

PC PDA

XML

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A Case Study of Developing XML -based Web Contents Supporting PC and PDA Browser

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PDA, PC PDA 가 가 , XSLT 가 , HTML DTD XSL XML

ABSTRACT

Due to rapid advance of wireless communication technology and popularization of wireless devices, demand on wireless internet contents is gradually increasing. Therefore, there are many researches and solution developments to provide good qualified contents quickly for wireless internet. For example, researches into converting wired web contents into wireless web contents or using integrated markup language like XHTML basic to make contents. In this paper, I propose a method to develop XML-based web contents which uses PHP language for data fetch from MySQL database. This method use open source software for a cost saving. Due to use of PHP extension as a XSLT engine, this method is very easy to apply. For a example of this method, a web content of movie information is implemented for PC and PDA browser. Developing XML-based web contents is useful not only for supporting devices of multiple type, but also for rapid changes of user interface design and for exchange of contents between web sites.

1. [1]. PDA(Personal Digital Assistant), PC PDA 가 가

2000 2010 XML, WAP, Webtop, Bluetooth, E-Cash

XML

2

XHTML basic

, XML

[2,3,4,5]

, XML

[6]

[7]

WAP(Wireless Application Protocol) forum

XHTML (eXtensible Hyper Text Markup Language) basic WAP2.0

[8]

XML(eXtensible Markup language)

가

XML

가

[2], XML 가

XML

[2,9,10,11].

XML

HTML

가 가,

가

MySQL, PHP XML

가

XML

가

, XML XSLT

, XML

, XSLT PHP wrapper

XML

2

XHTML basic

, XML

. 3

PC PDA

XML , 4

5

. 6

2.

WML(Wireless Markup Language), HDML(Handheld Device Markup Language), mHTML(mobile HTML), sHTML(small HTML), cHTML(compact HTML) 가

[2,3,4,5], [7,8], XML

2.1 (Contents Converter)

가

가

MySQL, PHP XML

가 Converter

Transcoder [2]. (Contents Converter)

HTML WML HTML

(Parsing) WML 가 [4].

HTML WML

WAP

가

HTML

XML (application) [12].

HTML SGML, XHTML

XML HTML 가

“XML+HTML”

HTML

HTML

(Automated Converter)

XML 가

(Configurable Converter)

XHTML Mobile phone, PALM,

WAP Gateway

Set-top box

(converter)가

HTML

XHTML

[13].

WAP Forum XHTMLMP(XHTML

(Quality of Service)

QoS

Mobile Profile) WAP 2.0

가

, XHTMLMP W3C XHTML

Phone.com WAP Gateway, Argo

Basic [16].

Actigate

가

XHTML basic XHTML 1.0

. XHTML

WML

가

. Oracle 9i

가

Application server Wireless Edition, IBM

Websphere Everyplace Suite, OpenTV

. XHTML

Spyglass Prism

[8].

XHTML basic WML, HDML, cHTML

가

, XHTML

가

가

가

가

2.2 – XHTML basic

XHTML(The Extensible Hyper Text Markup Language) 1998 5 ,

2.3 XML

HTML (“Shaping the Future of HTML”)

2.3.1 XML

HTML

W3C(World Wide Web Consortium)

XML 가 HTML

. XHTML HTML 4.0

가

가 (XSL
 , XML 가 , (, PDA
 DB) PDA XML
 HTML
 가 .
 HTML PDA
 XML HTML CSS
 HTML PHP 가 ,
 XML HTML (Markup
 Language) , HTML SGML PHP 가 .
 XML 가 .
 , XML HTML
 [9]. , XML HTML
 ()
 .
 XML HTML
 HTML 가 가
 , XML
 . XML
 HTML 가 가
 XSL .
 < 1> XML HTML

XSL
 (, PDA
 XML
 HTML PDA
 PDA
 HTML CSS
 PHP 가 ,
 html
 PHP 가 .
 .
 , XML
 가 가
 , xml
 가 xsl 가
 .
 , XML
 xml
 가 .
 가 xsl
 .
 XML

		XML	HTML
		,	,
		XSL	CSS
	가	XSL	CSS, HTML
	가	Script 1	가 가 Script 가
		XSL 가	HTML, CSS 가 + Script 가

. HTML , html
 가 PHP
 가
 , 가
 html
 . XML
 DTD
 , xml xsl
 . xsl
 , DTD가

HTML
 가 HTML
 , XML
 XML

2.3.2 XSLT
 XSL(eXtensible Stylesheet Language)[15]
 XML . XSL
 , XML
 XSLT (XSL Transformations)[16],

XSLT XML XPath[17], XML () (Document description language) XSL Formatting Object[18] 가 XSLT Process XML XSLT Stylesheet XML XML XSLT , XSLT XML 가 가 [10]. [19] , POST- PC 가

expat-lite , apache-1.3.9 php [21]. expat Sablotron Ginger Alliance , XSLT, DOM, XPath toolkit . Sablotron W3C 가 , XML . Sabloton C++ , Solaris, FreeBSD, OpenBSD, HP-UX, Win32 Microsoft . Sablotron James Clark expat XML [22]. Sablotron sabcmd C API Python, Perl, Php (extension or wrapper) 가 . Php 4.0.3 sablotron extension 가 . Php 4.1 configure --enable-xslt --with-xslt-sablotron sablotron extension .

