UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

SECOND SEMESTER / YEARLY EXAMINATIONS

MAY 2008

PROGRAMME	**BSc (Hons) Computer Science and Engineering/** **BSc (Hons) Information Systems** **Level 2**		
MODULE NAME	**Web Technologies**		
DATE	**Thursday 22 May 2008**	**MODULE CODE**	**CSE 2003Y(3)**
TIME	**9:30–12:30 Hours**	**DURATION**	**3 Hours**
NO. OF QUESTIONS SET	**5**	**NO. OF QUESTIONS TO BE ATTEMPTED**	**5**

INSTRUCTIONS TO CANDIDATES

Answer All Questions.

Answer All Questions.

Question 1

Consider a feedback application that is being developed to collect feedback from students about different modules. The following schema has been defined for the feedback database, implemented in MySQL.

classsizes (classsize, classsizedesc)
feedbacks (email, modulecode, moduleyear, programme, classsize, delivery, labs, Othercomments, moderation)
modules(modulecode, moduledesc)
users(username, pass)

Notes:

- *classsize* and *modulecode* in the *feedbacks* table are foreign keys from the *classsizes* and *modules* tables respectively.
- The *moderation* field contains values 'a' for approved, 'p' for pending, and 'r' for rejected. The default value is 'p'.
- The values for the *classsizes* table are 'a', 'p' , 'f' , 'e' in the *classsize* field for 'adequate', 'poor', 'fair' and 'excellent' respectively in the *classsizedesc* field.
- *Delivery* and *labs* fields are boolean and indicate whether improvements are required in the delivery and labs (a value of 1 indicates that improvement is required)

The following form, *feed.php* is used by students to enter data about the feedback.

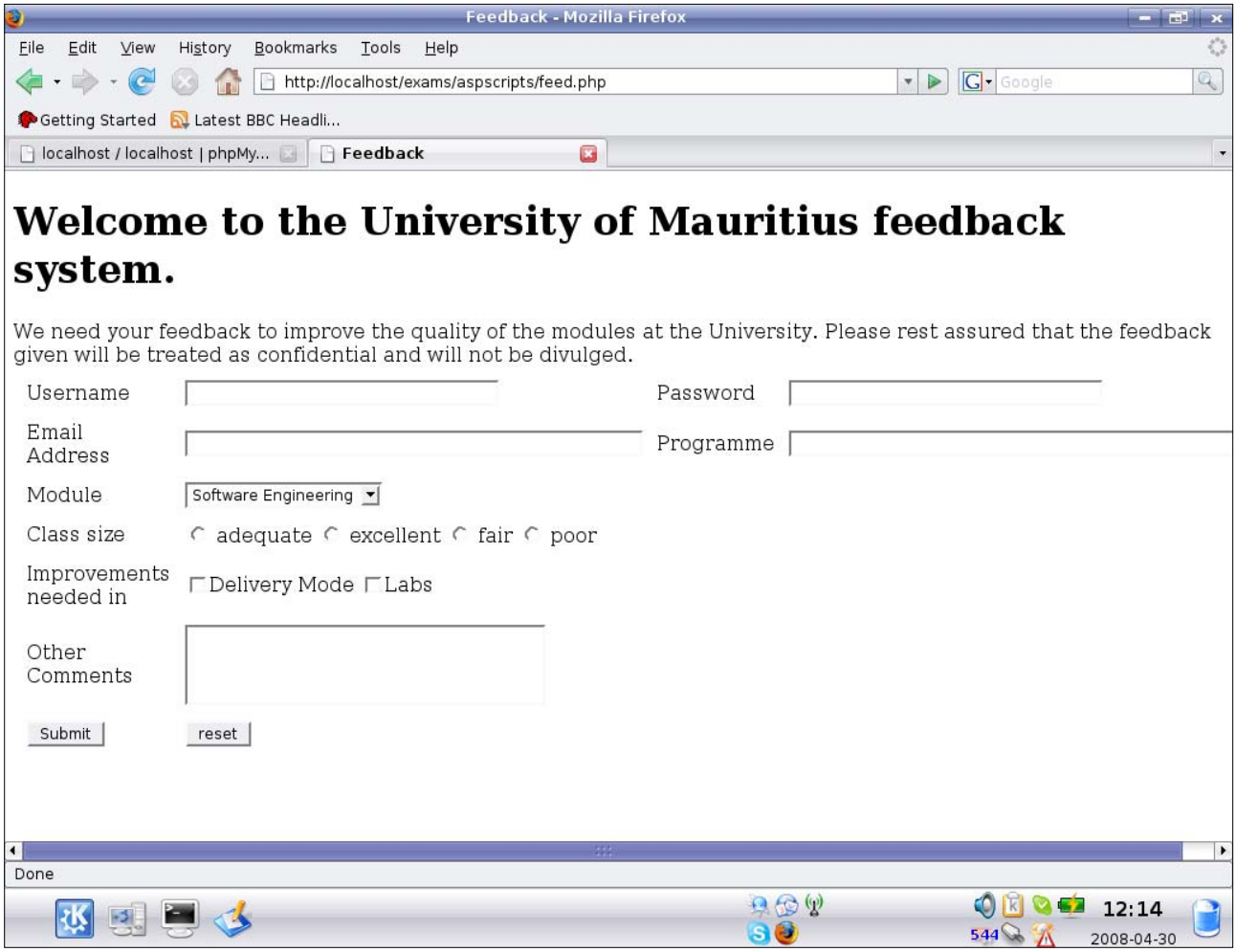


Figure 1

The code listing for *feed.php* is as follows:

