Generating Web Pages Using XSLT

XSLT for Data Interchange

6.1.xml: An Employee List Document

```
<?xml version="1.0" encoding="utf-8"?>
<employeelist>

  <!-- This is just a copy of ex_3.7.xml with this
    comment changed   -->

  <listdate>April 4, 2006</listdate>
  <listregion>Central</listregion>

  <employee>
    <name>
      <firstname>Xavier</firstname>
      <lastname>Ampul</lastname>
      <suffix>III</suffix>
    </name>
    <address>
      <street>1234 Main Street</street>
      <street>Apartment 401</street>
      <city>Chicago</city>
      <state>IL</state>
```

6.1.xml: An Employee List Document (cont.)

```
    <zip>60610</zip>
  </address>
  <phone type="home">555-555-5555</phone>
</employee>

<employee>
  <name>
    <firstname>Frances</firstname>
    <middleinit>R</middleinit>
    <lastname>Smith</lastname>
  </name>
  <address>
    <street>559 Primary Avenue</street>
    <city>Evanston</city>
    <state>IL</state>
    <zip>60201</zip>
  </address>
  <phone type="home">555-555-5590</phone>
  <phone type="mobile">555-555-5591</phone>
</employee>
```

6.1.xml: An Employee List Document (last)

```
  <employee>
    <name>
      <firstname>Raymond</firstname>
      <lastname>Jones</lastname>
    </name>
    <address>
      <street>987 Center Street</street>
      <city>Chicago</city>
      <state>IL</state>
      <zip>60610</zip>
    </address>
    <phone type="mobile">555-555-0987</phone>
  </employee>

</employeelist
```

