

## Department of Electronic Engineering

### City University of Hong Kong

#### **Mini-Project – Interactive Blog Design**

Course	: EE
Module Code	: EE4213
Module Name	: Human-Computer Interaction
Location	: P1406 – Student Terminal Room (STR)
Time	: Weeks 3 and 4 Tuesday, 9:30a.m. – 12:20p.m. for L01 Wednesday, 9:30a.m. – 12:20p.m. for L02 Thursday, 6:30p.m. – 9:20p.m. for L61
Semester	: A
Lecturer	: H. C. So

#### **Objectives:**

- Learn extensible hypertext markup language (XHTML)
- Learn JavaScript with exploring Microsoft Speech software development kit (SDK) 5.1
- Learn PHP
- Learn MySQL database with the use of phpMyAdmin
- Develop an interactive blog to experience interaction design process

#### **List of Equipment and Software:**

1. Microsoft Speech SDK 5.1
2. Microsoft Internet Explorer 6.0 or later
3. Apache 2.2.3
4. PHP 5.1.6
5. MySQL 5.0.24a
6. Windows XP-based PC with Speakers

#### **Grouping and Schedule:**

- **Each student** is required to submit a **hardcopy** informal report which contains answers to questions which have been underlined in this manual on **Week 5**
- Students are required to form groups of 4 by **Week 3**
- Student's workload at each group should be evenly distributed
- **Each group** is required to
  - Produce a draft version of your blog on **Week 10**
  - Give a 15-minute presentation for your blog on **Week 13**
  - Submit a **hardcopy** blog design report with  $\leq 20$  pages (do not include source codes) on **Week 13**

## **Background:**

### **A. XHTML and JavaScript [1]**

The hypertext markup language (HTML) was developed in late 1980s by Tim Berners-Lee to allow scientists to exchange documents in a standard format. Although HTML is very popular nowadays, the standards body for Web work, namely, the World Wide Web Consortium (W3C) [2], has announced that there will be no further HTML standards but all future standards will be designed for extensible hypertext markup language (XHTML).

XHTML in common with HTML is a markup language which allows you to specify the format and appearance of Web pages. However, XHTML has several important advantages over HTML:

- One of the main problems with HTML is that different browsers such as Internet Explorer (IE), Mozilla Firefox, Safari and Opera, support different and incompatible versions of HTML, and as a result Web pages may appear to be different depending on the browser that is used. While XHTML can overcome this problem.
- HTML documents contain the format of the documents as well as its structure, such as the fonts and colours used. While XHTML uses style sheets which separate these formatting elements from the description of document structure, which makes it easier to ensure a common rendering on different browsers and platforms.

A technology which is often misunderstood is JavaScript. It has some syntactic similarities to Java, but their capabilities are quite different: Java is a general, object-oriented programming language which supports multi-threaded code, networking and graphics while JavaScript is a scripting language and does not support the items listed for Java but can interact with the browser and XHTML.

The development of XHTML is inextricably linked with JavaScript. Although you can create form based applications in XHTML, the addition of JavaScript gives you much greater flexibility and allows you to create more interactive documents.

### **B. Speech Engines [3]**

At around 1999, most speech applications had dedicated functions. Some were command-and-control systems that allowed users to control an operating system, some were dedicated dictation packages and some were screen readers that provided text-to-speech output. However, the field has been rapidly changing and the leading commercial speech programs are now sold as suites that combine all of these functions. For example, IBM's ViaVoice [4] is a speech suite available in the market. Apart from the commercial products, many companies [5]-[6] offer speech development tools as well. Among them, Microsoft Research has developed the Microsoft Speech software development kit (SDK) and the latest version is 5.1, which can be freely downloaded at [5]. Basically, the Microsoft Speech SDK 5.1 is a developer kit for the Microsoft Windows environment. Tools, information, sample engines and applications are provided to help you integrate and optimise your speech recognition and speech synthesis engines with the new Microsoft Speech application programming interface 5 (SAPI 5). You can use C/C++, Visual Basic as well as scripting languages for program development in the SDK. Apart from English, the SDK also supports Japanese and simplified Chinese.

### C. PHP [7]-[9]

PHP, which originally stood for Personal Home Page, now means PHP Hypertext Preprocessor. PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML. It is a server-side language which means that the script is run on your Web server but not on the user's browser and thus there is no worry about any compatibility issues. Much of its syntax is borrowed from C, Java and Perl with a couple of unique PHP-specific features thrown in. The goal of the language is to allow Web developers to write dynamically generated pages quickly. A detailed description of the advantages of PHP can be found in [9].