Listing for *feed.php*

```
<?php
 //connecting to database
 include("db_connect.php");

 $Rs = mysql_query("SELECT * FROM modules");

 if (mysql_num_rows($Rs)<0)
 {
  mysql_close($con);
  header( 'Location: error.html') ;
 } //retrieving module information

 $Rs1 = mysql_query("SELECT * FROM classsizes");
 if (mysql_num_rows($Rs1)<0)
 {
  mysql_close($con);
  header( 'Location: error.html') ;
 }
?>

<html>
 <head>
  <title>Feedback</title>
 </head>
 <body>
 <script type="text/javascript" src=validations.js></script>
```

```
<script type="text/javascript">
<!--
function validateForm()
{
 if (!validateBlank(document.forms[0].txt_username,'Username'))
  return false;
 if (!validateBlank(document.forms[0].txt_password,'Password'))
   return false;
 if (!validateBlank(document.forms[0].txt_email,'Email'))
   return false;
 return true;
}
-->
</script>

<h1>Welcome to the University of Mauritius feedback system.</h1>
 We need your feedback to improve the quality of the modules at the University. Please rest assured that the feedback given will be
treated as confidential and will not be divulged.
<form id=frm_feedback action="feedback_pro.php" method="post" onsubmit="return validateForm()">
<table cellspacing=10 >
 <tr>
  <td>Username</td>
  <td><input type=text name="txt_username" maxlength=40 size=40 ></td>
  <td>Password</td>
  <td><input type=password name="txt_password" maxlength=40 size=40></td>
 </tr>
 <tr>
  <td>Email Address</td>
  <td><input type=text name="txt_email" maxlength=60 size=60 ></td>
  <td>Programme</td>
  <td><input type=text name="txt_programme" maxlength=60 size=60></td>
 </tr>
 <tr>
  <td>Module</td>
  <td><select name=txt_module>
       <? while ($rows = mysql_fetch_array($Rs)){?>
       <option value=<?echo $rows['modulecode'];?>><?echo $rows['moduledesc'];?></option>
       <?}
            ?>
   </select></td>
  <td></td>
  <td></td>
 </tr>
 <tr>
  <td>Class size</td>
  <td colspan=3>
    <?while ($rows = mysql_fetch_array($Rs1)){?>
     <input type=radio name="txt_classsize" value='<?echo $rows["classsize"];?>'>
     <?
      echo $rows["classsizedesc"];
     }?>
  </td>
 </tr>
 <tr>
  <td>Improvements needed in</td>
  <td colspan=3><input type=checkbox name=txt_delivery value="ON">Delivery Mode
   <input type=checkbox name=txt_labs value="ON">Labs</td>
 </tr>
 <tr>
  <td>Other Comments</td>
  <td><textarea name="txt_others" cols=40 rows=3></textarea></td>
  <td></td>
  <td></td>
 </tr>
 <tr>
  <td><input type=submit value="Submit"></td>
  <td><input type=reset value=reset></td>
  <td></td>
  <td></td>
```

```
 </tr>
 </table>
 </body>
</html>
<?
 mysql_close($con);
?>
```

(a) None of the radio buttons in the above form are selected. Modify the above page such that the 'adequate' option is selected. You are not required to rewrite the entire page, but you have to indicate where the changes will be made.

[5 marks]

Data from the above form (Figure 1) is submitted to the *feedback_pro.php* page, whose listing is shown below:

Listing for *feedback_pro.php*

```
<?php
 $username=$_POST["txt_username"];
 $password=$_POST["txt_password"];
 $select = "SELECT * FROM users WHERE username ='$username' AND pass='$password'";
 include("db_connect.php");
 //validating user
 $Rs = mysql_query($select);

 if (mysql_num_rows($Rs)<1)
 {
  mysql_close($con);
  header('Location: user_error.php?id='.$username);
 }
 //retrieving module information
 $year = date("Y");
 $email=$_POST["txt_email"];
 $programme=$_POST["txt_programme"];
 $module=$_POST["txt_module"];

 $classsize=$_POST["txt_classsize"];

 if (!isset($_POST["txt_delivery"]) || empty($_POST["txt_delivery"]))
  $delivery=0;
 else
  $delivery=1;

 if (!isset($_POST["txt_labs"]) || empty($_POST["txt_labs"]))
  $lab=0;
 else
  $lab=1;

 $others=$_POST["txt_others"];


 $sql_insert = "INSERT INTO feedbacks (email, modulecode, moduleyear, programme,classsize,Delivery, labs, OtherComments)
values ('$email','$module','$year','$programme','$classsize',$delivery,$lab,'$others')";

 if (!mysql_query($sql_insert,$con))
 {
   die('Error: ' . mysql_error());
 }

mysql_close($con);
?>
<html>
 <head>
  <title>Feedback Process</title>
 </head>
```

```
<body>
 Your feedback has been saved. We thank you for your support<br>
 Click <a href="signout.php">Here</a> to sign out
</body>
</html>
```

On clicking on submit from *feed.php* for a particular set of values, the user got the following error.

Error: Duplicate entry 'anwarchutoo@hotmail.com-CSE2001Y-2008' for key 1

(b) Briefly explain the cause for this error. Modify the above code to provide the user with a more friendly message when the above situation arises. You are not required to rewrite the entire page, but you have to indicate where the changes will be made. **[10 marks]**

Question 2

University Management wants to process feedbacks received from students. After successful login and validation, the user from management first chooses the module he wishes to view/update from the page shown below.

