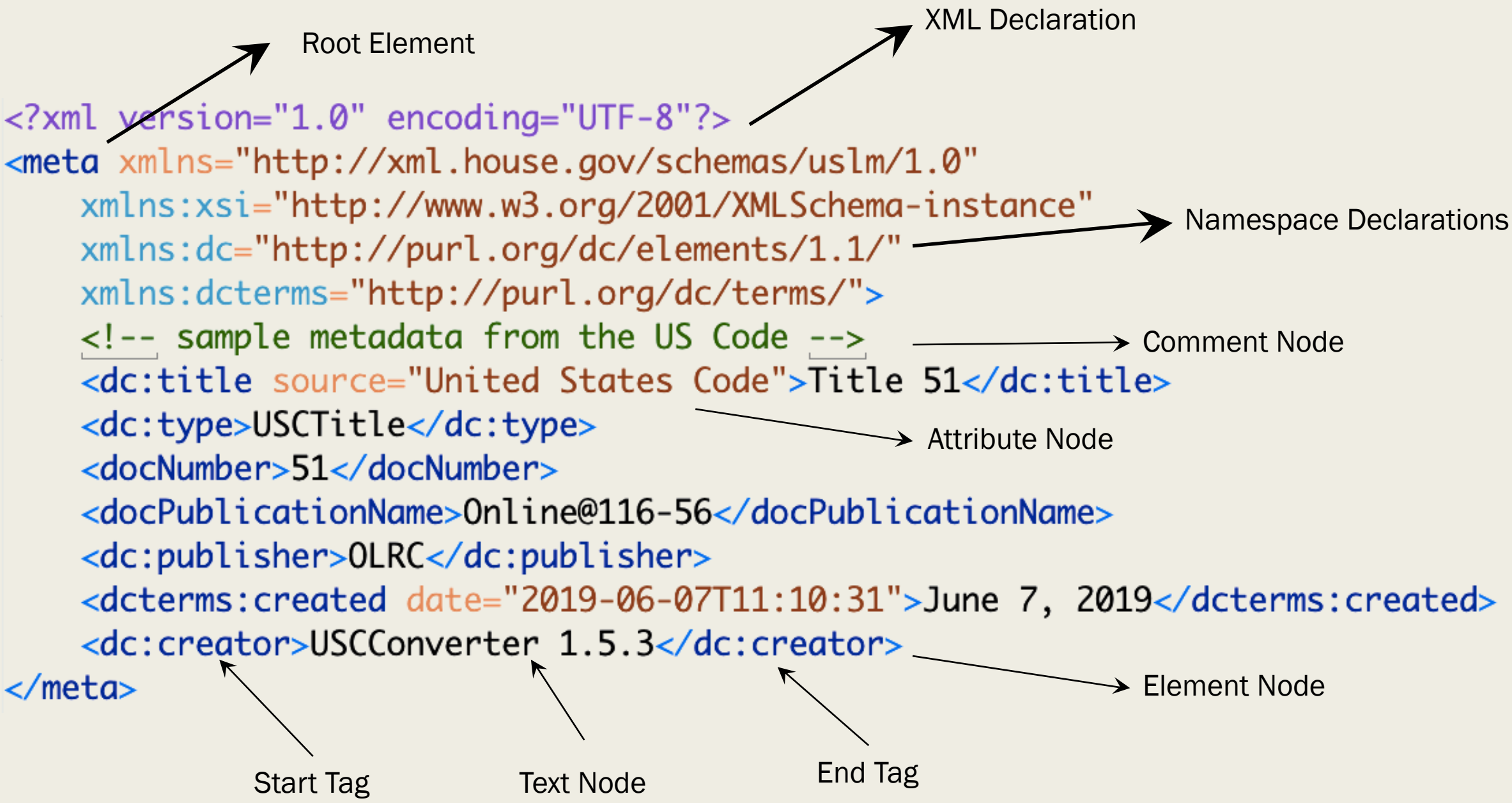
XML AND BASEX

XQuery Working Group

Text Mining at Scale

```
<?xml version="1.0"?>
<quiz>
 <qanda seq="1">
  <question>
   Who was the forty-second
   president of the U.S.A.?
  </question>
  <answer>
   William Jefferson Clinton
  </answer>
 </qanda>
 <!-- Note: We need to add
  more questions later.-->
</quiz>
```

XML


Root Element
XML Declaration
<?xml version="1.0" encoding="UTF-8"?>
<meta xmlns="http://xml.house.gov/schemas/uslm/1.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:dc="http://purl.org/dc/elements/1.1/"
xmlns:dcterms="http://purl.org/dc/terms/">
<!-- sample metadata from the US Code -->
<dc:title source="United States Code">Title 51</dc:title>
<dc:type>USCTitle</dc:type>
<docNumber>51</docNumber>
<docPublicationName>Online@116-56</docPublicationName>
<dc:publisher>OLRC</dc:publisher>
<dcterms:created date="2019-06-07T11:10:31">June 7, 2019</dcterms:created>
<dc:creator>USCConverter 1.5.3</dc:creator>
</meta>
Namespace Declarations
Comment Node
Attribute Node
Element Node
Start Tag
Text Node
End Tag

