Web Service – HTML Table
An Example Application, from Concept to Completion

Erich Spencer
### Web Service – HTML Table

*An Example Application, from Concept to Completion*

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Concept</td>
<td>5</td>
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<tr>
<td>Requirements (generalized, outline form)</td>
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</tr>
<tr>
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</tr>
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<td>decisions</td>
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<td>Requirements (formalized)</td>
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<td>Service Request Interface</td>
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<tr>
<td>Introduction screen</td>
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<td>Head</td>
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<tr>
<td>Body</td>
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<td>Content Entry screen</td>
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<tr>
<td>Head</td>
<td>7</td>
</tr>
<tr>
<td>Body</td>
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<td>Service Results screen</td>
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</tr>
<tr>
<td>Body</td>
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</tr>
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<tr>
<td>2.2 Body</td>
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<td>3.0 Content Entry screen</td>
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</tr>
<tr>
<td>3.1 Head</td>
<td>8</td>
</tr>
<tr>
<td>3.2 Body</td>
<td>8</td>
</tr>
<tr>
<td>4.0 Service Results screen</td>
<td>8</td>
</tr>
<tr>
<td>4.1 Head</td>
<td>8</td>
</tr>
<tr>
<td>4.2 Body</td>
<td>8</td>
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<td>Specifications (conforms to enumerated requirements)</td>
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<tr>
<td>2.1 Head</td>
<td>9</td>
</tr>
<tr>
<td>2.2 Body</td>
<td>9</td>
</tr>
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<td>3.0 Content Entry screen</td>
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<td>3.1 Head</td>
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<td>3.2 Body</td>
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<td>12</td>
</tr>
<tr>
<td>2.2 Body</td>
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</tr>
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Introduction

There are many different ways a developer could go about defining, organizing, documenting, designing, and building a program of any scale. This document provides one example of a simple, structured approach to defining and building a single, small-scale web service.

The approach represented by this document demonstrates a method that begins by defining the service concept in very general terms. Then, basic requirements are outlined into service representations, events, decisions, and responses. Gradually, through successive iterations, elements are elaborated into specific details that ultimately result in program code.
Web Service – HTML Table
An Example Application, from Concept to Completion

Concept

HTML Table - A user-viewable web service that marks-up user content with HTML table tags. User defines an arbitrary number of rows and columns. User enters content into corresponding form controls. User retrieves marked-up content.

Requirements (generalized, outline form)

representations
service request interface
service description message
user prompts or instructions
user input controls
  number of rows and columns
  cell content text
  finished HTML text

events
submit number of rows and columns
submit cell content text
copy finished HTML text

decisions
initial, default state
build rows and columns with text inputs
build rows and columns with user content

responses
present initial, default service interface
present content entry interface
present finished text interface
Requirements (generalized, What/How matrix form)

<table>
<thead>
<tr>
<th>WHAT</th>
<th>HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>representation</td>
<td>HTML</td>
</tr>
<tr>
<td>representation</td>
<td>text</td>
</tr>
<tr>
<td>representation</td>
<td>text</td>
</tr>
<tr>
<td>representation</td>
<td>text fields, textarea fields</td>
</tr>
<tr>
<td>representation</td>
<td>textarea field</td>
</tr>
<tr>
<td>event</td>
<td>post request</td>
</tr>
<tr>
<td>event</td>
<td>post request</td>
</tr>
<tr>
<td>event</td>
<td>client menu</td>
</tr>
<tr>
<td>decision</td>
<td>no row, column, or content variables present</td>
</tr>
<tr>
<td>decision</td>
<td>send row and column variables to row-building function</td>
</tr>
<tr>
<td>decision</td>
<td>send row, column, and content variables to row-building function</td>
</tr>
<tr>
<td>response</td>
<td>HTML template with row and column entry fields</td>
</tr>
<tr>
<td>response</td>
<td>HTML template with content cell entry fields</td>
</tr>
<tr>
<td>response</td>
<td>HTML template with textarea containing finished HTML text</td>
</tr>
</tbody>
</table>
Requirements (formalized)

Service Request Interface

Hyperlink to Service Request URL

Introduction screen

Head
Document Title

Body
Page Heading
Message text describing service
User prompt text to enter rows and columns
Form to define table dimensions
  Form action URL
  Form control to select number of rows
  Form control to select number of columns
  Form control to submit form data

Content Entry screen

Head
Document Title

Body
Page Heading
User prompt text to enter content into cells
Form to enter content
  Form action URL
  Form controls to enter content in each cell
  Form control to submit form data

Service Results screen

Head
Document Title

Body
Page Heading
User prompt text to copy text to Clipboard
Text of user content with HTML markup
Hyperlink to Service Request URL
Requirements (formalized and enumerated)

