RDF in XML and alternative (JSON, N-Triple) syntaxes -- and a Linked Data tool (BIBFRAME) by building on the course readings and the practical work completed in previous exercises in this course.

**Exercise Instructions:**

**Part 1.** Manually convert the DC metadata record in XML syntax that you created as part of Exercise 4 into a Linked-Data-ready metadata record in RDF/XML syntax keeping the same metadata scheme (Dublin Core and MODS respectively). Consult course materials (readings and instructor’s videorecorded presentation for week 5) as you work. Enter the resulting metadata record in the right-hand column of the table:

<table>
<thead>
<tr>
<th>Initial Dublin Core Metadata Record (XML syntax)</th>
<th>Resulting Linked-Data-ready Dublin Core Metadata Record (RDF/XML syntax)</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;dc:creator&gt;Dixit, Kanak Mani&lt;/dc:creator&gt;</code></td>
<td><code>&lt;rdf:Description rdf:about=&quot;Adventures of a Nepali Frog&quot;&gt;</code></td>
</tr>
<tr>
<td><code>&lt;dc:contributor&gt;Rai, Subhas&lt;/dc:contributor&gt;</code></td>
<td><code>&lt;rdf:Description rdf:about=&quot;Adventures of a Nepali Frog&quot;&gt;</code></td>
</tr>
<tr>
<td><code>&lt;dc:coverage&gt;Nepal&lt;/dc:coverage&gt;</code></td>
<td><code>&lt;rdf:Description rdf:about=&quot;Adventures of a Nepali Frog&quot;&gt;</code></td>
</tr>
</tbody>
</table>

Commented [OZ1]: This column contains my version of DC record for *Adventures of a Nepali Frog* which might differ from your version based on decisions you have made earlier in this course.

Commented [OZ2]: Here and below, solely for demonstration purposes (just like I did in Week 5 slides), I am crossing out the components of the XML record (e.g., literal data values and element closing tags, etc.) that were replaced in the process of conversion to RDF/XML. Please keep in mind though that in the real life the RDF/XML record would not have the crossed-out literals as this would negatively impact machine processing.
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Format</th>
<th>Identifier</th>
<th>Language</th>
<th>Publisher</th>
<th>Relation</th>
<th>Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>An exciting young frog from Kathmandu Valley, “just out of his tadpole teens”, decides to travel through his country. Bhaktaprasad Bhyaguto goes where no frog has gone before. He rides a tin can downriver, treks past majestic peaks, rides porter-back, mule-back, and yak-back to remote villages, and hops across a good part of Nepal before returning to Kathmandu in and airline pilot’s shirt pocket.</td>
<td>eBook</td>
<td><a href="http://goo.gl/qmOxNk">http://goo.gl/qmOxNk</a></td>
<td>English</td>
<td>Rato Bangala Kitab</td>
<td>Bhaktaprasāda bhayāgutāko Nepāla yātrā</td>
<td>Copyright held by Rato Bangala Kitab. This work is made available with the permission of the owner of copyright.</td>
</tr>
</tbody>
</table>

Commented [OZ3]: Because this record uses both RDF and DC element sets, we need to specify namespace with each element (this was not need in the original DC record on the left which used only DC element set).

Commented [OZ4]: RDF literal is replaced with RDF resource using Linked-Data version of LCNAF on http://id.loc.gov/authorities.

Commented [OZ5]: RDF literal is replaced with RDF resource using Linked-Data version of LCNAF on http://id.loc.gov/authorities.

Commented [OZ6]: RDF literal is replaced with RDF resource using Linked-Data version of LCNAF on http://id.loc.gov/authorities.

Commented [OZ7]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities.

Commented [OZ8]: I am keeping an RDF literal because RDF resource (established access point with associated URI) is not available for it, at least in the US Library of Congress Linked Data Service Vocabularies http://id.loc.gov/authorities.
Part 2. Manually convert the MODS metadata record in XML syntax that you created as part of Exercise 4 into a Linked-Data-ready metadata record in RDF/XML syntax keeping the same metadata scheme. Consult course materials (readings and instructor’s videorecorded presentation for week 5) as you work. Enter resulting metadata records in the right-hand column of the table:

<table>
<thead>
<tr>
<th>Your Initial MODS Metadata Record (XML syntax)</th>
<th>Resulting Linked-Data-ready MODS Metadata Record (RDF/XML syntax)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[copy and paste from your Exercise 4]</td>
<td>&lt;xml version=&quot;1.0&quot; encoding=&quot;UTF-8&quot;&gt;</td>
</tr>
</tbody>
</table>

