Introduction to WML

After installing these emulators, you are ready to make the first steps in WML programming. First, you have to remember what was already true for HTML: WML is a markup language, not a programming language. It provides the structure of a document.

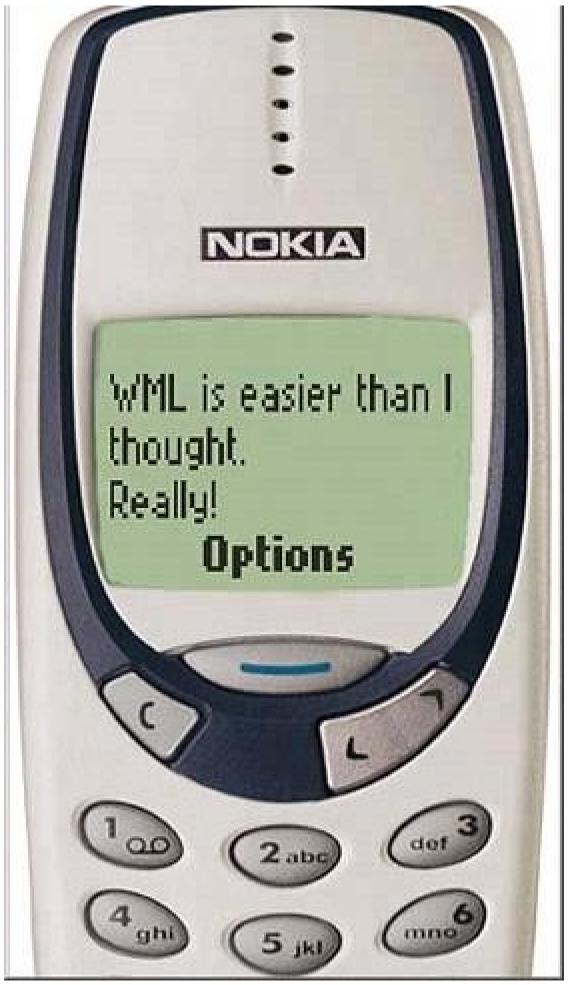
WML Structure

The most important aspect of WML is the structure of a WML document. Basically, it is pure XML, so using your favorite XML editor is just fine. HoweverWML document is called a *deck*. Within this deck, there existsone or more *cards*.

One of the reasons why this structure has been chosen lies in the low connection speed.Surfing a WAP page is expensive; however, the connection is established only on demand.

Text

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="card1">
  <p>
    WML is easier than I thought.
    <br/
    >
    Reall
    y!
  </p>
</card>
</wml>
```



WML is easier than I thought.
Really!

WML Properties	
Property	**Character**
&lt;	<
&gt;	>
&amp;	&
&nbsp;	(nonbreaking space)
&shy;	soft hyphen
&quot;	"
&apos;	'

Elements Used for Formatting Text	
Element	**Description**
<b>	bold
<big>	large
<em>	mostly bold (emphasized)
<i>	italic
<small>	small
<strong>	(mostly) italic
<u>	underlined

Text Formatting

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="card1">
 <p>
    Text can be made
     <b>b(old)</b>,
      <big>big</big>,
      <em>em(phasized)</em>,
      <i>i(talic)</i>,
      <small>small</small>,
      <strong>strong</strong>,or
      <u>u(nderlined)</u>.
    <br/
    >
    Reall
    y!
 </p>
</card
  >
</wml
  >
```

Text formatting but the Nokia simulator does not implement this.