6.1.xslt: An Empty XSLT Stylesheet

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="text"/>


 <!-- This is an empty stylesheet.  -->


</xsl:stylesheet>
```

6.1.txt: Results from an Empty Stylesheet

```
April 4, 2006CentralXavierAmpulIII1234 Main StreetApartment 401ChicagoIL
60610555-555-5555FrancesRSmith559 Primary AvenueEvanstonIL6020155
5-555-5590555-555-5591RaymondJones987 Center StreetChicagoIL60610
555-555-0987
```

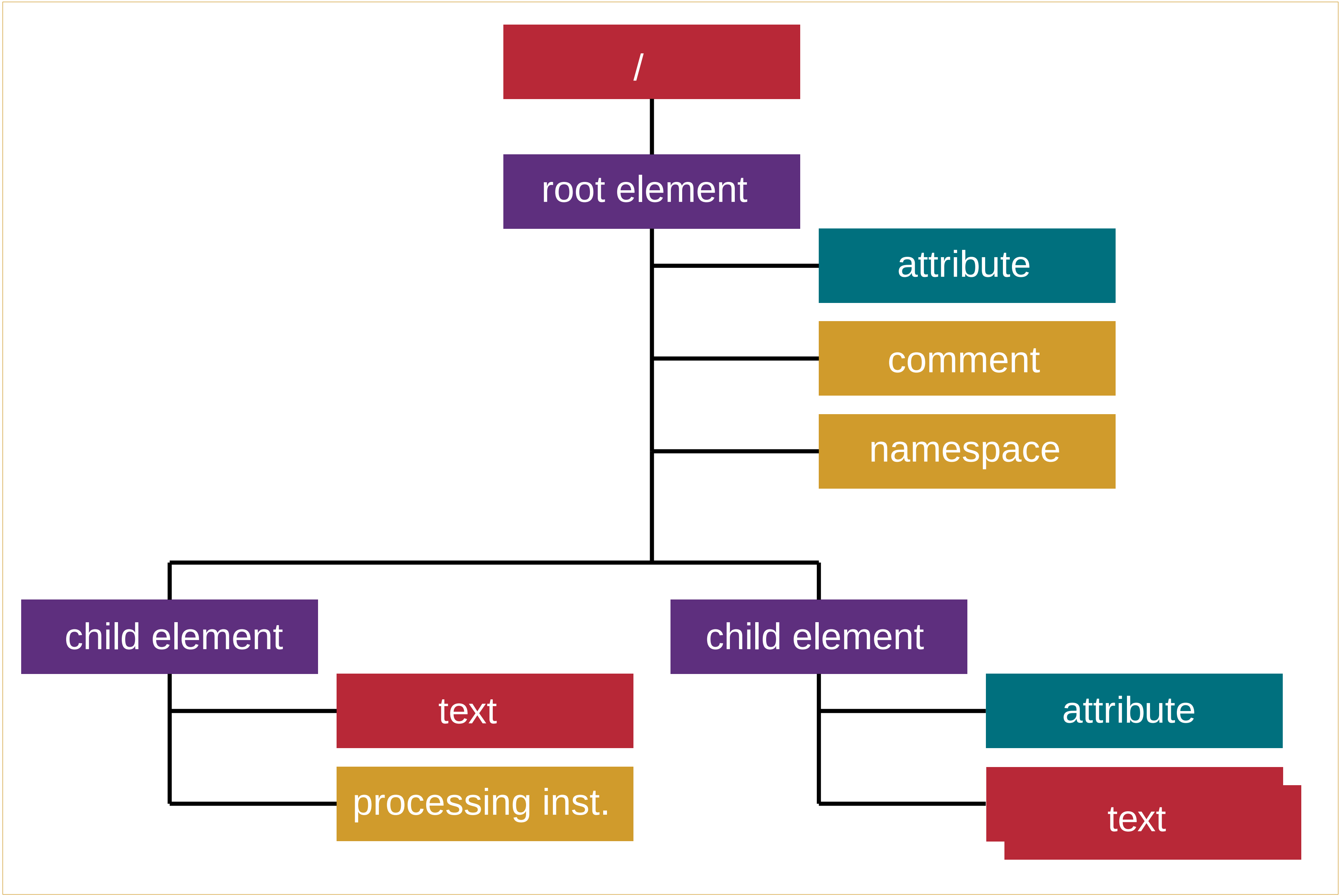
About Example 6.1

- XSLT Stylesheets have default behavior.
- So, an empty stylesheet (one without **template rules**) creates output.
- The default navigation behavior is for the processor to visit each of the **element nodes** in the **document tree**.
- At each element node, the default behavior is to output the text value of the element node.
- The root element of an XSLT stylesheet can be `xsl:stylesheet` or `xsl:transform`.
- `xsl:stylesheet` is most often used in practice.
- The `xsl:output` element controls output options.

About Example 6.1 (last)

- In this example, the `xsl:output` element causes a normal text file to be created rather than an XML or HTML document.

The XSLT Tree Model

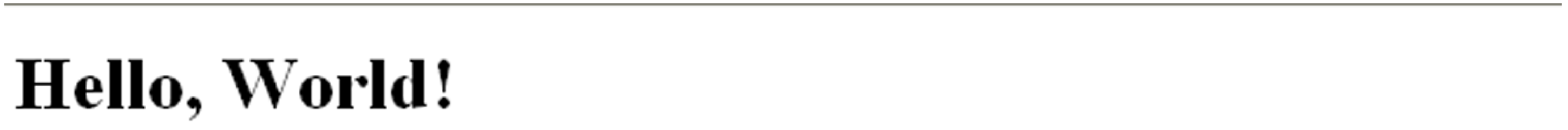


6.2.xslt: Hello World

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="html"
doctype-system="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"
    encoding="UTF-8" indent="yes"/>

<xsl:template match="/">
  <html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>Hello World</title>
  </head>
  <body>
    <h2>Hello, World!</h2>
  </body>
  </html>
</xsl:template>

</xsl:stylesheet>
```



Hello, World!

About Example 6.2

- This stylesheet is modeled after the **fill-in-the-blanks** stylesheet pattern.
- A single **template rule** is created with the `xsl:template` element.
- This single rule matches the root of the document tree.
- When a node from the document tree matches a template rule, the rule fires and its template text is placed into the output tree.
- Also, the automatic navigation to the node's children is interrupted.

About Example 6.2 (last)

- All template text is inserted into the output tree via this single rule.
- In this case, we haven't even filled in the blanks from the input document.
- Our output is all fixed literal text.
- Notice that we have included the basic markup that forms a proper XHTML page.
- The attribute values on the `xsl:output` element cause an html document to be created with the proper `DOCTYPE` declaration, `UTF-8` encoding, and useful indentation.