3. PC PDA XML XML 가 , XML XSLT ,

2.3.3 expat sablotron expat James Clark Thai Open Source Software Center Ltd. 1998 C XML 1.0 (parser) [20]. Expat 2.0 <http://sourceforge.net/projects/expat/> 2001 7 expat 1.95.2 , Windows Unix(Linux) Python, Perl, Php script API Apache apache-1.3.7

3.1 XML PDA UNIX OS MySQL PHP 가 XML , MySQL , DB

PHP
XML PHP 가
sablotron XSLT
3.2
API expat sablotron PHP
XML XSLT PDA
PC PDA

(2) PDA
(2) PDA
PC

PC PDA 가
PC PDA
<table>,

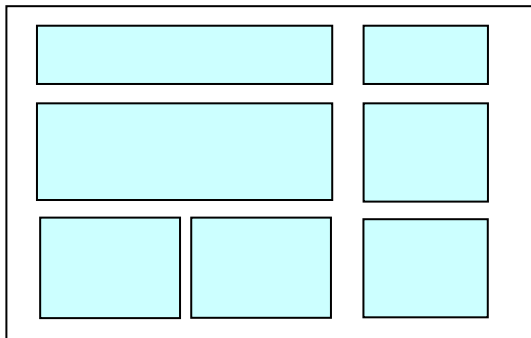
3.3
UNIX OS
MySQL apache

< 2> XML

	UNIX
	MySQL
	apache 1.3.19
Script	php 4.1.2
XML	expat 1.95.2
XSLT	sablotron 0.95

(1) PC
가 가
가 가

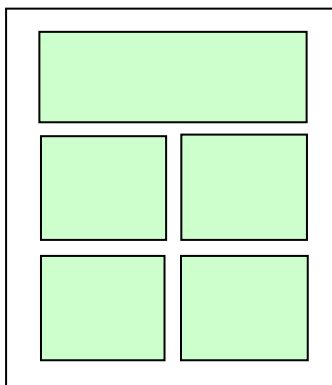
XML expat , XSLT
sablotron , expat ISO-
8859-1, US-ASCII, UTF-8 가 encoding



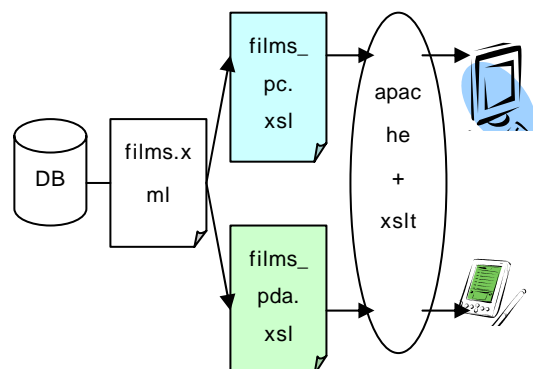
libiconv
libiconv Unicode가
encoding
code conversion GNU(GNU's not
UNIX) [23]
expat sablotron php

(1) PC

4.



4.1



XML

XML

XSL

(3)

< 3>

가

가

XSLT

가

가

DTD

DB

films.xml

PC

xsl films_pc.xsl,

< 4>

DTD

PDA xsl films_pda.xsl xslt processing

PC

PDA

XSLT

sablotron

apache

MySQL

DTD File	
films.dtd	DTD
hotnews.dtd	
openfilm.dtd	
boxoffice.dtd	
link.dtd	()

4.2

DB

DTD

(5)

films.dtd

MySQL

films.dtd

hotnews.dtd, openfilms.dtd, boxoffice.dtd

가

가

hotnews

openmovie

playmovie

korbox

usabox

```
<!ENTITY %hotnews SYSTEM "hotnews.dtd">
<!ENTITY %openfilm SYSTEM "openfilm.dtd">
<!ENTITY %boxoffice SYSTEM "boxoffice.dtd">
<!ELEMENT films (hotnews?,openfilm*,boxoffice*)>
```

