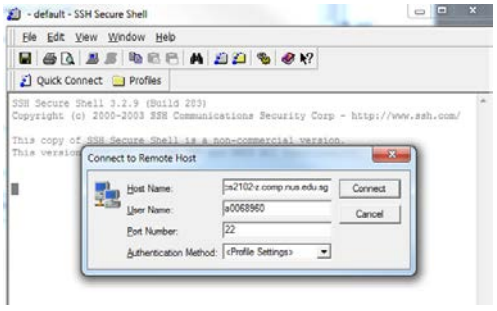
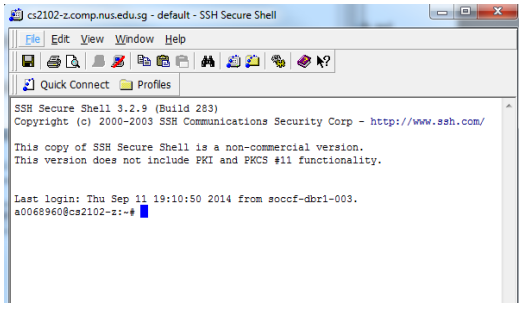
CS2102 Database Systems
PHP Handout

Relational DBMS supports an interactive SQL interface where users can directly enter SQL commands. In practice, we often encounter situations where we need the flexibility of a general purpose programming language in addition to the data manipulation facilities provided by SQL. For example, we may want to integrate a database application with a nice graphical user interface, or other existing applications.

PHP is a server-side, HTML embedded scripting language. It is used to program active Web pages. An HTML page contains PHP code inside the <?php> tags. This code is executed by the server before the page is delivered to the client. You can access your database from PHP. This PHP handout provides the basic steps to create a PHP file that interacts with the Oracle database in your zone account.

1. Login to zone account
   - Launch (double click) the application "SshClient.exe" in the lab desktop[1].
   - Click on the button "Quick Connect" on the toolbar of the application.
   - Input the below information in the pop-up dialog, and press button "Connect"
     - ❖ Hostname: cs2102-i.comp.nus.edu.sg
     - ❖ Username: your nusnet id
     - ❖ Password: your nusnet psw
   - You are now logged in the command shell of the zone account.



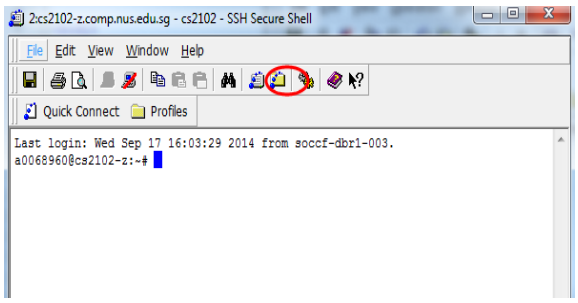


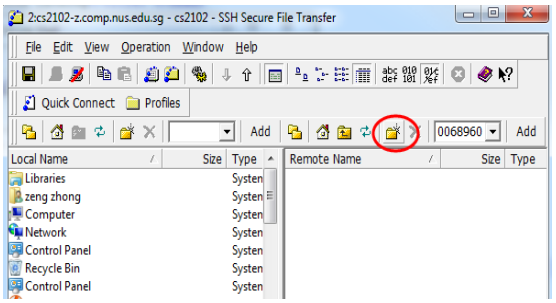
[1] If you want to use your own machine, please install the software SSH Secure Shell (SSHClient) and connect to the SoC network first.

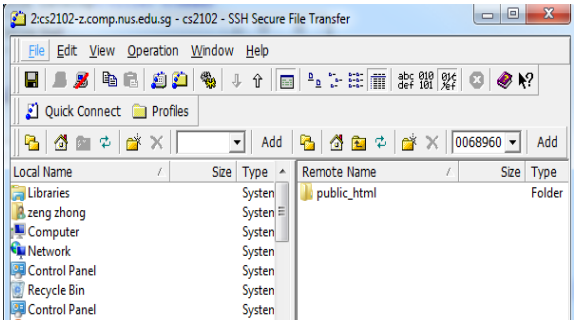
2. Create a PHP file called Book.php that contains the following HTML code to design the user interface and widgets (buttons, drop-down menu etc.) of the web application.