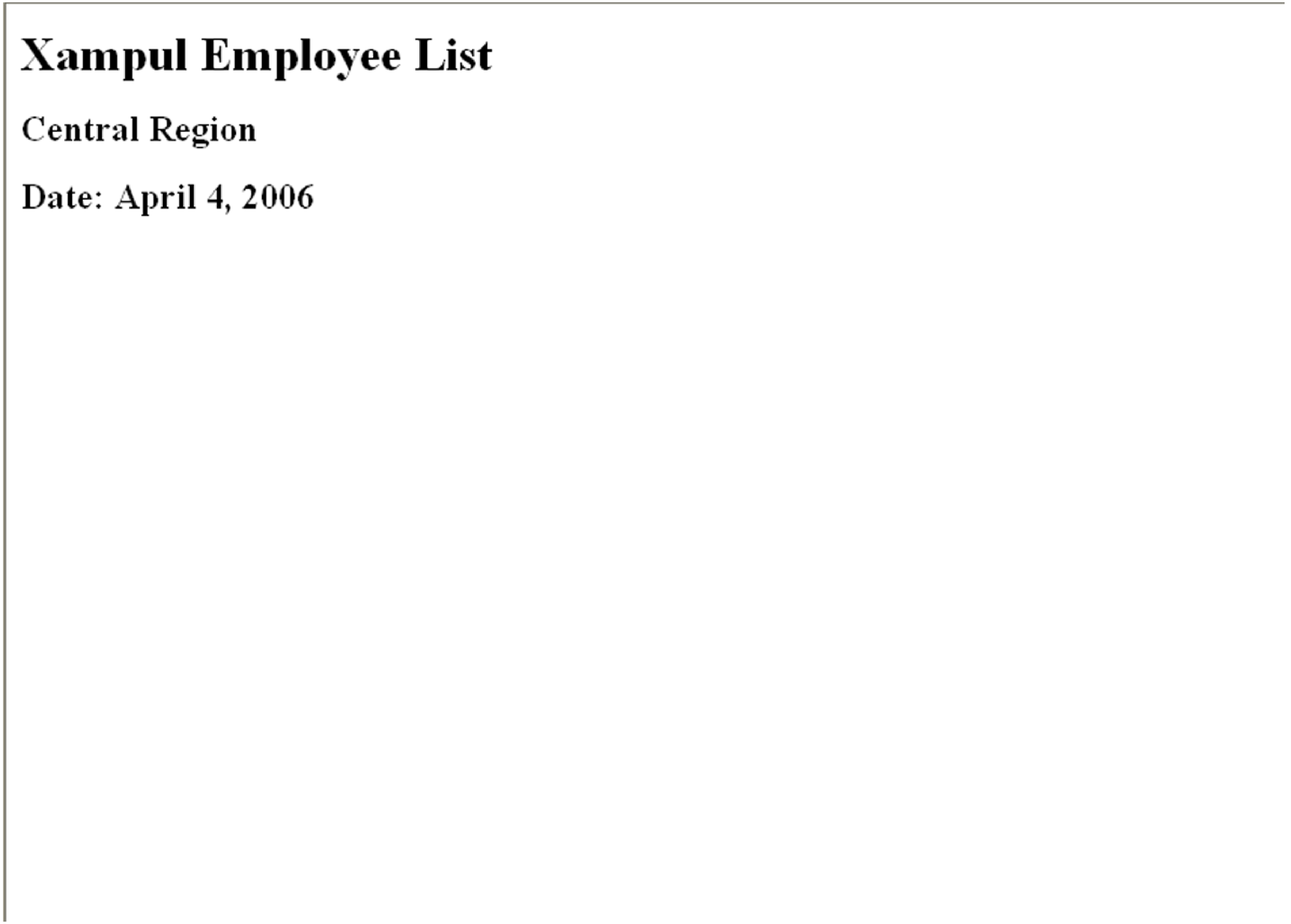
6.3.xslt: Starting the Employee List Page

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="html"
doctype-system="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"
    encoding="UTF-8" indent="yes"/>