(4) films.dtd

3>

< 3>

DB

openfilm.dtd

hotnews		(, ,)
openmovie		(, ,)
playmovie		(, ,)
korbox		(, , , ,)
usabox		(, , , , ,)

```
<!ENTITY % link SYSTEM "link.dtd">
%link;
<!ELEMENT openfilm firstfilm,(filmlist)*>
<!ATTLIST openfilm category (#PCDATA)>
<!ELEMENT firstfilm (#PCDATA)>
<!ATTLIST firstfilm %link;>
<!ELEMENT filmlist (#PCDATA)>
<!ATTLIST filmlist %link;>
```

(5) openfilm.dtd

XML
Type Definition)

DTD(Document

DTD

, DTD

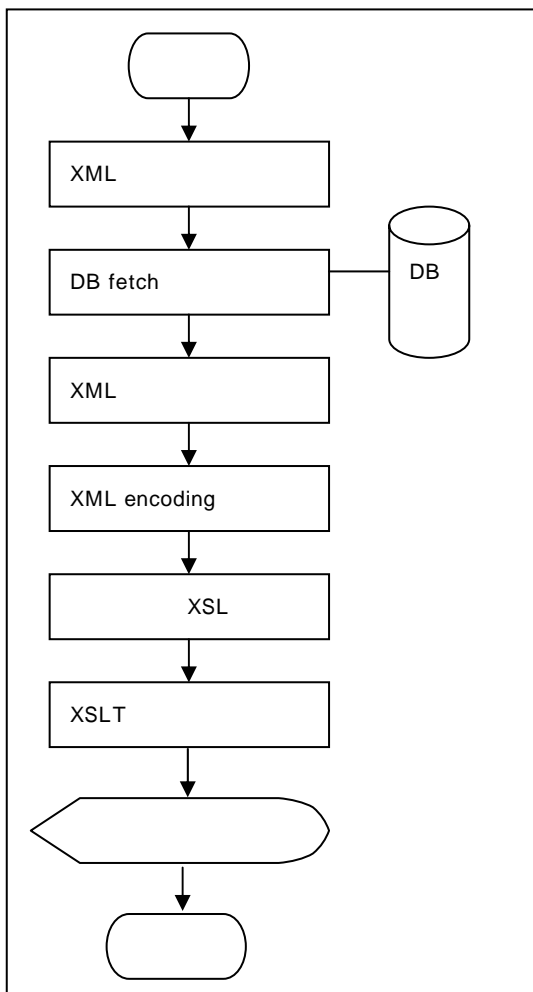
XML
DTD

DTD

XML

가 ‘ ‘ , ‘ ‘ ‘
 openfilm.dtd boxoffice.dtd ‘category’
 4.3
 DB

XML
 XSL XSLT Process
 HTML



(6)

‘<?xml version="1.0"....?>’
 XML . DB
 (fetch) films.dtd
 films
 xml . xml

XSLT 가
 encoding PC xsl
 , PDA xsl
 , xslt XSLT
 xsl
 html , html

5.

5.1 XML

(7) DB

XML XML
 PHP
 xml , XML
 ‘<?xml
 version="1.0"?>’ XML
 , films (root element)
 ‘<films>’
 DB
 ‘<hotnews>’
 , 4 select
 ‘<newslst>’ 4 . XML
 가 ‘</newslst>’
 ‘</hotnews>’ 가

```

<?php
// XML Header
$xml = "";
$xml .= "<?xml version=\ "1.0\ " encoding=\ "UTF-8\ "> \n";
$xml .= "<films xmlns:films=\ "films.dtd \ "> \n";

// DB
include "./dbClass.php";
$db = new MysqlDb;
$db->dbopen();
// 가
$sql = "select id, title from hotnews order by
id desc limit 4";
$result = $db->dbquery($sql);
$cnt = Mysql_num_rows($result);
$num = 0;
if ($cnt) {
// <hotnews> XML
$xml .= "<hotnews xmlns:hotnews=\
\ "hotnews.dtd \ "> \n";
while ($row = Mysql_fetch_array($result)) {
$num++;
$id = $row["id"];
$title = htmlspecialchars
($row["title"]);
  
```



```

// </hotnews>
$xml .= "</hotnews> \n";
}
( )
$xml .= "</films> \n";
$db->dbclose();
// 'UTF-8'
$xml_src = iconv("EUC-KR", "UTF-8", $xml);
$fp = fopen("films.xml", "w");
fputs($fp, $xml_src);
fclose($fp);
?>

```

(7) XML (films.php)

' ' 가 ' ,
' , ' ,
' xml '</films>
\$xml films xml
가 \$xml encoding 'UTF-8'
films.xml

5.2 XSL

XSL(extensible Stylesheet Language)