Links

One of the most important aspects on a Web page is linking otherwise, you would have toput all information on one page. As with HTML, linking is done with the <a> element, andthe href attribute contains the target of the link. Between <a> and </a>, the link text is provided:

```
<a href="newpage.wml">click me!</a>
```

However, when directly linking to a WML page, the uppermost card is opened somethingthat is not always desirable. However, WML offers something for that, too. Using the hashsymbol, you can directly link to a card on a decklike you do with anchors in an HTML page. After the hash, you provide the value of the ID attribute of the card, its identifier:

```
<a href="newpage.wml">first card on the deck newpage.wml</a>
<a href="newpage.wml#card2">card with id "card2" on the deck newpage.wml</a>
<a href="#card3">card with id "card3" on the current deck</a>
```

Three Cards, Linked with Each Other

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
  <card id="php3" title="PHP3">
  <p>
    PHP 3 was really good.
  </p>
  <p>
  <a href="#php4">PHP4</a><br />
  <a href="#php5">PHP5</a>
  </p>
  </card>

<card id="php4" title="PHP4">
  <p>
```

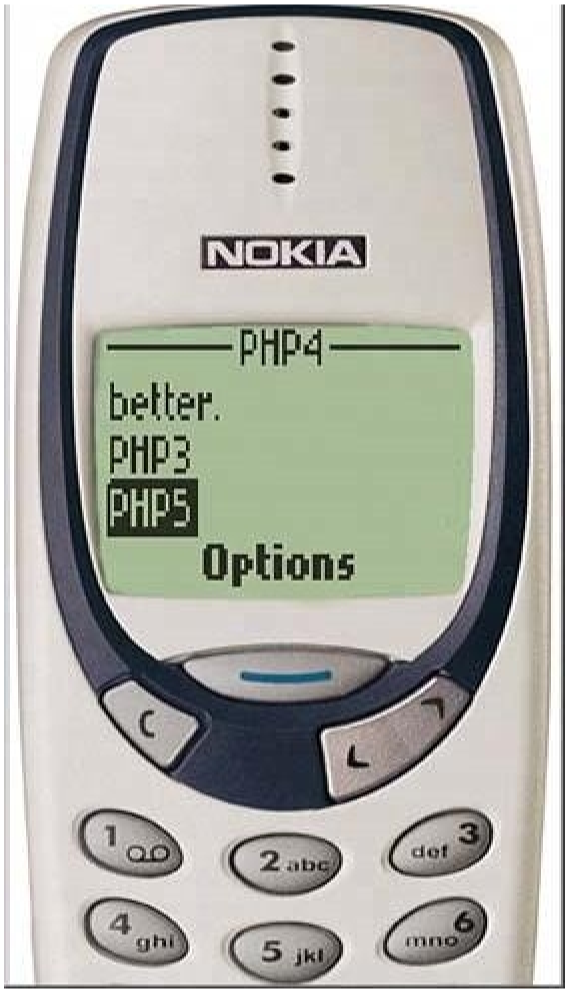
```
    PHP 4 was even better.
  </p>
  <p>
  <a href="#php3">PHP3</a><br />
  <a href="#php5">PHP5</a>
  </p>
  </card>

<card id="php5" title="PHP5">
  <p>
    PHP5 is a revolution (some fanatics say).
  </p>
  <p>
  <a href="#php3">PHP3</a><br />
  <a href="#php4">PHP4</a>
  </p>
  </card>