<xsl:template match="/">
  <html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>Employee List</title>
  </head>
  <body>
    <h2>Xampul Employee List</h2>
    <h3><xsl:value-of select="/employeelist/listregion"/> Region</h3>
    <h3>Date: <xsl:value-of select="/employeelist/listdate"/></h3>
  </body>
  </html>
</xsl:template>
```

6.3.xslt: Starting the Employee List Page (last)

```
</xsl:stylesheet>
```



Xampul Employee List

Central Region

Date: April 4, 2006

About Example 6.3

- The `xsl:value-of` element is used to pull values from the input tree and place them in the output tree.
- The `select` attribute takes an **XPATH** expression which gives an absolute path to the element that we desire.
- The value returned is the text that is contained in the element that we have selected.
- We have used this fill-in-the-blanks approach to create the headings of our page.

6.4.xslt: Listing the Names

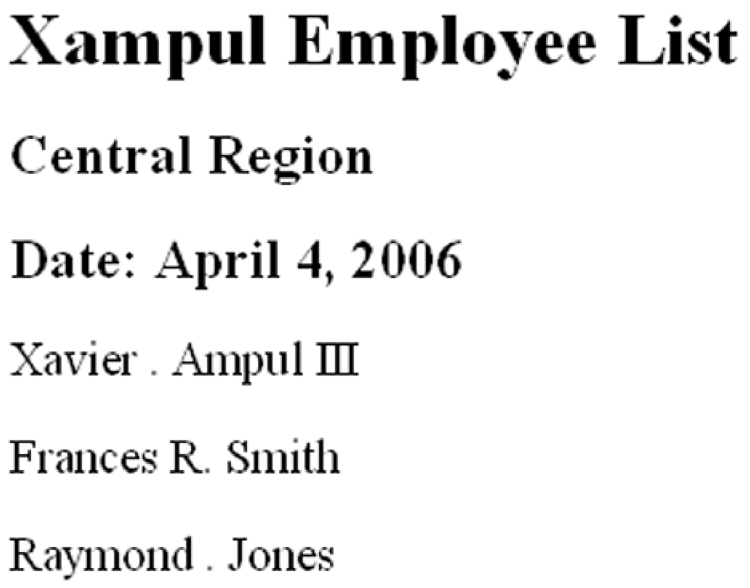
```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="html"
doctype-system="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"
    encoding="UTF-8" indent="yes"/>

<xsl:template match="/">
  <html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>Employee List</title>
  </head>
  <body>
    <h2>Xampul Employee List</h2>
    <h3><xsl:value-of select="/employeelist/listregion"/> Region</h3>
    <h3>Date: <xsl:value-of select="/employeelist/listdate"/></h3>
    <xsl:for-each select="employeelist/employee">
      <p>
        <xsl:value-of select="name/firstname"/>
        <xsl:text> </xsl:text>
```

6.4.xslt: Listing the Names (last)

```
        <xsl:value-of select="name/middleinit"/>
        <xsl:text>. </xsl:text>
        <xsl:value-of select="name/lastname"/>
        <xsl:text> </xsl:text>
        <xsl:value-of select="name/suffix"/>
      </p>
    </xsl:for-each>
  </body>
  </html>
</xsl:template>

</xsl:stylesheet>
```



Xampul Employee List

Central Region

Date: April 4, 2006

Xavier . Ampul III

Frances R. Smith

Raymond . Jones

About Example 6.4

- The new code in this example follows the **navigational** design pattern for stylesheets.
- `xsl:for-each` is used to iterate over each of a repeating group of elements.
- Within the `xsl:for-each` element, a **context** is set.
- So, all XPATH expressions within the loop construct are made relative to the established context.
- A series of `xsl:value-of elements` are used within the loop to pull out the values for the name.
- `xsl:text` is a reliable way to force text into the output tree (especially spaces).

About Example 6.4 (last)

- Notice that we need to make adjustments to the code in order to properly treat optional elements.

6.5.xslt: Fix Name and Do Address

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="html"
doctype-system="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"
    encoding="UTF-8" indent="yes"/>

<xsl:template match="/">
  <html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>Employee List</title>
  </head>
  <body>
    <h2>Xampul Employee List</h2>
    <h3><xsl:value-of select="/employeelist/listregion"/> Region</h3>
    <h3>Date: <xsl:value-of select="/employeelist/listdate"/></h3>
    <xsl:for-each select="employeelist/employee">
      <p>
        <xsl:value-of select="name/firstname"/>
        <xsl:text> </xsl:text>
```