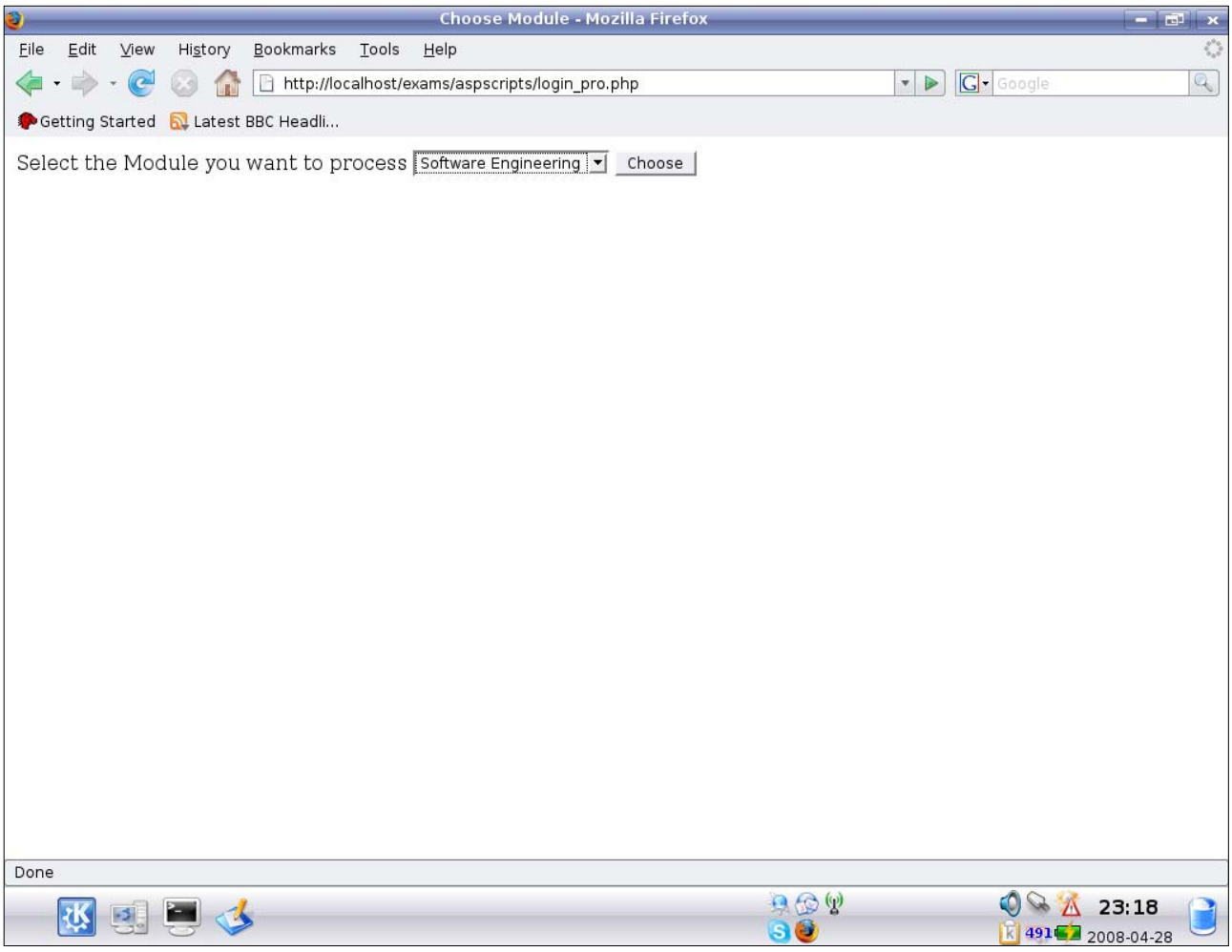


Figure 2

On clicking on the *Choose* button in the above page, the user is taken to the *menu.php* page as follows.