Commented [OZ9]: RDF literal is replaced with RDF resource using Linked-Data version of ISO 639-2 controlled vocabulary on http://id.loc.gov/authorities

Commented [OZ10]: I am leaving this name as RDF literal because RDF resource is not available for it, at least in http://id.loc.gov/authorities

Commented [OZ11]: RDF literal is replaced with RDF resource using Linked-Data version of LCNAF on http://id.loc.gov/authorities

Commented [OZ12]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities

Commented [OZ13]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities

Commented [OZ14]: I am leaving this as RDF literal because I am not finding RDF resource (URI) for it in http://id.loc.gov/authorities

Commented [OZ15]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities

Commented [OZ16]: This column contains my version of MODS record for Adventures of a Nepali Frog which might differ from your version based on decisions you have made earlier in this course.

Commented [OZ17]: This MODS XML record is converted into RDF/XML by analogy with how Dublin Core XML record was converted into RDF/XML above. Please see additional comments below.
Commented [OZ18]: MODS, unlike DC, has a built-in Linked Data tool – valueURI attributes for 20 MODS elements and subelements:

- `<classification>`
- `<descriptionStandard>`
- `<form>`
- `<frequency>`
- `<genre>`
- `<geographic>`
- `<geographicCode>`
- `<hierarchicalGeographic>`
- `<languageTerm>`
- `<name>`
- `<occupation>`
- `<physicalLocation>`
- `<placeTerm>`
- `<relatedContentSource>`
- `<roleTerm>`
- `<scriptTerm>`
- `<subject>`
- `<targetAudience>`
- `<temporal>`
- `<titleInfo>`
- `<topic>`

To create a Linked Data version of MODS record, we could either use these or – for elements that do not have valueURI attribute but hold terms and/or names that come from a controlled vocabulary available as Linked Data – `rdf:resource` as in DC record above.
An excitable young frog from Kathmandu Valley, “just out of his tadpole teens”, decides to travel through his country. Bhaktaprasad Bhyaguto goes where no frog has gone before. He rides a tin can downriver, treks past majestic peaks, rides porter-back, mule-back, and yak-back to remote villages, and hops across a good part of Nepal before returning to Kathmandu in and airline pilot’s shirt pocket.

An exciting young frog from Kathmandu Valley, “just out of his tadpole teens”, decides to travel through his country. Bhaktaprasad Bhyaguto goes where no frog has gone before. He rides a tin can downriver, treks past majestic peaks, rides porter-back, mule-back, and yak-back to remote villages, and hops across a good part of Nepal before returning to Kathmandu in and airline pilot’s shirt pocket.
The last La-Toh – Frontier Marmots of Changtang – Travels with Kaili – Myyaaah gets counter-clockwise – Lamolama the tall – Frog (finds himself) in Dolpo – Goodbye to all that – Flying friendly skies – Back to Mangalman</mods:tableOfContents>

Frog (finds himself) in Dolpo – Goodbye to all that – Flying friendly skies – Back to Mangalman</mods:targetAudience authority="marctarget">juvenile</mods:targetAudience>

<mods:note authority="lcsh" authorityURI="http://id.loc.gov/authorities/subjects/n79091522">Adventure travel</mods:note>

<mods:note authority="lcsh" authorityURI="http://id.loc.gov/authorities/subjects/sh85071180">Juvenile fiction</mods:note>

<mods:subject authority="lcsh" authorityURI="http://id.loc.gov/authorities/subjects/">Frogs</mods:subject>

<mods:subject authority="lcsh" authorityURI="http://id.loc.gov/authorities/subjects/">Nepal</mods:subject>

<mods:subject authority="lcsh" authorityURI="http://id.loc.gov/authorities/subjects/">Juvenile fiction</mods:subject>

<mods:subject authority="lcc" authorityURI="http://id.loc.gov/authorities/names/n79091522">Nepal</mods:subject>

<mods:subject authority="lcc" authorityURI="http://id.loc.gov/authorities/names/n79091522">Juvenile fiction</mods:subject>

PK2598.Z95.E54</mods:classification>

<titleInfo>
<title>Internet Children’s Digital Library</title>
</titleInfo>

<relatedItem>
titleInfo
<title>Internet Children’s Digital Library</title>
</relatedItem>