Well-Formed XML

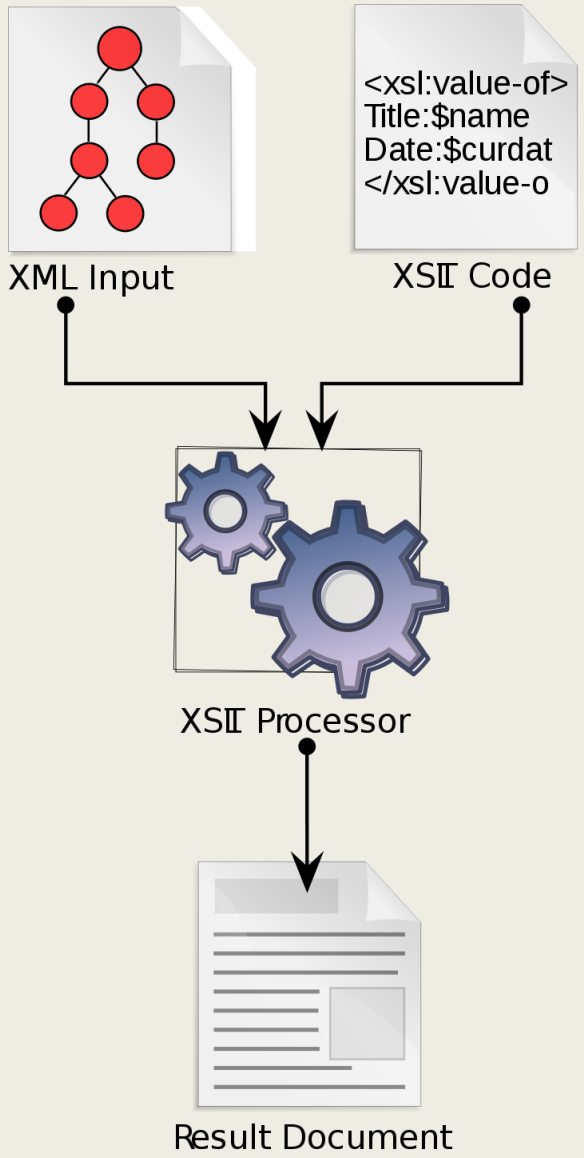
- Single “root element”
- Other elements are nested hierarchically without overlapping tags
- Contains only unicode characters
- Element names cannot begin with numbers
- Element names cannot contain spaces
- Certain characters are reserved and must be escaped
  - & → *&*
  - < → <

Validating XML

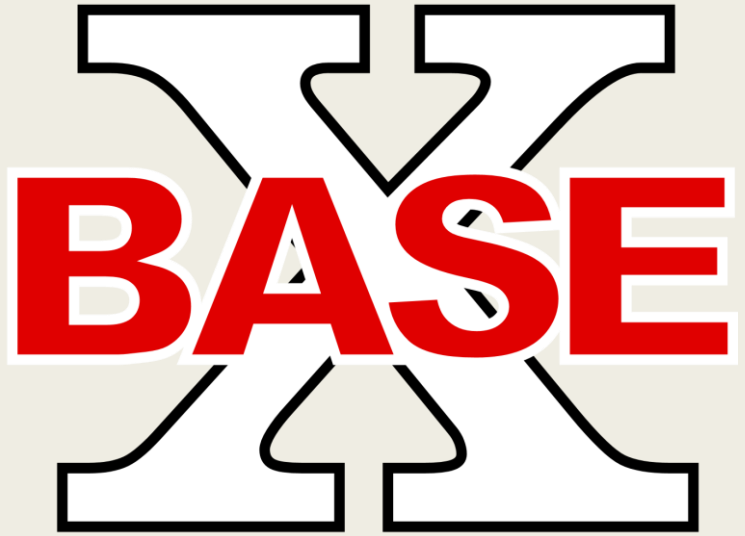
- Grammar-based validation
  - *Document Type Definitions (DTDs)*
  - *XML Schema Definitions (XSD)*
  - *RelaxNG*
    - XML Syntax
    - Compact Syntax
- Rule-based validation
  - *Schematron*
- Text Encoding Initiative
  - *One Document Does it All (ODD)*

XML Programming Languages

- DOM and SAX
- XPATH
- XSLT
- XQuery



XML Processors and Databases



Installing BaseX

- Install Java Runtime Environment (JRE)
  - *https://www.java.com/en/download/*
- Install BaseX
  - *Windows*
    - Windows Installer: http://basex.org/download/
  - *Mac OSX*
    - Open Terminal
    - Install Homebrew: https://brew.sh/
    - Install BaseX with Homebrew: ‘brew install basex’