1.0 Service Request Interface
1.1 Hyperlink to Service Request URL

2.0 Introduction screen
2.1 Head
2.1.0 Document Title
2.2 Body
2.2.0 Page Heading
2.2.1 Message text describing service
2.2.2 User prompt text to enter rows and columns
2.2.3 Form to define table dimensions
2.2.3.0 Form action URL
2.2.3.1 Form control to select number of rows
2.2.3.2 Form control to select number of columns
2.2.3.3 Form control to submit form data

3.0 Content Entry screen
3.1 Head
3.1.0 Document Title
3.2 Body
3.2.0 Page Heading
3.2.1 User prompt text to enter content into cells
3.3.2 Form to enter content
3.3.2.0 Form action URL
3.3.2.1 Form controls to enter content in each cell
3.3.2.2 Form control to submit form data

4.0 Service Results screen
4.1 Head
4.1.0 Document Title
4.2 Body
4.2.0 Page Heading
4.2.1 User prompt text to copy text to Clipboard
4.2.2 Text of user content with HTML markup
4.2.3 Hyperlink to Service Request URL
Specifications (conforms to enumerated requirements)

Program Name: HTML_Table
File Name: HTML_Table.php
Contents: PHP program script

1.0 Service Request Interface

1.1 Hyperlink to Service Request URL
anchor text: HTML Table
anchor href: http://www.industrex.com/services/HTML_Table.php

2.0 Introduction Screen

2.1 Head
2.1.0 Document Title
title: HTML Table - Set Your Size

2.2 Body
2.2.0 Page Heading
heading 1: HTML Table - Set Your Size
2.2.1 Message text describing service
paragraph: Automatically format your content into professionally written HTML
table code. It's as easy as 1-2-3!
ordered list: Pick the number of rows and columns you need.
Copy and paste your content into the on-screen text boxes.
Copy the finished HTML into your Clipboard.
2.2.2 User prompt text to enter rows and columns
paragraph: Enter number of ROWS and COLUMNS, then press "Next" to enter
your content.
2.2.3 Form to define table dimensions
2.2.3.0 Form action URL
action: http://www.industrex.com/services/HTML_Table.php
method: post
2.2.3.1 Form control to select number of rows
control: input
type: text
name: rows
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2.2.3.2 Form control to select number of columns
control: input
type: text
name: columns

2.2.3.3 Form control to submit form data
control: button
value: Next

3.0 Content Entry screen

3.1 Head
3.1.0 Document Title
title: HTML Table - Enter Your Content

3.2 Body
3.2.0 Page Heading
heading 1: HTML Table - Enter Your Content
3.2.1 User prompt text to enter content into cells
paragraph: Paste your content into each cell. When finished, press the "Next"
button to generate your HTML table.
3.2.2 Form to enter content
3.2.2.0 Form action URL
action: http://www.industrex.com/services/HTML_Table.php
method: post
3.2.2.1 Form controls to enter content in each cell
control: input
type: text
name: content[row][column]
3.2.2.2 Form control to submit form data
control: button
value: Next

4.0 Service Results screen

4.1 Head
4.1.0 Document Title
title: HTML Table - Copy Your Table

4.2 Body
4.2.0 Page Heading
heading 1: HTML Table - Copy Your Table
4.2.1 User prompt text to copy text to Clipboard
paragraph: Your finished HTML is displayed below. You may copy it to your
Clipboard for use in other applications.
4.2.2 Text of user content with HTML markup
code: HTML table text
4.2.3 Hyperlink to Service Request URL
anchor text: HTML Table
anchor href: http://www.industrex.com/services/HTML_Table.php
Web Service – HTML Table

An Example Application, from Concept to Completion

Design

Program Name: HTML_Table
File Name: HTML_Table.php
Contents: PHP program script
Program Flow:

start program
initialize program variables
if rows & columns request variables exist
build content entry screen
set instructions to content entry prompt
build table with content entry cells
else if user content request variables exists
build service results screen
set instructions to copy text prompt
build table with content
else
build introduction screen
set message to introduction
set instructions to row/column prompt

print results
stop program

1.0 Service Request Interface

HTML Table
Web Service Interface Shell

2.0 Introduction Interface Template
3.0 Content Entry Interface Template
4.0 Service Results Interface Template

Program Variables:

$rows
$columns
$title
$message
$userPrompt
$cellContent
$display

Program Functions:

$buildTableRows()
$buildEntryFields()
1.0 Service Request Interface

1.1 Hyperlink to Service Request URL

<a href="http://www.industrex.com/services/HTML_Table.php">HTML Table</a>

2.0 Introduction screen

2.1 Head

2.1.0 Document Title

$title = "Set Your Size"
<title>HTML_Table - $title</title>

2.2 Body

2.2.0 Page Heading

<h1>HTML_Table - $title</h1>

2.2.1 Message text describing service

$message = "<p>Automatically format your content into professionally written HTML table code. It's as easy as 1-2-3!</p>