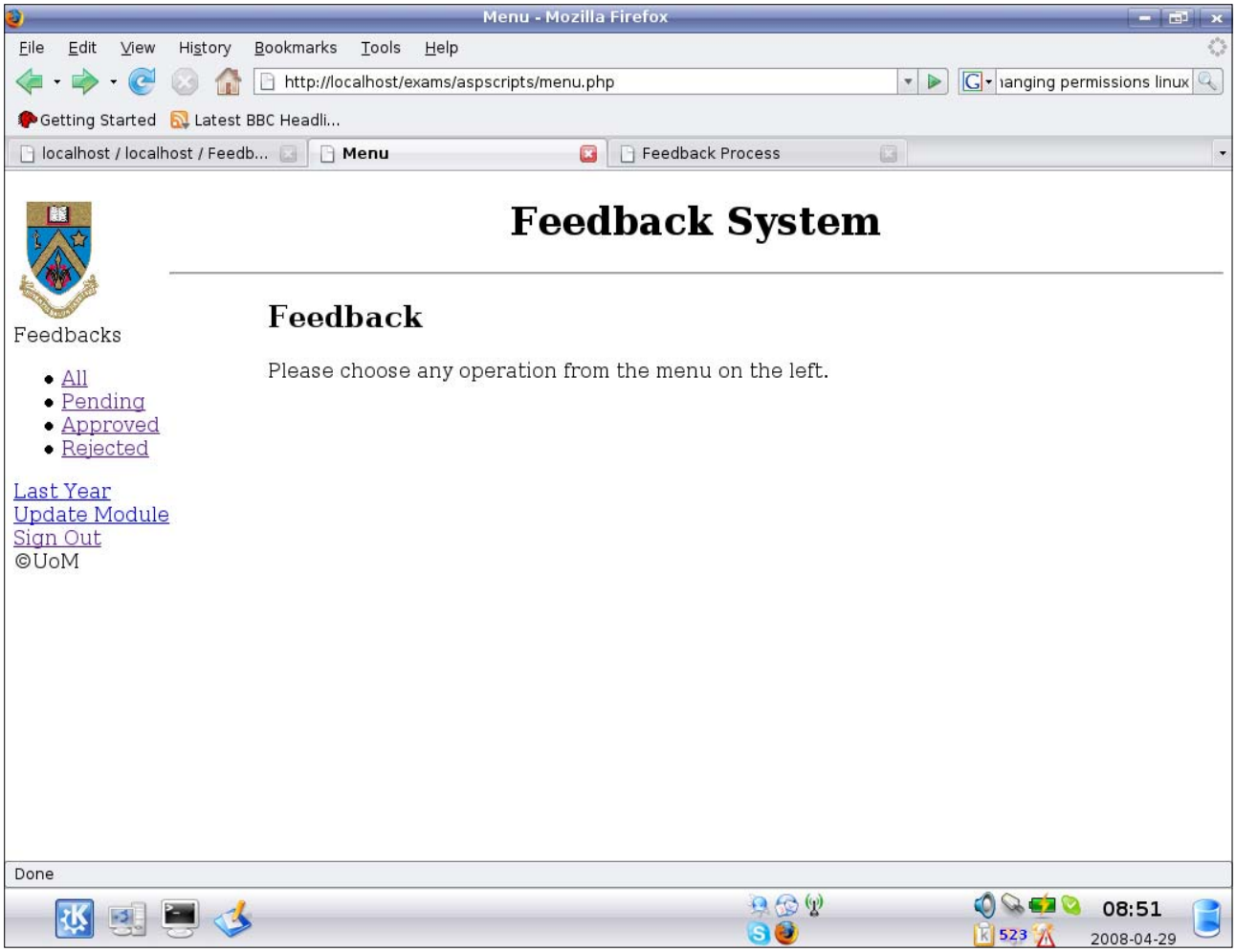


Figure 3

The codes for *menu.php* are given below.

Listing for *menu.php*

```
<?php
 //validate the user
 include("validate_session.php");
 $modulecode=$_POST['txt_module'];
 $_SESSION['modulecode']=$modulecode;
 include("menu.inc");
?>
<html>
 <head>
   <title>Menu</title>
 </head>
 <body>
  <h1 align="CENTER">Feedback System</h1>
  <hr>
  <div style="position:absolute;left:220">
    <h2>Feedback</h2>
    Please choose any operation from the menu on the left.
  </div>
 </body>
</html>
```

The file *menu.inc* contains the codes to display the links on the left of the page and is included in subsequent pages.

(a) Write the codes for *menu.inc*. The first four links in *menu.inc* point to *feedback_view.php*. However, the variable *edit* is passed as querystring in the second to fourth links and has values 'p', 'a' and 'r' respectively. The link *last year* opens the page *lastfeed.php*, *update module* opens the page *update.php*, and *signout* opens the page *signout.php*. The university logo is stored as the image *logo.jpg* in the folder images relative to the current folder. **[10 marks]**

(b) The above layout could have been achieved by using frames.

(i) Write the codes for *index.html*, the page that would have contained the different pages. Make any assumptions you think necessary.