PHP scripts start with <? and end with ?>. The <? is called an opening tag, while the ?> is called a closing tag. You can insert the server-side scripts anywhere in Web pages, even inside HTML tags. Since additional processing on the PHP scripts is required, not all servers support PHP. In this project, an Apache 2 server with PHP 5 will be provided for the blog development.

### D. MySQL Database & phpMyAdmin [7]-[10]

SQL stands for Structured Query Language, which is the most common language used to access databases. MySQL is a relational database management system, which means that it stores data in separate tables rather than putting all the data in one big area. This adds flexibility, as well as speed. In fact, the MySQL database server is the most popular open source database in the world.

phpMyAdmin is a tool written in PHP intended to handle the administration of MySQL over the Web. Currently it can create and drop databases, create/drop/alter tables, delete/edit/add fields, execute any SQL statement, manage keys on fields, manage privileges and export data into various formats. This tool makes it easy to create database driven sites with almost no knowledge of the SQL code. It is noteworthy that many resources for XHTML, JavaScript, PHP, MySQL and phpMyAdmin can be found in our library.

### E. Blog

Blog, which is the shortened name for Web log, is a type of Web sites where entries are made and displayed in a reverse chronological order. Blogs often provide commentary or news and information on a particular subject, such as food, politics, or local news while some are personal online diaries. A typical blog combines text, images, and links to other blogs, Web pages, and other media related to its topic. Most blogs are primarily textual although some focus on photograph, videos and/or audio. Many blog examples can be found in Blogger, Xanga, Yahoo!BLOG, Windows Live Spaces and MySinaBlog.

## **Procedure**

### A. XHTML

1. Browse Figures 1 and 2 at [11]. Apart from the text content, write down one major difference between the two Web pages.
2. Observe the source files, namely, "01HelloHTML.htm" and "02FirstWithHead.htm" which correspond to Figures 1 and 2, respectively. This can be achieved by using the "View Source" function in IE. State one difference between HTML and XHTML.

3. The file "02FirstWithHead.htm" is written in XHTML. Check if the file is a valid XHTML document using [11]. What is the result of the validation?
4. Modify "01HelloHTML.htm" to make it a valid XHTML file. What is the key step in the modification?
5. An important feature of XHTML is that it uses *styles* to control format and layout of pages. Browse Figure 3 at [11] and view the corresponding source file. Describe the font format for the heading tag <h2>.
6. Apart from defining exactly the font format of the heading tags, we can take advantage of *inheritance*. Browse Figure 4 at [11] and view the corresponding source file. Observe the inheritable properties which include color, font-family, font-size, font-weight and text-align. Describe the font format for the heading tag <h2> using the style sheet "Style1.css".
7. View Figures 3 and 4 at different "Text Size" in IE. Suggest one advantage of using inheritance.
8. Construct a style sheet named "Style2.css" which has the following specifications:
  - h1: 4 times body text size, centered, Arial Black, fallback to Arial, then sans-serif, green text color
  - h2: 2 times body text size, Comics Sans MS, fallback to Arial, then sans-serif, left aligned
  - h3: 1.5 times body text size, Arial falling back to sans-serif, italic (Use font-style instead of font-weight)
  - body: default size, Georgia, falling back to Times New Roman, then serif, yellow background color, blue text color

For the color assignment, use the code "rgb(x%, y%, z%)" where x, y and z range from 0 to 100 which indicate the percentages of red, green and blue, respectively. Compose a short XHTML code to verify the style sheet. Write down your XHTML code.
9. Browse Figures 5 to 7 at [11] to observe simple hyperlink construction.
10. Examples of unordered, ordered, definition and nested listing can be found in Figures 8 to 12 at [11]. After examining them, construct a XHTML Web page with the following layout:

## Disciplines Contribute to HCI

### A. Academic Disciplines

1. Computer Science
  - Develop computer programming languages
  - Develop computer system architectures
2. Engineering
  - Provide faster and cheaper equipment
3. Linguistics and Artificial Intelligence
  - Speech synthesis and recognition
  - Natural language processing
4. Psychology
  - Provide information about human mental capabilities
5. Ergonomics
  - Provide information about human physical capabilities
6. Sociology
  - How people interact in groups

### B. Design Practices

1. Graphic Design
2. Product Design
3. Artist Design
4. Industrial Design
5. Film Industry

11. Browse “DDMmusic.htm” at [11] and adjust the parameters in the corresponding style sheet. What do the properties border-style, border-width, padding and margins control? (Hint: border-style options include none, dashed, dotted and double)
12. Browse Figure 17 at [11] which is an on-line music survey. After examining the corresponding source file, design an on-line sport survey which at least contains the following questions:
  - sex
  - age range
  - education level
  - marital status
  - preference of indoors or outdoors
  - sport types (e.g., football, badminton, tennis, etc.)
  - activity frequency