</wml>
```

Card two of three.

A WML Page with a Graphic



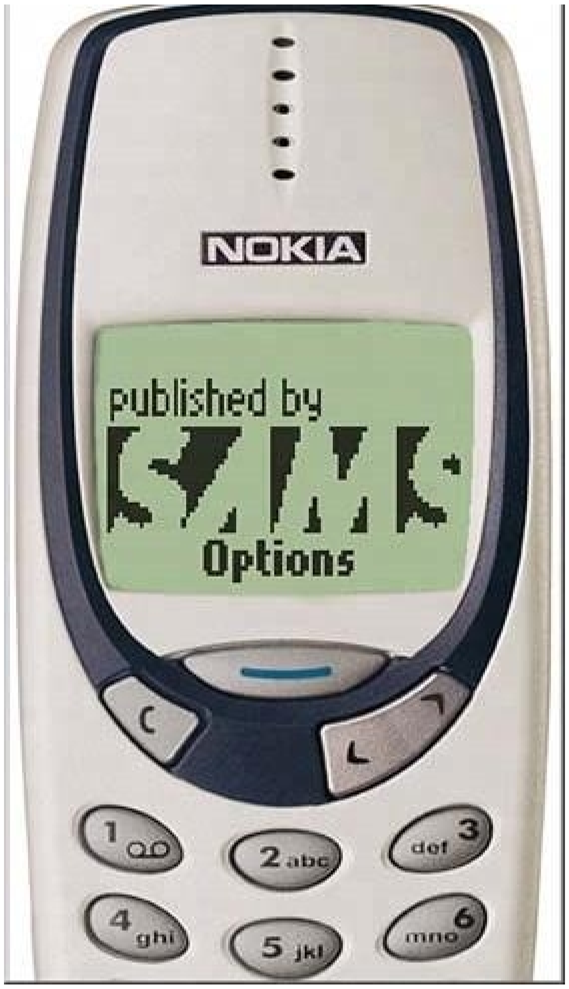
NOTE

On some browsers, you can change the text that appears on the lower-left edge of the screen when you select a link. For this, use the title attribute. However do not rely on it to workit is up to the browser developers whether this feature is supported.

A WML Page with a Graphic

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="card1">
 <p>
    This book was published by
    <img src="sams.wbmp" alt="SAMS" />.
 </p>
</card
   >
</wml
   >
```

The Sams logo as WBMP graphic.



WML Forms

One of the most important features of all browser-based markup languages are forms. Most of the time, forms are the only possibility for an interaction between a website/WAPsite and the user. They let users enter text information or let them choose between a number of alternatives.

WML supports the following set of form elements:

- Text fields
- Password fields

- Selection lists
- Option buttons
- Check boxes

Text and Password Fields

As previously mentioned, entering text or even passwords is not as easy with mobile devices as it is on a desktop computer with an actual keyboard. However, situations existwhere text must be entered the account number and PIN for entering your bank's WAP brokerage system, for instance, or the TAN required for each transaction.

Attributes for WML Text Fields

Attribute	**Description**
size	The display length of the text field (however, the value for maxlength maybe greater).
title	Descriptive title for the text field (displayed by some browsers).
type	Type of the field: "text" for text field, "password" for password field (as in HTML).
value	Default text in the field (as in HTML).

If you would like to allow users to enter their ZIP code, for instance, into a WAP form, the following code represents the text field for this task:

```
<input type="text" name="zip" size="5" maxlength="5"
title="ZIP code" value="00000" format="NNNNN"/>
```

Following is the code for a four-digit PIN, implemented using a password field:

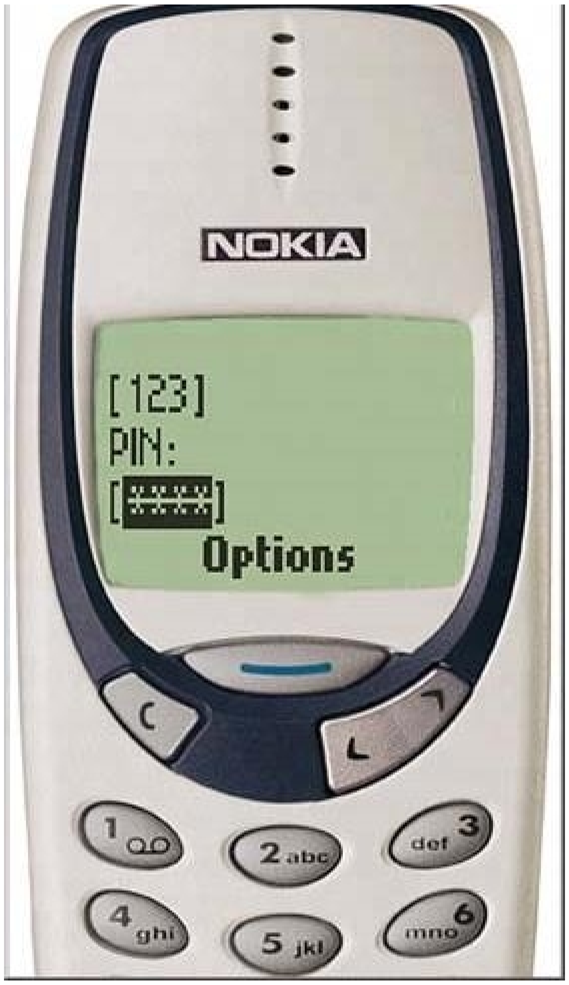
```
<input type="password" name="PIN" size="4" maxlength="4"
title="your PIN" format="NNNN"/>
```