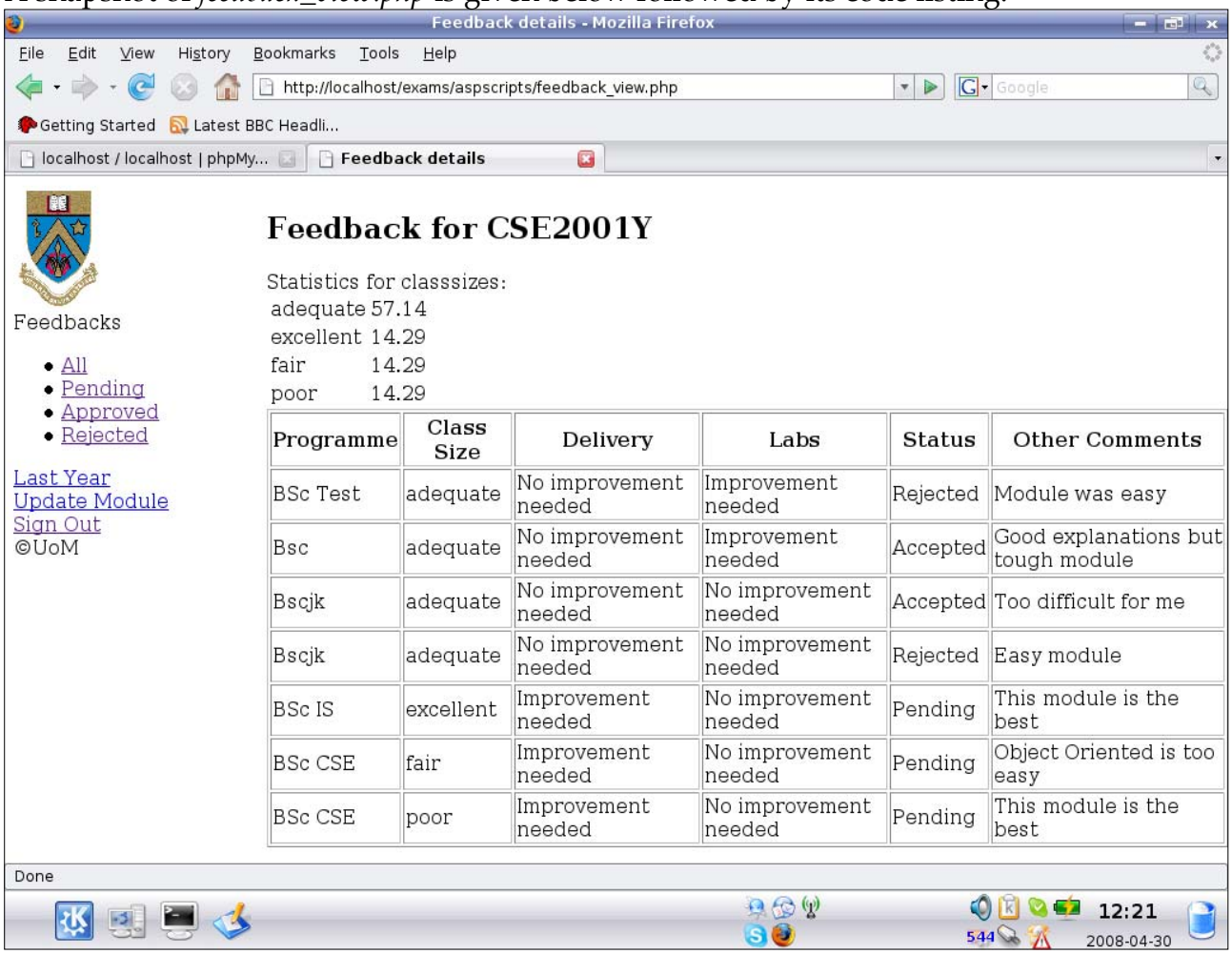
(ii) Indicate how your links in the page *menu.html* (page containing menu items) would be different from those you wrote in *menu.inc*

[4 + 2 marks]

(c) When the user clicks on *signout*, a message box appears asking the user whether he wants to sign out. If he chooses *ok*, he proceeds to the *signout.php* page, and if he chooses *cancel*, he stays on the current page. Write the javascript codes for the above. **[5 marks]**

Question 3

A snapshot of *feedback_view.php* is given below followed by its code listing.



Programme	Class Size	Delivery	Labs	Status	Other Comments
BSc Test	adequate	No improvement needed	Improvement needed	Rejected	Module was easy
Bsc	adequate	No improvement needed	Improvement needed	Accepted	Good explanations but tough module
Bscjk	adequate	No improvement needed	No improvement needed	Accepted	Too difficult for me
Bscjk	adequate	No improvement needed	No improvement needed	Rejected	Easy module
BSc IS	excellent	Improvement needed	No improvement needed	Pending	This module is the best
BSc CSE	fair	Improvement needed	No improvement needed	Pending	Object Oriented is too easy
BSc CSE	poor	Improvement needed	No improvement needed	Pending	This module is the best

Figure 4

Listing for feedback_view.php

```
<?php

 //redirect the user to login if session is invalid
 include("validate_session.php");

 $modulecode = $_SESSION["modulecode"];

 $edit = $_GET["edit"];
 //reading feedback information
 $select = "SELECT modules.moduledesc, feedbacks.email, feedbacks.programme, classsizes.classsizedesc, feedbacks.delivery,
feedbacks.labs, feedbacks.Othercomments, feedbacks.moderation FROM modules INNER JOIN (classsizes INNER JOIN feedbacks
ON classsizes.classsize = feedbacks.classsize) ON modules.modulecode =feedbacks.modulecode  WHERE
feedbacks.modulecode='$modulecode' AND feedbacks.moduleyear = '".date('Y')."'";

 //modifying SQL statement depending on querystring
 if ($edit=="p")
   $select = $select . " AND feedbacks.moderation ='p'";
 if ($edit=="a")
   $select = $select . " AND feedbacks.moderation ='a'";
 if ($edit=="r")
   $select = $select . " AND feedbacks.moderation ='r'";


 include("db_connect.php");

 $Rs = mysql_query($select);

 if (mysql_num_rows($Rs)<1)
 {
    mysql_close($con);
    header('Location: error.html');
 }
 //include the menu
 include("menu.inc");

 //Process statistics
 //retrieve total number of feedbacks
 $Rstot=mysql_query("SELECT count(*) AS tot FROM feedbacks WHERE modulecode='$modulecode' AND