**Show your on-line sport survey to the lecturer for assessment on Week 4.**

## B. Text-to-Speech and JavaScript

1. The speech SDK has already been installed in the computers at the Student Terminal Room (STR). (In case it is not, download the Microsoft Speech SDK 5.1 at [5]. You only need to get the file named “SpeechSDK51.exe”. Follow the instructions for the SDK installation.) Explore the applications in the SDK 5.1 and the source codes which may be useful for the project. See what the suite can do and support. In particular, you should go to “Microsoft Speech SDK 5.1 Help” and “Simple TTS DHTML” in “Web Samples”. Note that the source file “SimpleTTS.html” is written in JavaScript, but it is an invalid XHTML document. Go to [13]. What do you hear? (In case of error or no response, try the following: click “Tools” → Click “Internet Options” → Click “Security” → Click “Custom Level” → Change the option of “Initialize and script ActiveX controls not marked as safe” from “Disable” to “Enable”.) If IE has restricted the HTML file from showing its active content, you should choose “Allow Blocked Content”.
2. Download the E-content at [14] and then unzip the file into the computer hard disk. Investigate the files “firstjavascript.html” and “mystyle.css” in Chapters 11. From the first file, you can see the JavaScript in the source file. Note that immediately after the opening <script> tag you need to insert the <!-- and immediately before the closing </script> tag you need to insert // -->. Use IE to browse “firstjavascript.html”. What do you see?
3. Explore the files “hello.html” and “surfacearea.html” in Chapter 11 of [14] which employ functions. Basically, a function is a block of code which starts with the reserved word function and encloses the lines of code within a {}. If there is a particular sequence of program instructions that you are going to use more than once, those lines can be placed within a function and that function can be called whenever you want to use it. Describe the usages of these two files.

4. The if, else and else if statements can allow your JavaScript program to do different things depending on the value of data. Examine the file “ifelsestatement.html” in Chapter 12 of [14]. What do you expect to see if your browser is Opera?
5. Extract the file “the &&operator.html” in Chapter 12 of [14]. Change “memory” from 666 to 128. What do you see? Do you think that there is a logical problem? If so, suggest a way to fix it. Apart from “ifelsestatement.html” and “the &&operator.html”, notice that Chapter 12 contains other JavaScript language examples as well.
6. Browse the file “navigator.html” in Chapter 13 of [14] which gives some properties of the navigator object. Describe the property of appName.
7. Browse “navigatormethods.html” in Chapter 13 of [14]. Does IE support Java?
8. Another frequently used JavaScript object is Date. You can create Date objects in a variety of ways and some examples are as follows,

```

theDate = new Date();
theDate = new Date(dateString);
theDate = new Date(year,month,hours,minutes,seconds);

```

Browse “dates.html” in Chapter 13 of [14] which displays date information in different formats. Describe the use of “new Date(2008,7,15,7)”. Remove all the attributes in “new Date” and browse the file again. What do you see?

Other widely used JavaScript objects include Array, String and Math, and their examples can be found in the unzipped files from [14] as well. Methods of the Date, Array, String and Math objects are given in Tables 1 to 4, respectively.

JavaScript also supports event handling so that the interactivity can be increased. After examining “formeventsnumericchecking.html” in Chapter 14 of [14], develop a Web which converts Hong Kong dollar (HKD) to commonly used currencies, namely, Euro (EUR), US dollar (USD), Chinese Yuen (CNY) and Australian dollar (AUD). You should use 1 EUR = 11.46 HKD, 1 USD = 7.79 HKD, 1 CNY = 1.14 HKD and 1 AUD = 6.73 HKD.

**Show your developed Web to the lecturer for assessment on Week 4.**

### C. PHP

1. Construct a PHP file named “hello\_world.php” with the following content:

```

<html>
<head>
  <title>Hello, World!!</title>
</head>
<body>
  <?
    print "Hello, World!! ";
  ?>
</body>
</html>

```

where print "Hello, World!! " is a single line of PHP Script. Use your user name and password to log on the Web server and then upload “hello\_world.php” to your FTP account.