Commented [OZ24]: No RDF resource (URI) available in http://id.loc.gov/authorities

Commented [OZ25]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities

Commented [OZ26]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities

Commented [OZ27]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities

Commented [OZ28]: RDF literal is replaced with RDF resource using Linked-Data version of LCSH on http://id.loc.gov/authorities

Commented [OZ29]: RDF literal is replaced with RDF resource using Linked-Data version of LCNAF on http://id.loc.gov/authorities

Commented [OZ30]: RDF literal is replaced with RDF resource using Linked-Data version of LCNAF on http://id.loc.gov/authorities

Dr. Oksana L. Zavalina, ©2015-2017
**Part 3.** Using MARC to BIBFRAME Transformation Service on Bibframe.org website ([http://bibframe.org/tools/transform/start](http://bibframe.org/tools/transform/start)), convert the following MARC XML record (found in the left-hand column of the table below) into a BIBFRAME record. Consult course materials (readings and instructor’s videorecorded presentations as you work. Copy and paste the resulting BIBFRAME record in RDF/XML syntax and in N-Triples OR JSON syntax in the medium and right-hand columns of the table below:

<table>
<thead>
<tr>
<th>Initial MARC XML Metadata Record</th>
<th>Resulting BIBFRAME Record (RDF/XML syntax)</th>
<th>Resulting BIBFRAME Record (N-Triples OR JSON syntax)</th>
</tr>
</thead>
</table>

Commented [OZ31]: As of the time when we work on Week 5 exercise (February 27-March 5, 2017), the N-Triple option under Downloads -- shown as a new functionality in BIBFRAME Transformation Service -- returns a 404 error (probably, due to some bugs with this option) so the answer key is only showing the JSON syntax in this column.
Around 600 years ago the most powerful ruler of southeast Africa lived in a vast city of over 10,000 inhabitants —
Around 600 years ago the most powerful ruler of southeast Africa lived in a vast city of over 10,000 inhabitants - the ancient Kingdom and city of Great Zimbabwe. Houses of the ruling elite and the palace of the king were surrounded by an enormous circular stone wall covered with carved and painted clay. This wall was built as a display of power and to provide privacy for the rulers rather than for defense. The city had its golden age between 1200 and 1450 A.D. and then entered a long decline and was finally completely abandoned. So impressive were the walls even in semi-ruin that later European colonists claimed that they could not have been built by native Africans. This film takes a detailed look at the remains of the city, the walls and precious artifacts unearthed at the site in 1902.
Around 600 years ago the most powerful ruler of
southeast Africa lived in a vast city of over 10,000 inhabitants - the ancient Kingdom and city of Great Zimbabwe. Houses of the ruling elite and the palace of the king were surrounded by an enormous circular stone wall covered with carved and painted clay. This wall was built as a display of power and to provide privacy for the rulers rather than for defense. The city had its golden age between 1200 and 1450 A.D. and then entered a long decline and was finally completely abandoned. So impressive were the walls even in semi-ruin that later European colonists claimed that they could not have been built by native Africans. This film takes a detailed look at the remains of the city, the walls and precious artifacts unearthed at the site in 1902.\ldots\)
The Ancient kingdom of Great Zimbabwe / a video by Ophera Hallis with the participation of Peter Garlake.

Hallis, Ophera

Garlake, Peter S.
<madsrdf:GeographicElement>
  <madsrdf:elementValue>Zimbabwe</madsrdf:elementValue>
</madsrdf:GeographicElement>

<madsrdf:Geographic>
  <rdf:type rdf:resource="http://www.loc.gov/mads/rdf/v1#Authority"/>
  <madsrdf:authoritativeLabel>Great Zimbabwe (Extinct city)</madsrdf:authoritativeLabel>
  <madsrdf:elementList rdf:parseType="Collection">
    <madsrdf:GeographicElement>
      <madsrdf:elementValue>Great Zimbabwe (Extinct city)</madsrdf:elementValue>
    </madsrdf:GeographicElement>
    <madsrdf:GeographicElement>
      <madsrdf:elementValue>Great Zimbabwe (Extinct city)</madsrdf:elementValue>
    </madsrdf:GeographicElement>
  </madsrdf:elementList>
</madsrdf:Geographic>

<madsrdf:componentList>
  <madsrdf:Authority>
    <bf:hasAuthority>Shona (African people)--Antiquities</bf:hasAuthority>
  </madsrdf:Authority>