moduleyear='".date('Y')."'");
 $row1=mysql_fetch_array($Rstot);
 $total=$row1['tot'];

 //retrieve feedbacks according to classsizedesc, to be used to calculate ratio
 $Rssplit= mysql_query("SELECT count( * ) AS cnt, classsizedesc FROM feedbacks INNER JOIN classsizes ON
feedbacks.classsize = classsizes.classsize WHERE modulecode='$modulecode' AND moduleyear='".date('Y')."' GROUP BY
classsizes.classsize");

?>

<html>
 <head>
   <title>Feedback details</title>
  </head>
 <body>
   <div style="position:absolute;left:220">
   <h2>Feedback for <?echo $modulecode;?></h2>
    Statistics for classsizes: <br>
    <table>
    <?//calculating ratio for different classsizedesc and display as rows in a table
      while ($rows1=mysql_fetch_array($Rssplit))
      {
       echo "<tr>";
       echo "<td>".$rows1['classsizedesc'] . "</td>";
       $ratio= ($rows1['cnt']/$total)*100;
       echo "<td>".round($ratio,2) ."</td>";
       echo "</tr>";
      }
    ?>
```

```
   </table>
   <?if ($edit=="p") { ?>
    Click on links to view feedback for approval or rejection
   <?}?>

   <table border=1>
    <tr>
     <th>Programme</th>
     <th>Class Size</th>
     <th>Delivery</th>
     <th>Labs</th>
     <th>Status</th>
     <th>Other Comments</th>
    </tr>
    <?//preparing appropriate messages to be displayed
    while ($rows = mysql_fetch_array($Rs)){
        //display proper message for improvements
        if ($rows["delivery"]==0)
           $delivery = "No improvement needed";
        else
           $delivery = "Improvement needed";

        if ($rows["labs"]==0)
            $labs = "No improvement needed";
        else
            $labs = "Improvement needed";

        $status="Pending";
        if ($rows["moderation"]=='a')
                $status = "Accepted";
        if ($rows["moderation"]=='r')
                $status = "Rejected";
    ?>
    <tr>
      <td>
       <?if ($edit=="p") {?><a href=feedback_moderate.php?modulecode=<?echo $modulecode?>&email=<?echo
$rows["email"];?>>
        <?echo $rows["programme"];?></a>
        <?}//end if
          else{
           echo $rows["programme"];
          }//end else?>
       </td>
       <td><?echo $rows["classsizedesc"];?></td>
       <td><?echo $delivery;?></td>
       <td><? echo $labs;?></td>
       <td><? echo $status;?></td>
       <td><?echo $rows["Othercomments"];?></td>
    </tr>
   <?}//end while
    ?>
   </table>
  </div>
 </body>
</html>
<?
 mysql_close($con);
?>
```