For example, if your user name is 54325432, then you should upload the PHP file to

<ftp://eda.ee.cityu.edu.hk>

and then access the file via

[http://eda.ee.cityu.edu.hk/~54325432/hello\\_world.php](http://eda.ee.cityu.edu.hk/~54325432/hello_world.php)

Note that for ftp, you should create a folder "public\_html" under your home directory and put the uploaded file in it. What do you see when browsing "hello\_world.php" in IE? (It is not suggested to copy and paste the text in this manual to construct your PHP files as there may be spacing problem and misinterpretation of ") Note that the following script gives the same result:

```
<html>
<head>
  <title>Hello, World!!</title>
</head>
<body>
  <?= "Hello, World!! " ?>
</body>
</html>
```

2. To show date information, you can try the following:

```
<html>
<head>
  <title>Date!!</title>
</head>
<body>
  <?= Date("d m y") ?>
</body>
</html>
```

where the function Date provides the current date. The parameters d, m and y correspond to day, month and year, respectively. Construct a PHP file to show the date format of yyyy-mm-dd (e.g., 2008-08-22). Write down the attributes of Date in your PHP file. (Hint: Try capital letters for d, m and y)

3. In PHP, a variable is declared starting with \$:

```
<?
  $number = 1;
?>
```

where \$number is the variable. It is worthy to note that unlike C or Java programming, we do not need to include the variable type because in PHP the type is determined automatically by the runtime interpreter. An example of using variable in the simplest of flow control operation, namely, If-Else statement, is given as follows:

```
<?
  $a = 3;
  $b = 2;
  if($a < $b){
    print "True!! ";
  }
  else{
    print "False!! ";
  }
?>
```

What is the output of the PHP script?

Note that the following code gives the same result:

```
<?
    $a = 3;
    $b = 2;
    ($a < $b) ? print "True!! " : print "False!! ";
?>
```

4. Try the following For-Loop example:

```
<?
    for($i = 2; $i <= 5; $i++){
        print "intNum = ".$i."<br />";
    }
?>
```

What do you see?

5. The next flow control statement to be investigated is the Do While-Loop. Try the following example. Write down your observation.

```
<?
    $i = 0;
    while($i < 5){
        print "while i = ".$i."<br />";
        $i = $i + 1;
    }
?>
```

6. Functions and Includes of PHP scripts are introduced one by one as follows.

```
<?
function Mult($A, $B){
    $Mult = $A * $B;
    return $Mult;
}
?>
```

```
<?
print Mult (4, 3);
?>
```

What is the output?

7. The use of Include is to insert the content of one file into a PHP file before the server executes it. The format is `<? include("filename.extension"); ?>`. Construct a text file "textFile.txt" with the following content:

```
<?
    print "Text File is Imported!!"
?>
```

Then construct a PHP file "include.php" with the following content:

```
<html>
<body>
<? include("textFile.txt"); ?>
</body>
</html>
```

What do you see when browsing the PHP file?

8. In a XHTML file, we can use PHP to process user input. An example is given as follows. Consider a HTML form with the following scripts:

```
<html>
```

```

<head>
<title>htmlForm</title>
</head>
<body>
  <form method="post" action="post.php"> <!-- "get.php" in the next
section -->
    <p>First Name: <input type="text" name="FirstName"></p>
    <p>Last Name: <input type="text" name="LastName"></p>
    <input type="submit" value=" Submit">
  </form>
</body>
</html>

```

A PHP file for processing can be:

```

<?
print $_POST["FirstName"];
print " ";
print $_POST["LastName"];
?>

```

Note that the post method is used in the form tag of the HTML file. Another method is get. In the post method, the form data is to be encoded by a browser into a URL while the get method means that the form data is to appear within a message body. More descriptions regarding the differences between the two methods can be found in [15].

With the use of the two example files, write a XHTML file called "post.html" and a PHP file with file name "post.php" to show both the First Name and Last Name (begins with Last Name) that are inputted from the XHTML form.

9. Another approach is to use Query String. You might have seen URL link likes the one below:

<http://www.ie.cuhk.edu.hk/index.php?id=74>

All the information that the site needs is encoded in the string "id=74". This is known as the Query String and forms part of an URL.

You can also pass multiple values, like:

<http://www.ie.cuhk.edu.hk/index.php?id=74&FirstName=Peter&LastName=Yum>

To access the data contained in the variable "FirstName" above, you can use:

```

<?
print $_GET["FirstName"];
?>

```

The Query String collection passes via a form with method" = "get". However, there is a limit to the amount of data that can be passed on through the Query String and you are expected to use a form for more data.

Write a HTML file and a PHP file to give the same output of the "post.php".