A Fictitious Login Page

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="login">
 <p>
    Account #:
    <input type="text" name="Account" size="10" title="your account number"/>
  <br/
    >
    PI
    N:
    <input type="password" name="PIN" size="4" maxlength="4"
      title="your PIN" format="NNNN"/>
</p>
</card>
</wml
   >
```

Depending on the WML browser used, the display of these form elements may vary, especially when you're entering text into the password field. For instance, some browsersalways display the character you currently enter, whereas all other characters in the text are masked using the asterisk (or a similar) symbol.

One text field, one password field.



Selection Lists, Option Buttons, and Check Boxes

WML is rather simple; one proof for that is that all remaining form elements are represented by the same element: <select>. The various elements in this selection list (orgroup of option buttons or check boxes) are assigned using the <option> element. Again,the similarities to HTML are striking.

Attributes for the <select> Element

Attribute	Description
name	The unique identifier for the form element
multiple	Whether only one element of the list may be selected (false; standard value)or not (true)

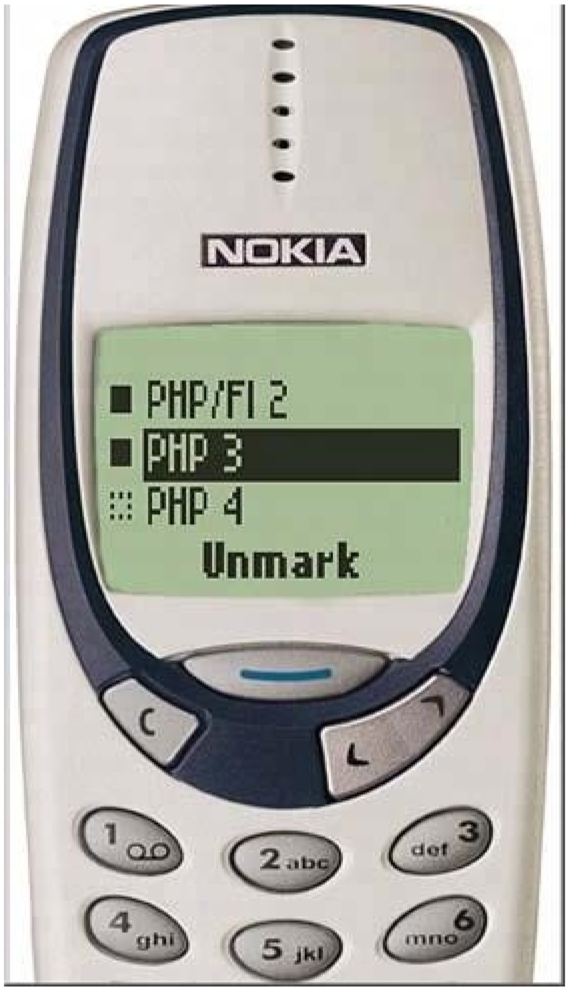
The <option> element also has two useful attributes; however, they are completelyoptional:

Attributes for the <option> Element	
Attribute	**Description**
title	Descriptive title of the list element (displayed by some browsers)
value	The value of the list element (if the attribute is not set, the textbetween <option> and </option> is used)

Two WML Selection Lists

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="form">
 <p>
    You have used ...
    <select name="earlier" multiple="true">
      <option title="PHP/FI" value="php2">PHP/FI 2</option>
      <option title="PHP 3" value="php3">PHP 3</option>
      <option title="PHP 4" value="php4">PHP 4</option>
      <option title="PHP 5" value="php5">PHP 5</option>
    </select>
    <br/>
    You are currently using ...
    <select name="currently" multiple="false">
      <option title="PHP/FI" value="php2">PHP/FI 2</option>
      <option title="PHP 3" value="php3">PHP 3</option>
      <option title="PHP 4" value="php4">PHP 4</option>
      <option title="PHP 5" value="php5">PHP 5</option>
    </select>
</p>
</card>
</wml
   >
```