The user wants that any feedback that has been rejected be displayed in red, and be strike-through. Write the codes that will reflect the above changes. You are not required to rewrite all the codes, but you should indicate where you will make changes.

[10 marks]

Note: The *line-through* value applied to the *text-decoration* attribute provides a strike-through appearance.

Question 4

(a) What do you understand by the following statement: "An XML document should be valid and well-formed"?

[4 marks]

(b) Consider the following XML which has been obtained by processing information from the *feedback* database. The XML shows the statistics of feedbacks for the year specified.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<feedback>
	<module code="CSE2001Y">
		<moduleyear>2007</moduleyear>
		<lab>
			<percentagesatisfied>71.43</percentagesatisfied>
		</lab>
		<delivery>
			<percentagesatisfied>57.14</percentagesatisfied>
		</delivery>
		<classsize>
			<clssz sz='adequate'>57.14</clssz>
			<clssz sz='excellent'>14.29</clssz>
			<clssz sz='fair'>14.29</clssz>
			<clssz sz='poor'>14.29</clssz>
		</classsize>
	</module>
</feedback>
```

(i) Write the schema, *feedback.xsd*, for the above XML file

[10 marks]

(ii) Write the code required to link the *feedback.xsd* schema to the above XML file.

[1 mark]

(c) The above XML is displayed as shown below using the file *feedback.xsl*.

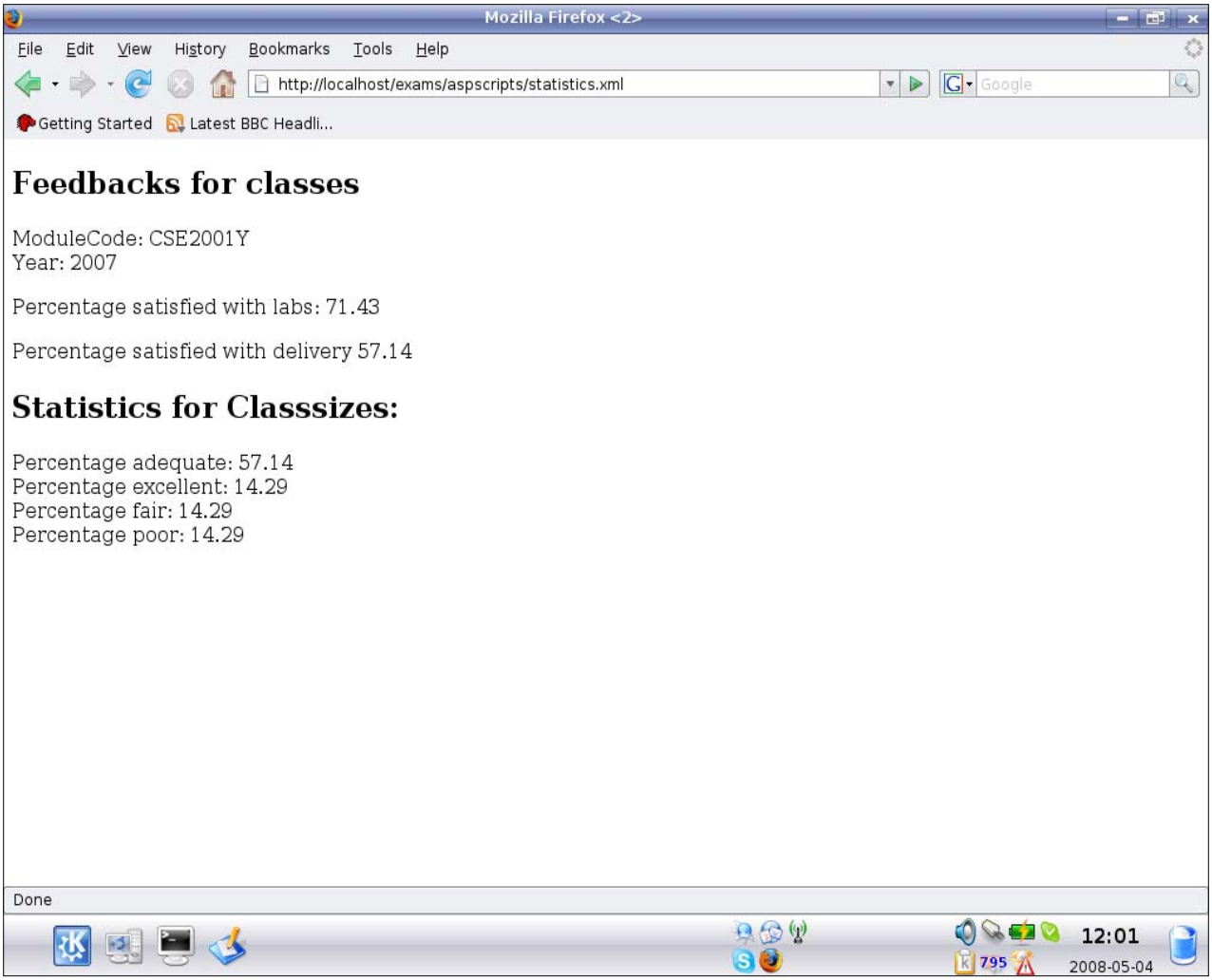


Figure 5

(i) Write the codes for *feedback.xsl*.

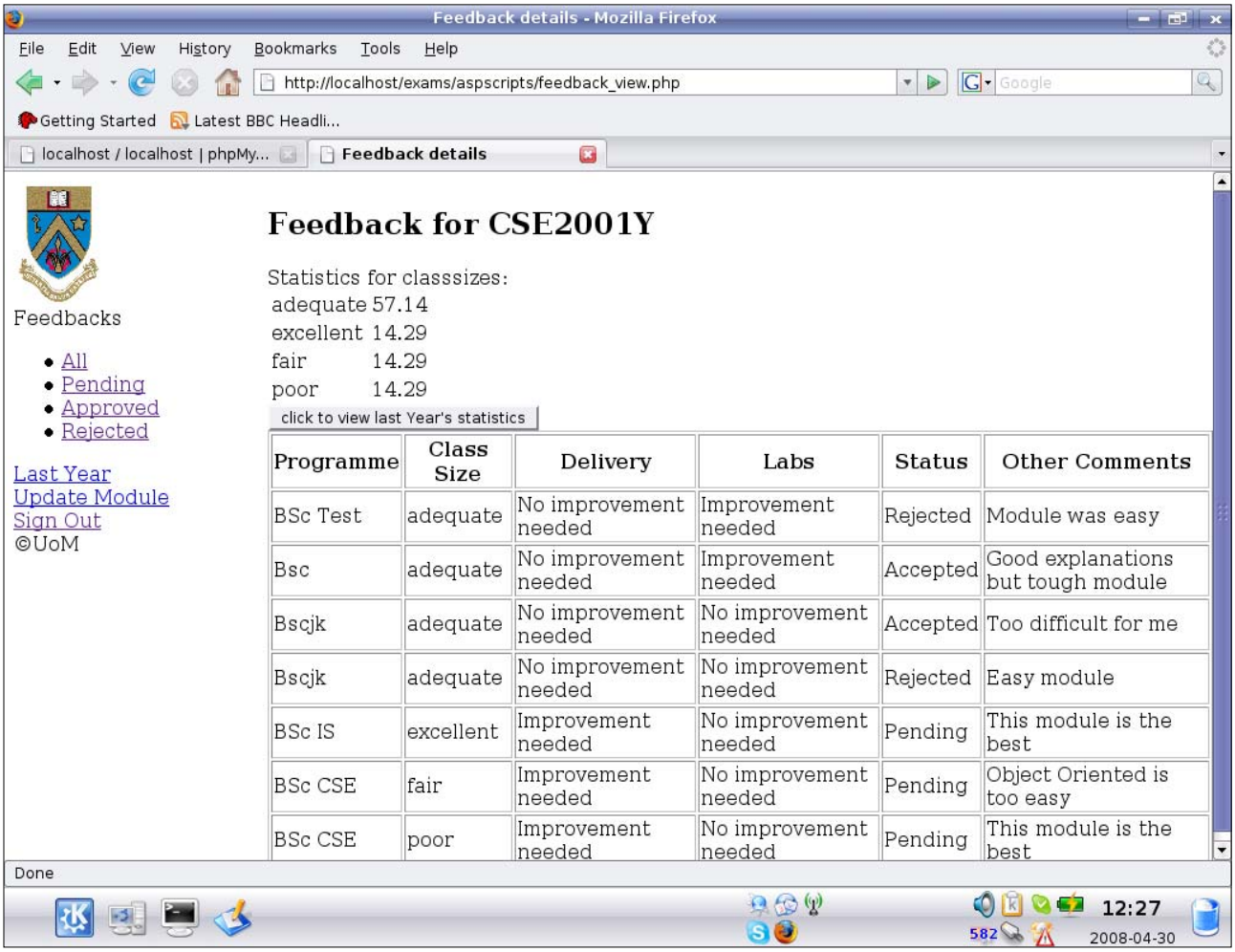
[10 marks]

(ii) Write the code required to link the *feedback.xsl* to the above XML file.

[1 mark]

Question 5