10. Image gallery function is a common blog feature nowadays. A PHP gallery function, `bolGallery`, is studied as follows. Detailed information about this function is found at [16] Extract "PHP\_image.zip" at [13] and follow [16] to install the gallery function in your account. What do you see by browsing `image.php`? What are the meanings for the parameters in the function `bolGallery("./", 5, 80, 50)`? Note that other similar functions available in the Web may also be used to enhance your blog design.

## D. MySQL and phpMyAdmin

MySQL database is a relational database and the information is organized in the form of tables. An example is given as follows.

record

Id	name
50258640	Raymond
50258191	Andy
50247626	Kin

where record is the name of the table while id and name are column names of the table.

We will create this table shortly. Common commands to manage tables include:

CREATE	– create a database or a table
DROP	– delete a database or a table
SELECT	– retrieval data from a table
WHERE	– define conditions, used with SELECT, INSERT
INSERT	– insert data into a table
UPDATE	– update data in a table
DELETE	– delete data in a table

In this section, phpMyAdmin will be used to process these commands and you can login at:

<http://eda.ee.cityu.edu.hk/phpmyadmin>


with your group account name and password.

1. A database named school has already been created because you do not have the privileges to **Create** and **Drop** a database.


Nevertheless, the steps to **Create** and **Drop** a database are illustrated as follows:

Create a database named school by entering it into **Create new database** field. To do so, input school and then press the “Create” button. You will see the message “Database school has been created.” and the SQL statement:


```
CREATE DATABASE `school` ;
```

Press “Drop” button  to delete the school database, then the SQL statement will show:

```
DROP DATABASE `school`
```


Note that you can also create the database using the statement “CREATE DATABASE `school` ;” in SQL page as follows. Press “SQL” button  to popup a SQL query page, paste the statement in the text box and then press “Go” button. Similarly, you can paste the statement of “DROP DATABASE `school` ” into the SQL page to delete a database.

2. The steps of Create and Drop a table are illustrated using the following example.

A database named schoolXX has been created for group XX. Using this database and your student ID, enter SQL query page  with the statement:

```
CREATE TABLE record_54325432 ( `id` INT( 8 ) NOT NULL, `name`
VARCHAR( 100 ) NOT NULL);
```

assuming that your ID is 54325432. Note that INT and VARCHAR are the data types of the columns, INT(8), VARCHAR(100), and NOT NULL correspond to integer of maximum 8 digits, string with maximum 100 characters and data not filled with “NULL”, respectively.

Then press “Go” button. Click the table’s name record\_54325432 (near ) on the left hand side of the menu, then the properties of the table will be shown.

To Drop a table, try



```
DROP TABLE record_54325432
```

using the SQL query page again. The table name will be disappeared on the left menu.

3. The steps of Insert data into a database are illustrated using the following example.

First resume the previous table. With the created record\_54325432 table, try the following statement:

```
INSERT INTO record_54325432 ( `id` , `name` ) VALUES ( '50258640',
'Raymond' );
```

Click the table name record\_54325432 (near ) on the left hand side of the menu and then click “Browse” button .

Similarly, insert the names Andy and Kin and their id from the previous table. Do you see that the data have been inserted?

4. The usages of Select and Where are illustrated as follows.

In Q.3, you will also see the SQL statement

```
SELECT * FROM `record_54325432`
```

where “\*” means all columns are selected. You can also see the same statement in the “SQL query” window.

To show a specific column “id”, try

```
SELECT id FROM record_54325432;
```

What is the result?

To show a specific row, try:

```
SELECT * FROM record_54325432 WHERE name = 'Kin';
```

What is the result?

To show more than one specified rows, try:

```
SELECT * FROM record_54325432 WHERE id = 50258640 OR id = 50258191;
```

What is the result?

Try:

```
SELECT name FROM record_54325432 WHERE name = "Andy" OR id =50258191;
```


What is the result?

Note that WHERE has the following comparison conditions:

=	Equal to
!=	Not equal to
>	Greater than
> =	Greater than or equal to
<	Less than
<=	Less than or equal to

5. Update can change data in a database. Try

```
UPDATE record_54325432 SET name = "Carol" WHERE id = 50258640;
```


Click the table name record\_54325432, and then click "Browse"  **Browse** button.

What is the result?

Change the name from "Carol" back to "Raymond" by writing a SQL statement. Write down your SQL statement.

6. Delete can remove rows in a database. Try:

```
DELETE FROM record_54325432 WHERE id = 50258191;
```

Click the table name record\_54325432, and then click "Browse"  **Browse** button.

What is the result?

For more information on SQL statements, please visit [17] and there are useful tutorials and examples.