The multiple selection list.

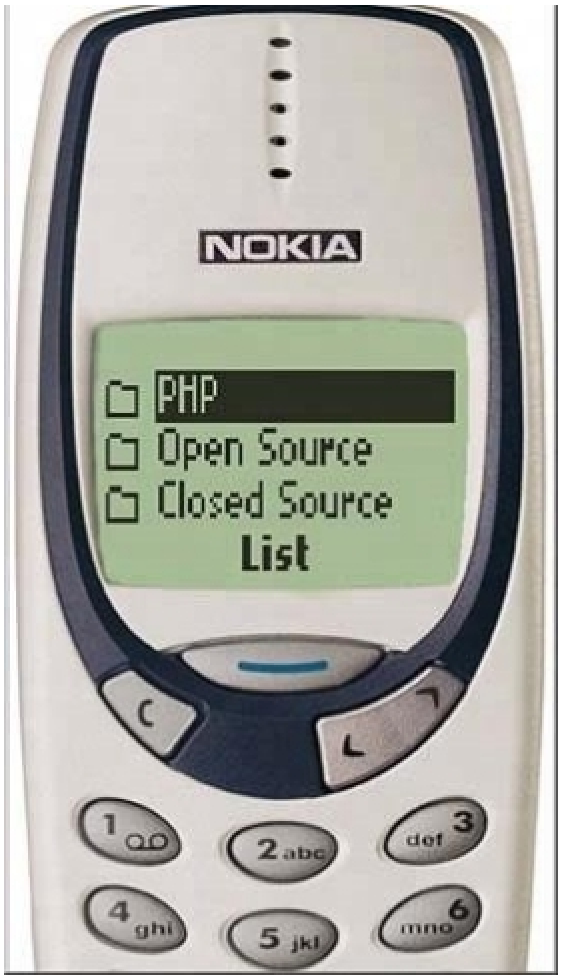


Grouping Form Elements

Grouped Form Elements

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="form">
  <p>
    Scripting technologies you are using
    <select name="scripting" multiple="true">
      <optgroup title="PHP">
        <option title="PHP/FI" value="php2">PHP/FI 2</option>
        <option title="PHP 3" value="php3">PHP 3</option>
        <option title="PHP 4" value="php4">PHP 4</option>
        <option title="PHP 5" value="php5">PHP 5</option>
      </optgroup>
      <optgroup title="Open Source">
        <option title="Perl 5" value="perl5">Perl 5</option>
        <option title="Perl 6" value="perl6">Perl 6</option>
        <option>Ruby</option>
      </optgroup>
      <optgroup title="Closed Source">
        <option>ASP</option>
        <option title="ASP.NET/C#"
          value="aspnet_cs">ASP.NET with C#</option>
        <option title="ASP.NET/VB.NET"
          value="aspnet_vb">ASP.NET with VB.NET</option>
      </optgroup>
    </select>
</p>
</card>
</wml>
```

The list of groups list elements are displayed upon clicking the softkey.



Processing Form Data

Within WML, you have a limited support for variables. Variable names start with the dollarsign; for compatibility reasons, the actual variable name should be enclosed in parentheses: $(var_name). When a form field is filled with a value, a variable is created.Its name is the name attribute of the form field; its value is the text entered (or the elementselected) in the form element. Thus, the following approach for simple form data processing is effective:

- Provide form elements.
- At the end of the form, offer a link to another card (on the same deck).
- Output the values of the form variables on the second card.

Form Input Is Displayed

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="form">
  <p>
    Your name is ...
    <input type="text" name="name"/>
    <br/>
    You have used ...
    <select name="earlier" multiple="true">
      <option title="PHP/FI" value="php2">PHP/FI 2</option>
      <option title="PHP 3" value="php3">PHP 3</option>
      <option title="PHP 4" value="php4">PHP 4</option>
      <option title="PHP 5" value="php5">PHP 5</option>
    </select>
    <br/>
    You are currently using ...
    <select name="currently" multiple="false">
      <option title="PHP/FI" value="php2">PHP/FI 2</option>
      <option title="PHP 3" value="php3">PHP 3</option>
      <option title="PHP 4" value="php4">PHP 4</option>
      <option title="PHP 5" value="php5">PHP 5</option>
    </select>
  <br/>
  <a href="#output">Send form data</a>
</p>
</card>
<card id="output">
```

```
 <p>
    Hello, $(name:e)!
    <br/>
    You have used $(earlier).
    <br/>
    But you are currently using $(currently:e).
 </p>
</card
   >
</wml
   >
```