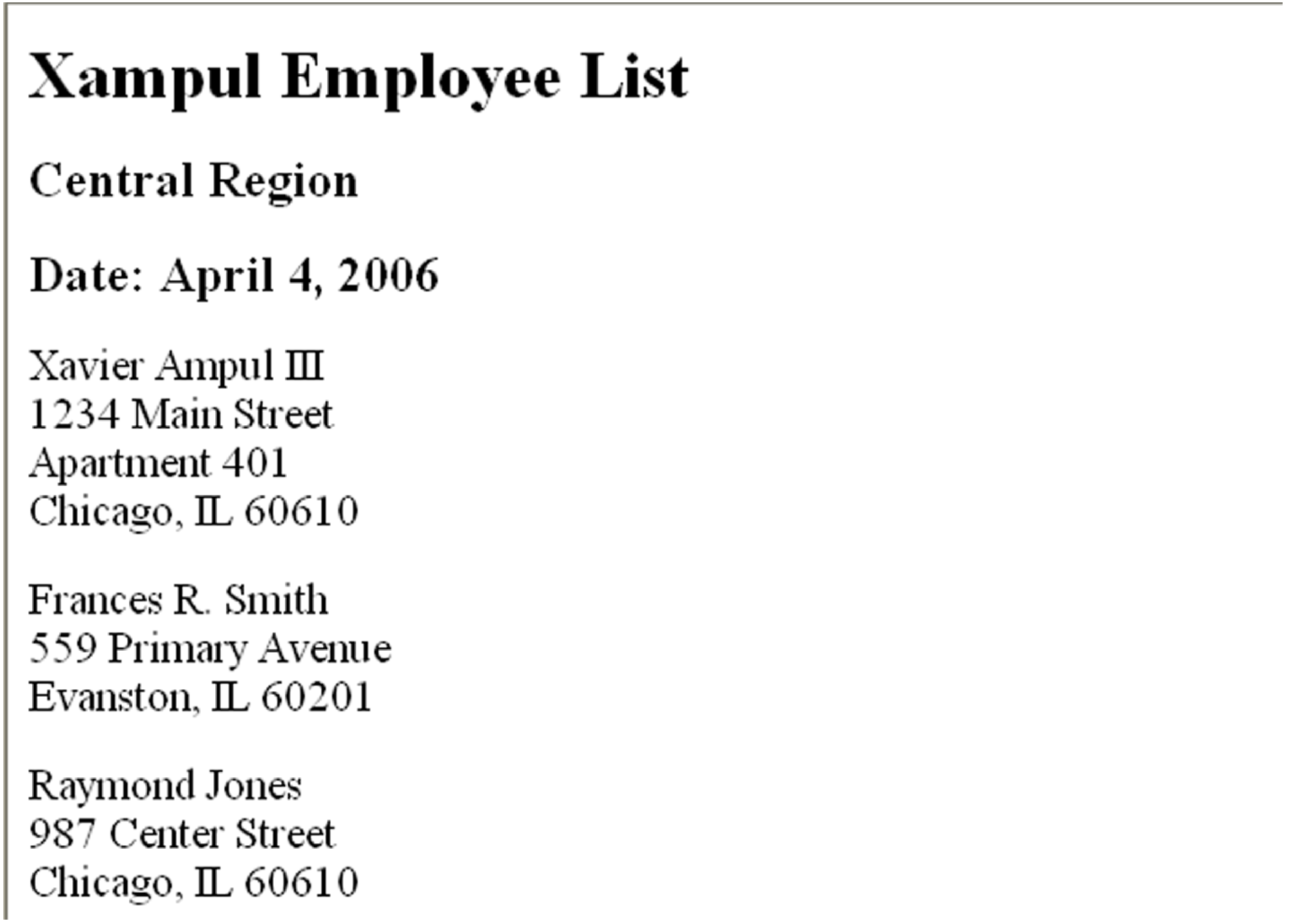
6.5.xslt: Fix Name and Do Address (cont.)

```
  <xsl:if test="name/middleinit">
    <xsl:value-of select="name/middleinit"/>
    <xsl:text>. </xsl:text>
  </xsl:if>
  <xsl:value-of select="name/lastname"/>
  <xsl:if test="name/suffix">
    <xsl:text> </xsl:text>
    <xsl:value-of select="name/suffix"/>
  </xsl:if>
  <br/>
  <xsl:for-each select="address/street">
    <xsl:value-of select="."/>
    <br/>
  </xsl:for-each>
  <xsl:value-of select="address/city"/>
  <xsl:text>, </xsl:text>
  <xsl:value-of select="address/state"/>
  <xsl:text> </xsl:text>
  <xsl:value-of select="address/zip"/>
</p>
```