The *feedback_view.php* page discussed in question 3 is to be extended with the button *click to view last Year's statistics* as shown below:



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Bsc	adequate	No improvement needed	Improvement needed	Accepted	Good explanations but tough module
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BSc IS	excellent	Improvement needed	No improvement needed	Pending	This module is the best
BSc CSE	fair	Improvement needed	No improvement needed	Pending	Object Oriented is too easy
BSc CSE	poor	Improvement needed	No improvement needed	Pending	This module is the best

Figure 6

When the button *click to view last Year's statistics* is pressed, the page *statistics.php* is invoked using AJAX. This page connects to the database and calculates the statistics for the previous year: it calculates the percentage of satisfaction for the lab and delivery. It also calculates the percentages for different classsizes. It then formats the data appropriately and sends the data. When the browser receives the data, it displays it in a tag, with id *divstatistics*. The following figure illustrates the page after *click to view last Year's statistics* is pressed.

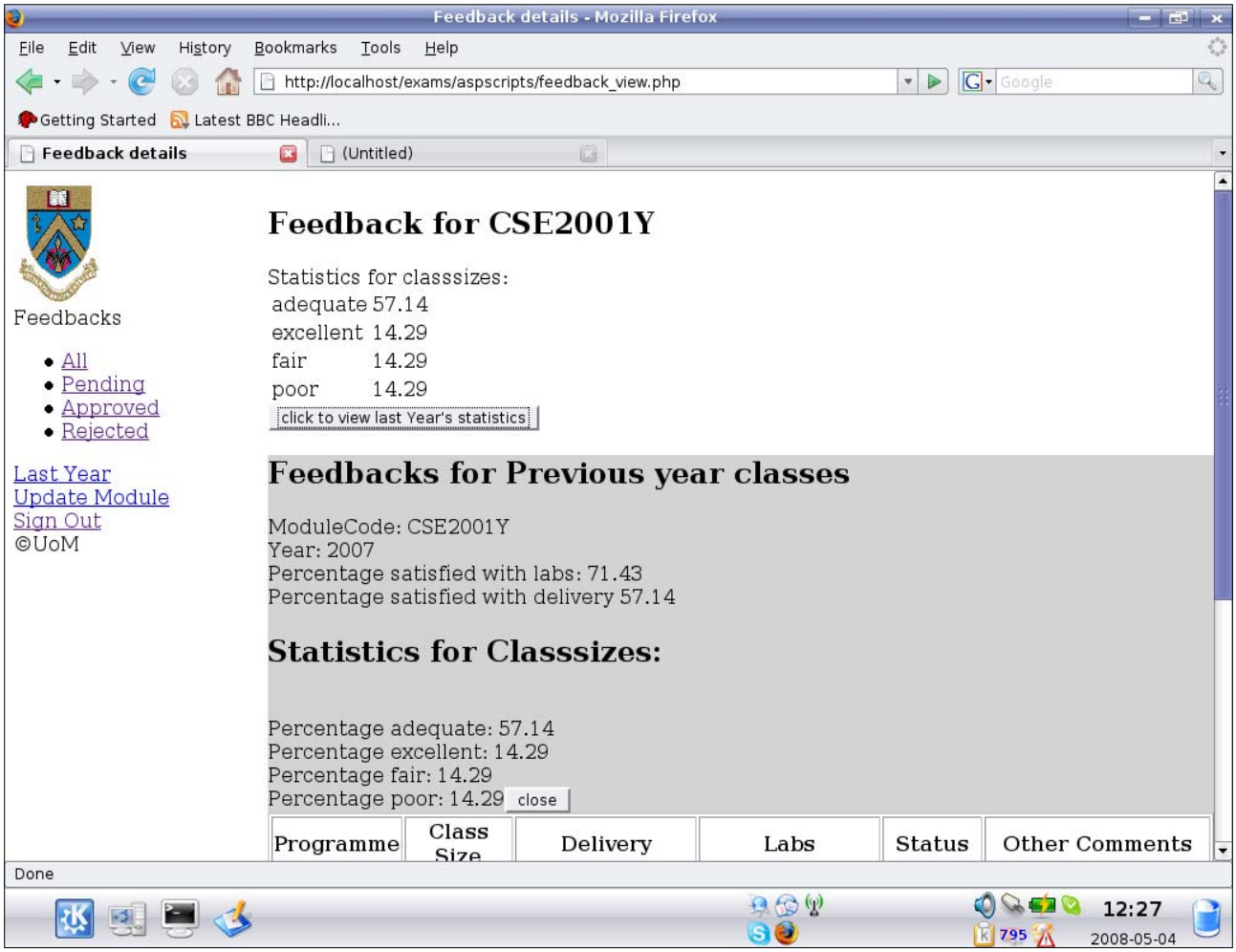

Figure 7

(a) Write the php codes of *statistics.php* to calculate the statistics described above.

[10 marks]

(b) Write the AJAX codes for the processing when *click to view last Year's statistics* is pressed .

[10 marks]

(c) Write the codes that cause the data received from *statistics.php* to be displayed as light-grey.

[4 marks]

(d) Write the javascript function *clearContents()*, that is called when the *close* button associated with *divstatistics* in figure 7 is pressed .

[4 marks]

END OF QUESTION PAPER

sg/