However, there is no way you can add some additional page logic to this script. Especially, you cannot break down the cryptic string for the selected list elements into something more readable. This can be done server side, and we do that with PHP.

Sending Form Data Server Side

There are two ways to transfer data to a server-side script:

- Use GET: The data is appended to the URL of the script; forexample, scriptname.php?name=John&currently=php5.
- Use POST: The data is transferred to the Web server as part of the HTTP headerof the request, invisible to the user.

In general, the POST method is preferred because GET is limited to 5002000 characters (depending on the user's Web server). However, GET can be achieved appealingly simply:

```
<a href="scriptname.php?name=$(name:e)&amp;currently=$(currently:e)">send
  data</a>
```

CAUTION

Yes, you do have to escape the ampersand in the link. The WML/XML parser expects an entity after the & sign, thus this must be converted to &amp;.

Then use the <anchor> element to make these <postfield> elements part of the link. Theyare then submitted as part of the HTTP request for the linked URL. To do so, enclose the <postfield> elements in a <go> element within the <anchor> element:

```
<anchor>
  <go href="scriptname.php" method="post">
    <postfield name="name" value="$(name:e)"/>
    <postfield name="currently" value="$(currently:e)"/>
  </go>
  Send form data
</anchor>
```

Form Data Is Sent to a PHP Script

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN"
"http://www.wapforum.org/DTD/wml12.dtd">
<wml>
<card id="input" title="input">
  <p>
    Your name is ...
    <input type="text" name="name"/>
    <br/>
    You have used ...
    <select name="earlier" multiple="true">
      <option title="PHP/FI" value="php2">PHP/FI 2</option>
      <option title="PHP 3" value="php3">PHP 3</option>
      <option title="PHP 4" value="php4">PHP 4</option>
      <option title="PHP 5" value="php5">PHP 5</option>
    </select>
    <br/>
    You are currently using ...
    <select name="currently" multiple="false">
      <option title="PHP/FI" value="php2">PHP/FI 2</option>
      <option title="PHP 3" value="php3">PHP 3</option>
      <option title="PHP 4" value="php4">PHP 4</option>
      <option title="PHP 5" value="php5">PHP 5</option>
    </select>
    <br/>
    Send form data
    <a href="scriptname.php?name=$(name:e)&amp;earlier=$(earlier:e)&amp;currently=$
➥(currently:e)">[GET]</a>
    <anchor>
      <go href="scriptname.php" method="post">
        <postfield name="name" value="$(name:e)"/>
        <postfield name="earlier" value="$(earlier:e)"/>
        <postfield name="currently" value="$(currently:e)"/>
      </go>
      [POS
      T]
    </anchor>
 </p>
</card
   >
</wml
   >
```

using the Web server, not via file system). We will develop this script later on in this chapter.