6.5.xslt: Fix Name and Do Address (last)

```
      </xsl:for-each>
    </body>
    </html>
  </xsl:template>

  </xsl:stylesheet>
```



Xampul Employee List

Central Region

Date: April 4, 2006

Xavier Ampul III
1234 Main Street
Apartment 401
Chicago, IL 60610

Frances R. Smith
559 Primary Avenue
Evanston, IL 60201

Raymond Jones
987 Center Street
Chicago, IL 60610

About Example 6.5

- This example uses `xsl:if` to assure that missing optional elements do not trigger unwanted output.
- In this case, the `test` attribute is checking whether an element exists that fits this XPATH expression.
- `xsl:for-each` is used to assure that we generate the proper number of lines for street address in the output tree.
- Using a **period** for the value of the select attribute selects the text of the current element.
- Note the use of relative XPATH expressions to retrieve the parts of the address.

6.6.xslt: Finishing Touches

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="html"
doctype-system="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"
    encoding="UTF-8" indent="yes"/>

<xsl:template match="/">
  <html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>Employee List</title>
  </head>
  <body>
    <h2>Xampul Employee List</h2>
    <h3><xsl:value-of select="/employeelist/listregion"/> Region</h3>
    <xsl:for-each select="employeelist/employee">
      <p>
        <xsl:value-of select="name/firstname"/>
        <xsl:text> </xsl:text>
        <xsl:if test="name/middleinit">
```

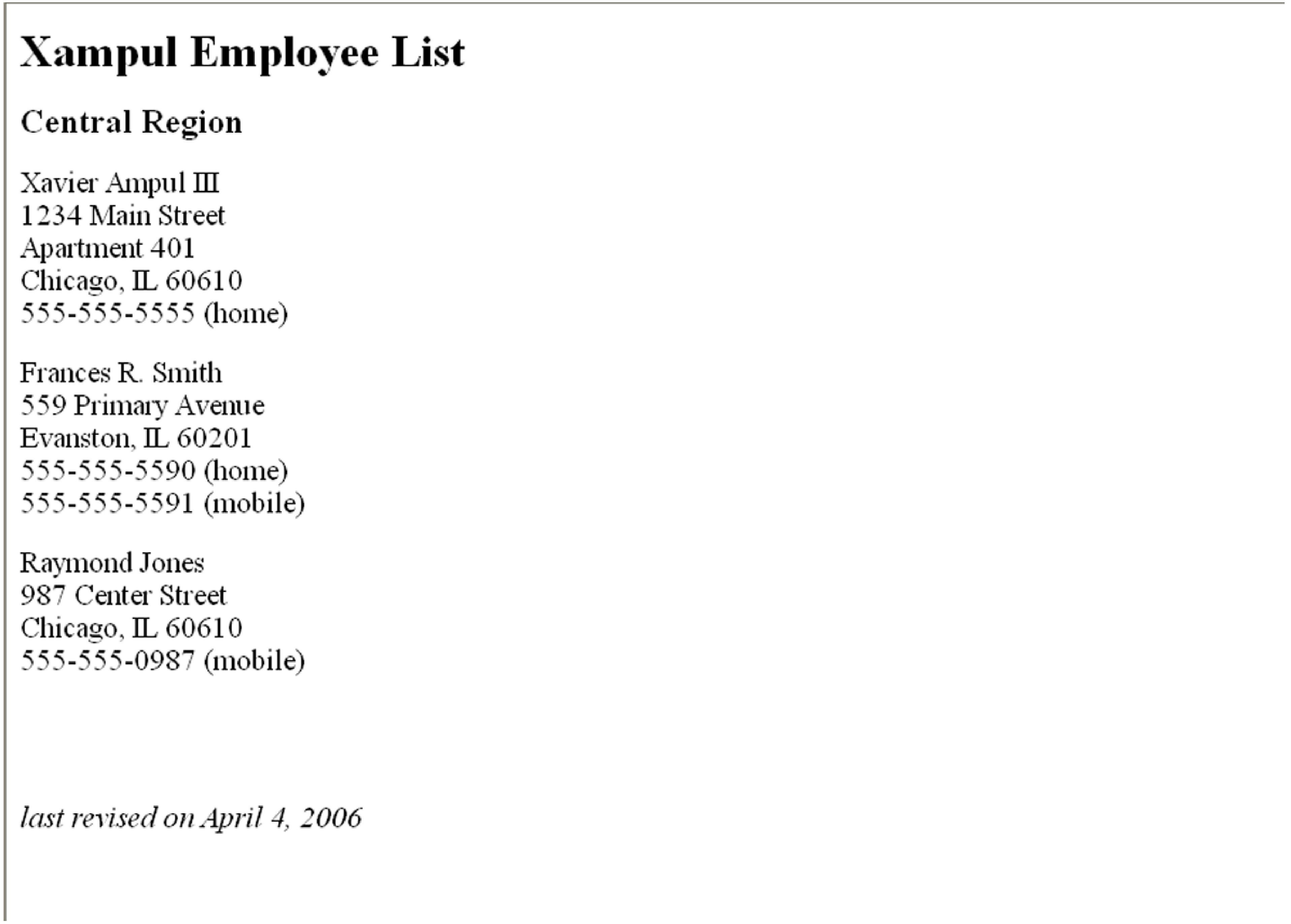
6.6.xslt: Finishing Touches (cont.)