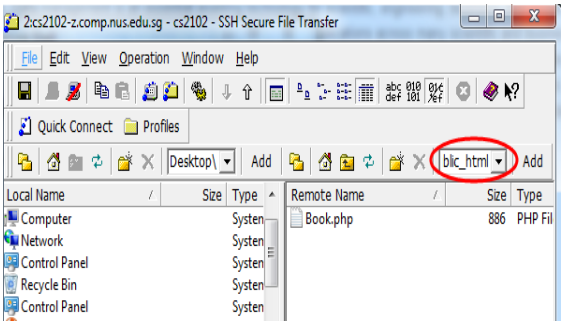
```
<html>
<head> <title>Demo Online Book Catalog</title> </head>

<body>
<table>
<tr> <td colspan="2" style="background-color:#FFA500;">
<h1> Demo Book Catalog</h1>
</td> </tr>

<tr>
<td style="background-color:#eeeeee;">
<form>
    Title: <input type="text" name="Title" id="Title">

    <select name="Language"> <option value="">Select Language</option> </select>

    <input type="radio" name="Format" id="Format1" value="hardcover">hardcover
    <input type="radio" name="Format" id="Format2" value="paperback">paperback

    <input type="submit" name="formSubmit" value="Search" >
</form>
</td> </tr>

<tr>
<td colspan="2" style="background-color:#FFA500; text-align:center;"> Copyright &#169; CS2102
</td> </tr>
</table>

</body>
</html>
```

- You can use Notepad in the desktop PC to create the file, and upload it to your zone account via the SSH Secure Shell File Transfer Window. Put the file Book.php in the directory public_html in your zone account. Create the directory if it does not exist.









- Now you can run the code in your web browser by typing

  http://cs2102-i.comp.nus.edu.sg/~your nusnet id/Book.php

3. The above pure HTML code in Book.php does not access the Oracle database to retrieve book information. PHP scripts are needed to interact with the database. The following code highlights the embedded PHP scripts which connect to the Oracle database, execute an SQL statement and display the results.

```
<html>
<head> <title>Demo Online Book Catalog</title> </head>
<body>
<table>
```

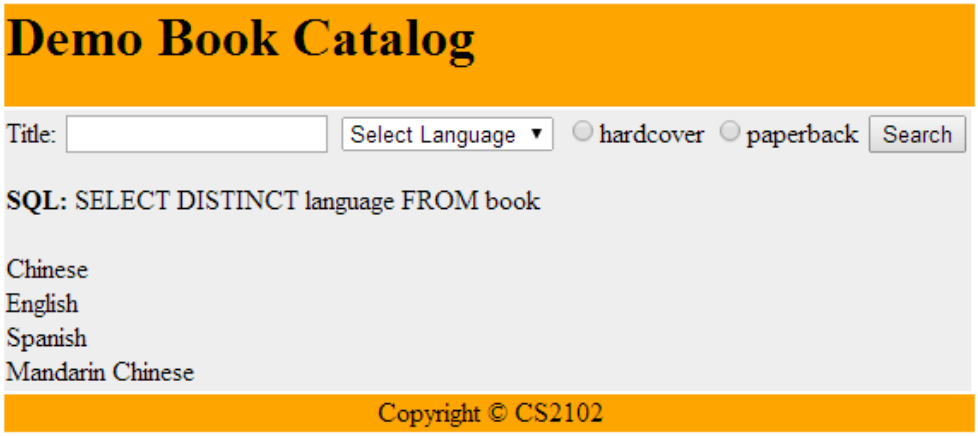
```
<tr> <td colspan="2" style="background-color:#FFA500;">
<h1> Demo Book Catalog</h1>
</td> </tr>

<?php
putenv('ORACLE_HOME=/oraclient');
$dbh = ocilogon('your nusnetid', 'your nusnet psw', ' (DESCRIPTION =
   (ADDRESS_LIST =
     (ADDRESS = (PROTOCOL = TCP)(HOST = sid3.comp.nus.edu.sg)(PORT = 1521))
   )
   (CONNECT_DATA =
     (SERVICE_NAME = sid3.comp.nus.edu.sg)
   )
 )');
?>

<tr>
<td style="background-color:#eeeeee;">
<form>
      Title: <input type="text" name="Title" id="Title">

      <select name="Language"> <option value="">Select Language</option> </select>

      <input type="radio" name="Format" id="Format1" value="hardcover">hardcover
      <input type="radio" name="Format" id="Format2" value="paperback">paperback

      <input type="submit" name="formSubmit" value="Search" >
</form>
<?php if(isset($_GET['formSubmit']))
{
          $sql = "SELECT DISTINCT language FROM book";
          $stid = oci_parse($dbh, $sql);
          oci_execute($stid, OCI_DEFAULT);

          echo "<b>SQL: </b>".$sql."<br><br>";

          while($row = oci_fetch_array($stid)) {
            echo  "$row[0]"."<br>";
          }

          oci_free_statement($stid);
}
?>
</td> </tr>
<?php
oci_close($dbh);
?>
<tr>
```

These PHP codes open a connection to the database

These PHP codes execute an SQL query to retrieve the languages from the Book table when you click on the Search button.