## E. Blog Design

After gaining background knowledge in XHTML, JavaScript and PHP, the final goal is to develop an interactive blog so that you can experience the human computer interaction design process. The design flexibility of the blog is very high and you should use your own

*creativity, programming skills, interaction design principles* you have learned to achieve the task. However, your developed interface should possess the following features:

- You can write your own messages in your blog with password protected
- Your classmates and friends can visit your blog to write comments
- Speaking features should be included

Other suggestions, although not necessary, are:

- All of your files should be of valid XHTML
- Speak a welcome message to the visitor after he/she has inputted his/her name once entering your blog system
- Record the date and time of the blog entries and replies
- Implement a function to search blog entries and replies

Try your best to promote your blog to your classmates and friends in order to get their feedbacks well before Week 13. You should then carry out modifications based on their comments, if appropriate.

**Nevertheless, you should provide the URL of your prototype blog on Week 10. Assessment of this blog system is mainly based on usability and so you should explain why it is usable in the report. Other assessment factors include time management, creativity and functionality of your design.**

To facilitate your design, a simple blog example is given as a ZIP file in [18]. There are five PHP files to construct this simple blog:

(i)	index.php	Layout to show blog
(ii)	config.php	MySQL configurations
(iii)	functions.php	To show calendar, blog entries and replies
(iv)	blog.php	To insert blog entries and replies into database
(v)	addedit.php	Layout to show Add / Edit Form

To install the blog, you need to modify “config.php” with your own configurations.

MySQL is required to store blog entries and replies. In the sample blog, there are two tables inside the database “hciDB”:

entry

Column name	entry_date	Entry_title	Entry_content
Data Type	date	varchar(255)	Text
Default value	0000-00-00		
Other property	NOT NULL	NOT NULL	NOT NULL

reply

Column name	Entry_date	reply_date	Reply_name	Reply_email	reply_content
Data Type	Date	datetime	varchar(255)	varchar(255)	text
Default value	0000-00-00	0000-00-00 00:00:00			
Other property	NOT NULL	NOT NULL	NOT NULL	NOT NULL	NOT NULL

To create the above database and tables, please paste the SQL statements from the file “hciDB.sql” with the use of phpMyAdmin. For more information about mySQL, please visit [19].

1. Investigate the file “addedit.php”. There are 3 functions: PrintDate, PrintTitle and PrintEntry.
  - (i) Which PHP file defines these functions?
  - (ii) These functions are called by other files. How to achieve this?
  
2. Investigate the file “blog.php”. What will be returned by the functions in the SQL statements (Suppose the current date is 2008-9-11 and time is 17:18:19 )?
  - (i) YEAR
  - (ii) MONTH
  - (iii) DAYOFMONTH
  - (iv) NOW
  
3. Investigate the file “functions.php”.
  - (i) For the SQL statement DATEFORMAT, what is the meaning of %e, %b and %Y? You can visit [20] for more information.
  - (ii) What are the usages of functions “htmlspecialchars”, “list” and “nl2br”?

**You should decide to develop your blog based on the given example or not. Moreover, some up-to-date features may not be provided in our departmental PHP hosting service. If you would like to include advanced features which are not supported in the campus hosting server, you can try free commercial hosting providers such as [21]-[24], where newer versions of PHP interpreters are used.**

### Advanced Study

Apart from the speech synthesis engine, the SDK also has the speech recognition engine. Before evaluating the speech recognition function, it is necessary to complete a training process for higher recognition accuracy. During training, you will read some predetermined text which the application can optimize for your voice and speech pattern. Since the laboratory environment will be noisy at the laboratory sessions, it is suggested to perform the training under a noise-free environment. You can contact Mr. C.Y. Cheng at Student Terminal Room (STR) for the training arrangement, if needed. Or you can try the speech recognition engine at home. An advanced study is to investigate how to incorporate the speech recognition applications in the blog system.

### References:

- [1] J. Cowell, *Essential XHTML Fast*, Springer, 2003
- [2] <http://www.w3c.org>
- [3] S. Weinschenk and D. T. Barker, *Designing Effective Speech Interfaces*, Wiley, 2000
- [4] [http://www-306.ibm.com/software/pervasive/embedded\\_viavoice/](http://www-306.ibm.com/software/pervasive/embedded_viavoice/)
- [5] <http://www.microsoft.com/downloads>
- [6] <http://www.nuance.com>
- [7] E. Naramore, *Beginning PHP5, Apache, and MySQL Web Development*, Wiley, 2005
- [8] L.E. Ullman, *PHP and MySQL for Dynamic Web Sites*, Pearson Education, 2005
- [9] [http://www.webdevelopersjournal.com/articles/why\\_php.html](http://www.webdevelopersjournal.com/articles/why_php.html)
- [10] J.C. Meloni, *Sams teach yourself PHP, MySQL and Apache all in one*, Sams, 2005
- [11] [http://www.prenhall.com/mccracken\\_wolfe/students/appendix.htm](http://www.prenhall.com/mccracken_wolfe/students/appendix.htm)
- [12] <http://validator.w3.org>

