

CSC 472 / 372 Mobile Application Development for Android



Prof. Xiaoping Jia
School of Computing, CDM
DePaul University
xjia@cdm.depaul.edu
[@DePaulSWEng](https://twitter.com/DePaulSWEng)



An XML Primer for Android Developers



Outline

- What is XML?
- The components of XML
- The basic syntax rules
- Elements
- Attributes
- Namespaces



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What is XML?

- eXtensible Markup Language
- A simple text-based format for representing structured information
 - Documents, data, configurations, transactions, etc.
- Developed by the W3C (*World Wide Web Consortium*, <http://www.w3.org>)
 - Derived from SGML. Simpler.
 - Similar syntax to HTML. More strict. No predefined tags.
 - Extensible. Application-defined tags. Self-descriptive.
- Used extensively in Android for resources and configurations, etc.



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Anatomy of an XML Document – String Resources strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
  <string name="app_name">HelloAndroid</string>
  <string name="hello_world">Hello world!</string>
  <string name="action_settings">Settings</string>
</resources>
```



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```

XML Declaration



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```
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</resources>
```

An element

The start-tag

The end-tag

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Anatomy of an XML Document – String Resources strings.xml

```
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  <string name="app_name">HelloAndroid</string>
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```

An element

An attribute (inside the start-tag), with name and value

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Anatomy of an XML Document – String Resources strings.xml

```
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  <string name="app_name">HelloAndroid</string>
  <string name="hello_world">Hello world!</string>
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</resources>
```

An element

The content

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Anatomy of an XML Document – String Resources strings.xml

```
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<resources>
  <string name="app_name">HelloAndroid</string>
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</resources>
```

A container element

The end-tag

The start-tag

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Anatomy of an XML Document – String Resources strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
  <string name="app_name">HelloAndroid</string>
  <string name="hello_world">Hello world!</string>
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```

A container element

The element content

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Anatomy of an XML Document – String Resources strings.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
  <string name="app_name">HelloAndroid</string>
  <string name="hello_world">Hello world!</string>
  <string name="action_settings">Settings</string>
</resources>
```

A container element

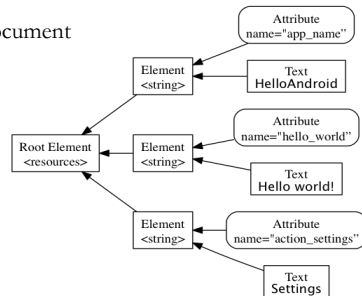
The root element

A child element

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XML Document Tree

- An XML document forms a tree



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Basic Syntax Rules of XML

- XML declaration must be at the beginning
 - If not present, default to XML 1.0
- Names are case-sensitive
- White spaces are preserved
- Comments

```
<!-- This is a comment -->
```

- But

```
<!-- This is an -- illegal -- comment -->
```

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Rules for Tag Names

- May contain letters, digits, and other characters
 - No spaces
 - Must start with a letter
 - Cannot start with the prefix `xml` (or `XML`, or `Xml`, etc.)
- Best naming practices**
 - Use simple descriptive names
 - Avoid: - : .

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Entity References

- Some characters have special meanings in XML
 - < > &
 - Illegal for regular contents
- Use *entity references* for these characters

<	<	less than
>	>	greater than
&	&	ampersand
'	'	apostrophe, single quote
"	"	double quote

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Elements

- May contain other elements.
- End-tag, or closing-tag, is required for all elements

```
<string ... > ... </string>
```

- Empty elements. An element with no contents.

```
<string></string>
```

- Can be abbreviated as

```
<string/>
```

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Attributes

- Elements may have attributes
 - Specified in the element start-tag
- Each attribute has a *name* and a *value*

```
name = "value"
```

```
<string name="app_name">HelloAndroid</string>
```
- Attribute name must be unique within the element
- Attribute values must be enclosed by quotes
 - Either single ('...') or double ("...") quotes
 - Values are treated as simple strings

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Well-Formed XML Documents

- A document must have a single root element
- All elements must have matching start-tag and end-tag
- All elements must be properly nested
 - Overlapping elements are not allowed
- Legal:


```
<event> ... <location> ... </location> ... </event>
```
- Illegal:


```
<event> ... <location> ... </event> ... </location>
```
- All attributes are quoted

Namespaces

- A mechanism to avoid name conflicts
 - Using a prefix: **prefix:name**

```
<root>
  <my:table> ... </my:table>
  <your:table> ... </your:table>
</root>
```

- The **xmlns** attribute: **xmlns:prefix=uri**

```
<root xmlns:my="http://www.myinc.com/"
      xmlns:your="http://www.yourcorp.com/" >
  <my:table> ... </my:table>
  <your:table> ... </your:table>
</root>
```

Using Namespace – Android App Manifest

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  package="edu.depaul.csc472.helloandroid" >
  <application
    android:allowBackup="true"
    android:icon="@drawable/ic_launcher"
    android:label="@string/app_name"
    android:theme="@style/AppTheme" >
    <activity
      android:name=".MyActivity"
      android:label="@string/app_name" >
      <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LAUNCHER" />
      </intent-filter>
    </activity>
  </application>
</manifest>
```

Namespace definition

Namespace reference

Use of Namespaces in Android

- All Android SDK defined names are in the namespace named **android**

```
xmlns:android="http://schemas.android.com/apk/res/android"
```
- Conventions for XML files in Android projects
 - Namespaces are absent for tag names
 - Assuming only Android SDK defined tags are used
 - The **android** prefix is used for all Android SDK defined attributes
 - Non Android SDK defined attributes may also be present
 - Attributes not in the android namespace are ignored by Android

Next ...

- Android app fundamentals
- Android resources in XML

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