XSL 가
. XSLT XSLT
, <xsl:import>,
<xsl:include> XSL ,
<xsl:variable>, <xsl:param>
가 , <xsl:choose>, <xsl:if>,
<xsl:for-each> 가

XSL

<xsl:import href="..." />

xsl

xsl

xsl

import

(8) films
. PC

xsl

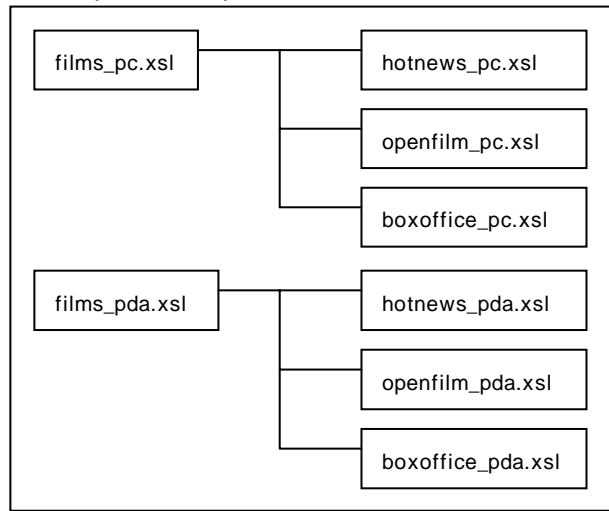
films_pc.xml

PDA

films_pda.xml

xsl

_pc.xml _pda.xml



(8)

XSL

```

<?xml version="1.0"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Tr
ansform">
<xsl:import href="./hotnews_pc.xml"/>
<xsl:import href="./openfilm_pc.xml"/>
<xsl:import href="./boxoffice_pc.xml"/>
<xsl:output method="html"
indent="yes" encoding="EUC-KR"/>
<xsl:template match="films">
<html>
( )
<!-- Hot News -->
<xsl:apply-templates select="hotnews"/>
( )
</html>
</xsl:template>
<xsl:template match="hotnews">
<xsl:apply-imports/>
//import hotnews_pc.xml
</xsl:template>
( )
</xsl:stylesheet>

```

```

( 9) <xsl:import>
      (films_pc.xml)

( 9) <xsl:import>, <xsl:apply-imports>
      xsl          films_pc.xml
      hotnews_pc.xml, openfilm_pc.xml,
      boxoffice_pc.xml import apply-
      templates      apply-imports
      import xsl
      ,
      DTD XSL
      ,
      <xsl:if>

```

```

<xsl:template match="boxoffice">
  <table width="169" cellpadding="0"
        cellspacing="0" border="0">
    <tr>
      <xsl:if test="@category = 'koreabox'">
        <td></td>
      </xsl:if>
      <xsl:if test="@category = 'usabox'">
        <td></td>
      </xsl:if>
    </tr>
  </td>
</xsl:template>

```

(10) <xsl:if> (boxoffice_pc.xml)

(10) <xsl:if>
[국내 박스오피스](#) (title_r_boxoffice.gif)
[미국 박스오피스](#) (title_a_boxoffice.gif)
 boxoffice_pc.xml

5.3 php, sablotron XSLT Processing

```

php          sablotron XSLT
            wrapper
xslt_create() xslt_process()

```

```

XSLT
xslt_process() xslt_create()
              xml , xsl

XSLT
xslt_errno()  xslt_error()

xslt_free()   xslt

```

```

<?php
  // XSLT Process
  $xslt_proc = xslt_create();
  //          xslt_process
  if ($device == "pda")
    $xslt_result = xslt_process($xslt_proc,
                                "films.xml", "films_pda.xml");
  else
    $xslt_result = xslt_process($xslt_proc,
                                "films.xml", "films_pc.xml");
  if (!$xslt_result) {
    echo "error is ". xslt_error($xslt_proc);
    echo " error code is ".
          xslt_errno($xslt_proc);
  }
  // XSLT Process
  xslt_free($xslt_proc);

  //
  echo "<pre> \n";
  echo $xslt_result;
  echo "</pre> \n";   ?>

```

(11) XSLT (films.php)

(11) php XSLT

```

xsl
XSLT          films.php

```

5.4 PC PDA

PC PDA



(12) PC

(12) (1)
가 PC



(13) PDA

(13) (2) PDA

(12) (13)

xml

xsl

, 가

6.

XML

XSLT

XSL

HTTP WAP
m-HTML, s-HTML, c-HTML

PC PDA

XSLT

XSLT
wrapper

XML

가

XML

XHTML basic,

XML

HTTP

, XML

Open Source

, XML

php extension

expat sablotron

Xlink

가

XML

XSL

- DTD
XML
가
XML
가
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