- [13] <http://www.ee.cityu.edu.hk/~hcs0>
- [14] <http://www.springeronline.com/sqw/cda/frontpage/0,11855,3-40109-22-2277114-0,00.html> (If unsuccessful, please use Google search with query “Essential XHTML Fast Source”)
- [15] <http://www.cs.tut.fi/~jkorpela/forms/methods.html>
- [16] <http://bolgallery.free.fr/>
- [17] <http://www.w3schools.com/sql/default.asp>
- [18] <http://www.ee.cityu.edu.hk/~hcs0/ee4213.html>
- [19] <http://dev.mysql.com/doc/refman/5.0/en/>
- [20] <http://dev.mysql.com/doc/refman/5.0/en/date-and-time-functions.html>
- [21] <http://www.40gigs.com/>
- [22] <http://www.110mb.com/>
- [23] [http://www.100webpace.com/web\\_hosting/free\\_plan.html](http://www.100webpace.com/web_hosting/free_plan.html)
- [24] <http://www.trap17.com/>

Method	Description
<i>getDate()</i>	Returns the day of the month of the Date object.
<i>getDay</i>	Returns the day of the week.
<i>getFullYear()</i>	Returns the year in four digits.
<i>getHours()</i>	Returns the hour.
<i>getMilliseconds()</i>	Returns the milliseconds.
<i>getMinutes()</i>	Returns the minutes.
<i>getMonth()</i>	Returns the month.
<i>getSeconds()</i>	Returns the seconds.
<i>getTime()</i>	Returns the internal representation of the Date object in milliseconds.
<i>getTimeZoneOffset()</i>	Returns the time difference in minutes between the time and the GMT time.
<i>getUTCDate()</i>	Returns the day of the month in universal time.
<i>getUTCDay()</i>	Returns the day of the week in universal time.
<i>getUTCFullYear()</i>	Returns the year in four digits, in universal time.
<i>getUTCHours()</i>	Returns the hour in universal time.
<i>getUTCMilliseconds()</i>	Returns the milliseconds in universal time.
<i>getUTCMinutes()</i>	Returns the minutes in universal time.
<i>getUTCMonth()</i>	Returns the month in universal time.
<i>getUTCSeconds()</i>	Returns the seconds in universal time.
<i>setDate(dayOfMonth)</i>	Sets the day of the month.
<i>setFullYear(year)</i>	Sets the year.
<i>setHours(hour)</i>	Sets the hour.
<i>setMilliseconds(ms)</i>	Sets the milliseconds.
<i>setMinutes(min)</i>	Sets the minutes.
<i>setMonth(month)</i>	Sets the month.
<i>setSeconds(sec)</i>	Sets the seconds.
<i>setTime(ms)</i>	Sets the time in milliseconds using the internal representation of the Date object.
<i>setUTCDate(dayOfMonth)</i>	Sets the day of the month in universal time.
<i>setUTCFullYear(year)</i>	Sets the year field in universal time.
<i>setUTCHours(hour)</i>	Sets the hours field in universal time.
<i>setUTCMilliseconds(ms)</i>	Sets the milliseconds in universal time.
<i>setUTCMinutes(min)</i>	Sets the minutes in universal time.
<i>setUTCMonth(month)</i>	Sets the month in universal time.
<i>setUTCSeconds(sec)</i>	Sets the seconds in universal time.
<i>toGMTString()</i>	Returns a string representing the date in GMT.
<i>toLocaleString()</i>	Returns a string representing the date in the local time.
<i>toString()</i>	Returns a string representation of the date.
<i>toUTCString()</i>	Returns a string representation of the UTC date.
<i>valueOf()</i>	Converts the date to milliseconds using the internal representation.