<ol>
<li>Enter the number of rows and columns you need.</li>
<li>Type or paste your content into the on-screen text boxes.</li>
<li>Copy the finished HTML into your Clipboard.</li>
</ol>

2.2.2 User prompt text to enter rows and columns

$userPrompt = "<p>Enter number of ROWS and COLUMNS, then press "Next" to enter your content.</p>"

2.2.3 Form to define table dimensions

2.2.3.0 Form action URL

<form action="href="http://www.industrex.com/services/HTML_Table.php" method="post">

2.2.3.1 Form control to select number of rows

<input type="text" name="rows" size="4" value="" />

2.2.3.2 Form control to select number of columns

<input type="text" name="columns" size="4" value="" />

2.2.3.3 Form control to submit form data
### 3.0 Content Entry screen

#### 3.1 Head

3.1.0 Document Title

```
$title = "Enter Your Content"
<title>HTML_Table - $title</title>
```

#### 3.2 Body

3.2.0 Page Heading

```
<h1>HTML Table - $title</h1>
```

3.2.1 User prompt text to enter content into cells

```
$message = ""
$userPrompt = "Type or paste your content into each cell. When finished, press the "Next" button to generate your HTML table.""
```

3.2.2 Form to enter content

3.2.2.0 Form action URL

```
<form action="http://www.industrex.com/services/HTML_Table.php" method="post">
```

3.2.2.1 Form controls to enter content in each cell

```
<textarea name="content[0][0]" rows="4" cols="20"></textarea>
```

3.2.2.2 Form control to submit form data

```
<button type="submit">Next &gt;&gt;</button>
```

### 4.0 Service Results screen

#### 4.1 Head

4.1.0 Document Title

```
$title = "Copy Your Table"
<title>HTML_Table - $title</title>
```

#### 4.2 Body

4.2.0 Page Heading

```
<h1>HTML Table - $title</h1>
```

4.2.1 User prompt text to copy text to Clipboard

```
$message = ""
$userPrompt = "Your finished HTML is displayed below. You may copy it to your Clipboard for use in other
```
4.2.2 Text of user content with HTML markup

```php
$userTable = \texttt{HTML table text}
<code>$userTable</code>
```

4.2.3 Hyperlink to Service Request URL

```html
<a href="http://www.industrex.com/services/HTML_Table.php">New Table</a>
```

or

```html
<form>
  <button type="submit"> New Table</button>
</form>
```
Construction

Writing the code...

1.0 Service Request Interface

2.0 Introduction screen

3.0 Content Entry screen

4.0 Service Results screen
Implementation

The working service, online at the specified interface (URL).

1.0 Service Request Interface

http://www.industrex.com/services/HTML_Table.php

2.0 Introduction screen

3.0 Content Entry screen

4.0 Service Results screen
Adding Enhancements

Once the web service functions correctly, extending it or adding enhancements should be a simple matter of defining, building, testing, and integrating new components directly into place. The structure of this documented process may be reused in abbreviated form to rapidly detail each new component.

Each additional component may be inserted in place using the enumerated format. New components will introduce new numbers in their respective units. Enhancements to existing components will simply extend the numbered items already listed.

Concept

Alert the user if 0 or empty values submitted for row or column dimensions.

Requirements (generalized, What/How matrix form)

<table>
<thead>
<tr>
<th>WHAT</th>
<th>HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>representation</td>
<td>Message to alert user to send non-zero values for rows and columns</td>
</tr>
<tr>
<td>event</td>
<td>submit 0 or nothing for number of rows and/or columns</td>
</tr>
<tr>
<td>decision</td>
<td>rows or columns empty or 0</td>
</tr>
<tr>
<td>response</td>
<td>present initial, default service interface with alert message</td>
</tr>
</tbody>
</table>

Requirements (formalized and enumerated)

2.0 Introduction screen

2.2 Body

2.2.1 Message text describing service

2.2.1.1 Empty row/column value alert

Specifications

2.0 Introduction screen

2.2 Body

2.2.1 Message text describing service

2.2.1.1 Empty row/column value alert

Append alert to message content

paragraph: NOTE: You must define at least one row and column.
Design

Program Variables: $emptyValues

2.0 Introduction screen

2.2 Body

2.2.1 Message text describing service

2.2.1.1 Empty row/column value alert

$message .= "<p id="error">NOTE: You must define at least one row and column.</p>";

Implementation

2.0 Introduction screen

(Repeat the process illustrated above for each enhancement or new component...)