```
    <xsl:value-of select="name/middleinit"/>
    <xsl:text>. </xsl:text>
  </xsl:if>
  <xsl:value-of select="name/lastname"/>
  <xsl:if test="name/suffix">
    <xsl:text> </xsl:text>
    <xsl:value-of select="name/suffix"/>
  </xsl:if>
  <br/>
  <xsl:for-each select="address/street">
    <xsl:value-of select="."/>
    <br/>
  </xsl:for-each>
  <xsl:value-of select="address/city"/>
  <xsl:text>, </xsl:text>
  <xsl:value-of select="address/state"/>
  <xsl:text> </xsl:text>
  <xsl:value-of select="address/zip"/>
  <xsl:for-each select="phone">
    <br/>
```

6.6.xslt: Finishing Touches (last)

```
          <xsl:value-of select="."/>
          <xsl:text> (</xsl:text>
          <xsl:value-of select="@type"/>
          <xsl:text>)</xsl:text>
        </xsl:for-each>
      </p>
    </xsl:for-each>
    <br/>
    <br/>
    <br/>
    <i>last revised on
      <xsl:value-of select="/employeelist/listdate"/>
    </i>
  </body>
  </html>
</xsl:template>

</xsl:stylesheet>
```



Xampul Employee List

Central Region

Xavier Ampul III
1234 Main Street
Apartment 401
Chicago, IL 60610
555-555-5555 (home)

Frances R. Smith
559 Primary Avenue
Evanston, IL 60201
555-555-5590 (home)
555-555-5591 (mobile)

Raymond Jones
987 Center Street
Chicago, IL 60610
555-555-0987 (mobile)

last revised on April 4, 2006

About Example 6.6

- `xsl:for-each` is used in this example to control the number of `phone` lines generated in the output tree.
- The XPATH expression `@type` is used to retrieve the value of the attribute `type` for the current `phone` element.
- The retrieval and output of the `listdate` element has been moved from the top of the page to the bottom of the page to demonstrate the ease of processing elements in an arbitrary order with XSLT.