Table 1: Methods of Date object

Method	Description
<i>concat(value,...)</i>	Creates and returns an array after adding specified values to an existing array. The original array is unchanged.
<i>join()</i> <i>join(separator)</i>	Converts each element into a string and then concatenates them. If a separator is not specified a comma is used. The original array is unchanged.
<i>pop()</i>	Deletes the last element of an array and returns the resulting array.
<i>push(value,...)</i>	Adds elements to an array and returns the resulting array.
<i>reverse()</i>	Reverses the order of elements in an array.
<i>shift()</i>	Removes the first element of an array and returns it.
<i>slice(start, end)</i>	Returns the portion of an array between a start and finish index. A negative index specifies a position from the end of the array. The original array is unchanged.
<i>sort()</i> <i>sort(orderfunction)</i>	Returns the array sorted by numerical or alphabetical order.
<i>splice(start, deleteCount, value..)</i>	Deletes zero or more elements, starting at the specified starting position and replaces them by a list of values.
<i>toString()</i>	Converts the array to a string.
<i>unshift(value,...)</i>	Inserts a set of values at the start of the array.

Table 2: Methods of Array object

Method	Description
<i>anchor(name)</i>	Returns the string enclosed within an XHTML <i>a</i> element.
<i>big()</i>	Returns the string enclosed in a <i>big</i> element.
<i>blink()</i>	Returns the string enclosed in a <i>blink</i> element.
<i>bold()</i>	Returns the string enclosed in a <i>b</i> element.
<i>charAt(n)</i>	Returns the character at the specified position.
<i>charCodeAt(n)</i>	Returns the Unicode encoding of the character at the specified position.
<i>concat(value,...)</i>	Concatenates two strings to return a single string.
<i>fixed()</i>	Returns a copy of the string in a <i>tt</i> element (that is with a fixed pitch font).
<i>fontcolor(colour)</i>	Returns a copy of the string with a <i>font</i> element specifying the colour.
<i>fontsize(size)</i>	Returns a copy of the string with a <i>font</i> element specifying the font size as a value between 1 and 7.
<i>indexOf(substr)</i> <i>indexOf(substr,start)</i>	Returns the position of the first occurrence of a string within the <i>String</i> object.
<i>italics()</i>	Returns the string enclosed in an <i>i</i> element.
<i>lastIndexOf(substr)</i> <i>lastIndexOf(substr,start)</i>	Returns the position of the last occurrence of a string, passed to the method, within the <i>String</i> object.
<i>link(href)</i>	Returns an <i>a</i> element with the <i>href</i> attribute set to the URL passed to the method.
<i>match(regex)</i>	Carries out pattern matching based on a regular expression passed to the method.
<i>replace(regex,replace)</i>	Carries out a search and replace operation.
<i>search(regex)</i>	Returns the position of a string passed to the method in the <i>String</i> object.
<i>slice(start, end)</i>	Returns the string between the two index positions.
<i>small()</i>	Returns the string enclosed in a <i>small</i> element.
<i>split(delimiter)</i>	Returns an array of strings split on the basis of a delimiting string passed to the method.
<i>strike()</i>	Returns the string enclosed in a <i>strike</i> element.
<i>sub()</i>	Returns the string enclosed in a <i>sub</i> element.
<i>substr(start,length)</i>	Returns a string between a start index and a specified numbers of characters. If the start index is negative it is the position from the end of the string.
<i>substring(start, finish)</i>	Returns a string between a start index and finish index. The start index may not be negative.
<i>sup()</i>	Returns the string enclosed in a <i>sup</i> element.
<i>toLowerCase()</i>	Returns a copy of the string in lowercase.
<i>toUpperCase()</i>	Returns a copy of the string in uppercase.

Table 3: Methods of String object

Method	Description
<i>Math.abs(x)</i>	Returns the absolute value.
<i>Math.acos(x)</i>	Returns the arccosine value.
<i>Math.asin(x)</i>	Returns the arcsine value.
<i>Math.atan(x)</i>	Returns the arctangent value.
<i>Math.atan2(y,x)</i>	Returns the arctangent between a point(x,y) and the X axis.
<i>Math.ceil(x)</i>	Returns the closest integer to the value specified.
<i>Math.cos(x)</i>	Returns the cosine of an angle.
<i>Math.exp(x)</i>	Returns the e <sup>x</sup> value.
<i>Math.floor(x)</i>	Returns the value rounded down to the nearest integer.
<i>Math.log(x)</i>	Returns the natural log.
<i>Math.max(a, b)</i>	Returns the larger of two given values.
<i>Math.min(a, b)</i>	Returns the smaller of two given values.
<i>Math.pow(x, y)</i>	Returns the value of x <sup>y</sup> .
<i>Math.random()</i>	Returns a random number between 0.0 and 1.0.
<i>Math.round(x)</i>	Returns the integer closest to the given value.
<i>Math.sin(x)</i>	Returns the sine of the given value.
<i>Math.sqrt(x)</i>	Returns the square root of the given value.
<i>Math.tan(x)</i>	Returns the tangent of the given value.

Table 4: Methods of Math object