These PHP codes close the connection to the database.

```
<td colspan="2" style="background-color:#FFA500; text-align:center;"> Copyright &#169; CS2102
</td> </tr>
</table>

</body>
</html>
```



4. You can use the results from your query to create a drop-down menu in html.

```
<html>
<head> <title>Demo Online Book Catalog</title> </head>

<body>
<table>
<tr> <td colspan="2" style="background-color:#FFA500;">
<h1> Demo Book Catalog</h1>
</td> </tr>

<?php
putenv('ORACLE_HOME=/oraclient');
$dbh = ocilogon('your nusnetid', 'your nusnet psw', ' (DESCRIPTION =
   (ADDRESS_LIST =
     (ADDRESS = (PROTOCOL = TCP)(HOST = sid3.comp.nus.edu.sg)(PORT = 1521))
   )
   (CONNECT_DATA =
     (SERVICE_NAME = sid3.comp.nus.edu.sg)
   )
 )');

?>

<tr>
<td style="background-color:#eeeeee;">
```

```
<form>
    Title: <input type="text" name="Title" id="Title">

    <select name="Language"> <option value="">Select Language</option>
                <?php
                $sql = "SELECT DISTINCT language FROM book";
                $stid = oci_parse($dbh, $sql);
                oci_execute($stid, OCI_DEFAULT);
                while($row = oci_fetch_array($stid)){
                        echo "<option
value=\"".$row["LANGUAGE"]."\">".$row["LANGUAGE"]."</option><br>";
                }
                oci_free_statement($stid);
                ?>
                </select>

    <input type="radio" name="Format" id="Format1" value="hardcover">hardcover
    <input type="radio" name="Format" id="Format2" value="paperback">paperback

    <input type="submit" name="formSubmit" value="Search" >
</form>

</td> </tr>
<?php
oci_close($dbh);
?>
<tr>
<td colspan="2" style="background-color:#FFA500; text-align:center;"> Copyright &#169; CS2102
</td> </tr>
</table>

</body>
</html>
```

These PHP codes create options for the dropdown menu based on the result of the query.

5. We can also construct an SQL query from user input in the widgets (text box, dropdown menu, radio button). The query is executed when the user clicks on the Search button. The following code displays the results of the constructed query in a table.

```
<html>
<head> <title>Demo Online Book Catalog</title> </head>

<body>
<table>
<tr> <td colspan="2" style="background-color:#FFA500;">
<h1> Demo Book Catalog</h1>
</td> </tr>

<?php
putenv('ORACLE_HOME=/oraclient');
$dbh = ocilogon('your nusnetid', 'your nusnet psw', ' (DESCRIPTION =
   (ADDRESS_LIST =
    (ADDRESS = (PROTOCOL = TCP)(HOST = sid3.comp.nus.edu.sg)(PORT = 1521))
   )
   (CONNECT_DATA =
    (SERVICE_NAME = sid3.comp.nus.edu.sg)
   )
 )');
?>

<tr>
<td style="background-color:#eeeeee;">
<form>
      Title: <input type="text" name="Title" id="Title">

      <select name="Language"> <option value="">Select Language</option>
                  <?php
                  $sql = "SELECT DISTINCT language FROM book";
                  $stid = oci_parse($dbh, $sql);
                  oci_execute($stid, OCI_DEFAULT);
                  while($row = oci_fetch_array($stid)){
                        echo "<option
value=\"".$row["LANGUAGE"]."\">".$row["LANGUAGE"]."</option><br>";
                  }
                  oci_free_statement($stid);
                  ?>
                  </select>

      <input type="radio" name="Format" id="Format1" value="hardcover">hardcover
      <input type="radio" name="Format" id="Format2" value="paperback">paperback

      <input type="submit" name="formSubmit" value="Search" >
</form>
<?php
```

```
if(isset($_GET['formSubmit']))
{
        $sql = "SELECT Title, Authors FROM Book WHERE Title like '%".$_GET['Title']."%' AND
Language='".$_GET['Language']."' AND Format='".$_GET['Format']."'";
        echo "<b>SQL:   </b>".$sql."<br><br>";
        $stid = oci_parse($dbh, $sql);
        oci_execute($stid, OCI_DEFAULT);
        echo "<table border=\"1\" >
        <col width=\"75%\">
        <col width=\"25%\">
        <tr>
        <th>Title</th>
        <th>Authors</th>
        </tr>";


        while($row = oci_fetch_array($stid)) {
          echo "<tr>";
          echo "<td>" . $row[0] . "</td>";
          echo "<td>" . $row[1] . "</td>";
          echo "</tr>";
        }
        echo "</table>";

        oci_free_statement($stid);
}
?>

</td> </tr>
<?php
oci_close($dbh);
?>
<tr>
<td colspan="2" style="background-color:#FFA500; text-align:center;"> Copyright &#169; CS2102
</td> </tr>
</table>

</body>
</html>
```

Obtain user input in widgets

Display the result of query in a table

Reference:

HTML W3C School: http://www.w3schools.com/html/

PHP W3C School: http://www.w3schools.com/php/