<bf:Topic xmlns:bf="http://bibframe.org/vocab/">
  <bf:hasAuthority>Short films</bf:hasAuthority>
</bf:Topic>

  <bf:hasAuthority>Short films</bf:hasAuthority>
</bf:Topic>

<bf:AuthorizedAccessPoint>Shona (African people)--Antiquities</bf:AuthorizedAccessPoint>
<bf:Label>Short films</bf:Label>
<bf:hasAuthority>
  <madsrdf:Authority>
    "bf-id": "ocn712368955 topic20",
    "uri": "http://bibframe.org/resources/gbk1470675538/ocn712368955 topic20",
    "label": "Short films",
    "bf-authorizedAccessPoint": "Short films",
    "bf-label": "Short films",
    "bf-hasAuthority": [
      "type": "Authority",
      "rdfs-type": "",
      "madsrdf-authoritativeLabel": "Nonfiction films",
      "madsrdf-isMemberOfMADSScheme": ""
    ],
    "bf-authoritySource": "http://id.loc.gov/vocabulary/subjectschemes/lcgft",
    {
      "type": "Topic",
      "id": "ocn712368955 topic9",
      "uri": "http://bibframe.org/resources/gbk1470675538/ocn712368955 topic9",
      "label": "Nonfiction films",
      "bf-authorizedAccessPoint": "Nonfiction films",
      "bf-label": "Nonfiction films",
      "bf-hasAuthority": [
        "type": "Authority",
        "rdfs-type": "",
        "madsrdf-authoritativeLabel": "Nonfiction films",
        "madsrdf-isMemberOfMADSScheme": ""
      ],
      "bf-authoritySource": "http://id.loc.gov/vocabulary/subjectschemes/lcgft"
    }
  ]
</madsrdf:Authority>
<table>
<thead>
<tr>
<th><a href="">madsrdf:Authority</a></th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="">rdf:type</a></td>
</tr>
<tr>
<td>rdf:resource=&quot;<a href="http://www.loc.gov/mads/rdf/v1#GenreForm%22/%3E">http://www.loc.gov/mads/rdf/v1#GenreForm&quot;/&gt;</a></td>
</tr>
<tr>
<td><a href="">madsrdf:authoritativeLabel</a>Nonfiction films&lt;/madsrdf:authoritativeLabel&gt;</td>
</tr>
<tr>
<td>&lt;madsrdf:isMemberOfMADSScheme rdf:resource=&quot;<a href="http://id.loc.gov/vocabulary/subjectSchemes/lcft%22/%3E">http://id.loc.gov/vocabulary/subjectSchemes/lcft&quot;/&gt;</a></td>
</tr>
<tr>
<td>&lt;/madsrdf:Authority&gt;</td>
</tr>
<tr>
<td>&lt;/bf:hasAuthority&gt;</td>
</tr>
<tr>
<td>&lt;/bf:Topic&gt;</td>
</tr>
<tr>
<td><a href="">bf:authorizedAccessPoint</a>Short films&lt;/bf:authorizedAccessPoint&gt;</td>
</tr>
<tr>
<td><a href="">bf:label</a>Short films&lt;/bf:label&gt;</td>
</tr>
<tr>
<td><a href="">bf:hasAuthority</a></td>
</tr>
<tr>
<td><a href="">madsrdf:Authority</a></td>
</tr>
<tr>
<td><a href="">rdf:type</a></td>
</tr>
<tr>
<td>rdf:resource=&quot;<a href="http://www.loc.gov/mads/rdf/v1#GenreForm%22/%3E">http://www.loc.gov/mads/rdf/v1#GenreForm&quot;/&gt;</a></td>
</tr>
<tr>
<td><a href="">madsrdf:authoritativeLabel</a>Short films&lt;/madsrdf:authoritativeLabel&gt;</td>
</tr>
<tr>
<td>&lt;madsrdf:isMemberOfMADSScheme rdf:resource=&quot;<a href="http://id.loc.gov/vocabulary/subjectSchemes/lcft%22/%3E">http://id.loc.gov/vocabulary/subjectSchemes/lcft&quot;/&gt;</a></td>
</tr>
<tr>
<td>&lt;/madsrdf:Authority&gt;</td>
</tr>
<tr>
<td>&lt;/bf:hasAuthority&gt;</td>
</tr>
</tbody>
</table>