

References

- [1] Marciniak J.J. (2001.), Encyclopedia of Software Engineering, 2nd Edition, John Wiley and Sons, Inc, New York.
- [2] Ramez Elmasri, Shamkant Navathe, Fundamentals of Database Systems (6th Edition)
- [3] Ryan Asleson and Nathaniel T. Schutta (2006), Foundations of Ajax
- [4] Sommerville I. (2004), Software Engineering, Pearson Education Ltd, 7(1), pp 87-144
- [5] www.ambyssoft.com/essays/userInterfaceDesign.html
- [6] www.comp.lancs.ac.uk/computing/resources/IanS/SE6/PDF/Introduction.pdf
- [7] www.databases.about.com/cs/specificproducts/g/er.htm
- [8] www.developer.com/design/article.php/2247041
- [9] www.en.wikipedia.org/wiki/Feasibility_study#What_is_Feasibility_Study
- [10] www.en.wikipedia.org/wiki/Relational_database
- [11] www.en.wikipedia.org/wiki/Software_design
- [12] www.en.wikipedia.org/wiki/Use_case
- [13] www.filecm.com/webapps/site/62413/58162/html
- [14] www.inforouter.com/Document_Management.asp
- [15] www.ibm.com/developerworks/rational/library/3101.html
- [16] www.opendocman.com/what-can-i-do-with-opendocman/
- [17] www.peoplesbank.lk/site_map.shtml

Use Case Diagrams

1 User use case diagrams

User has given facilities for Read circulars, Search Circulars, Generate a signature code, Change the password and Send receipt

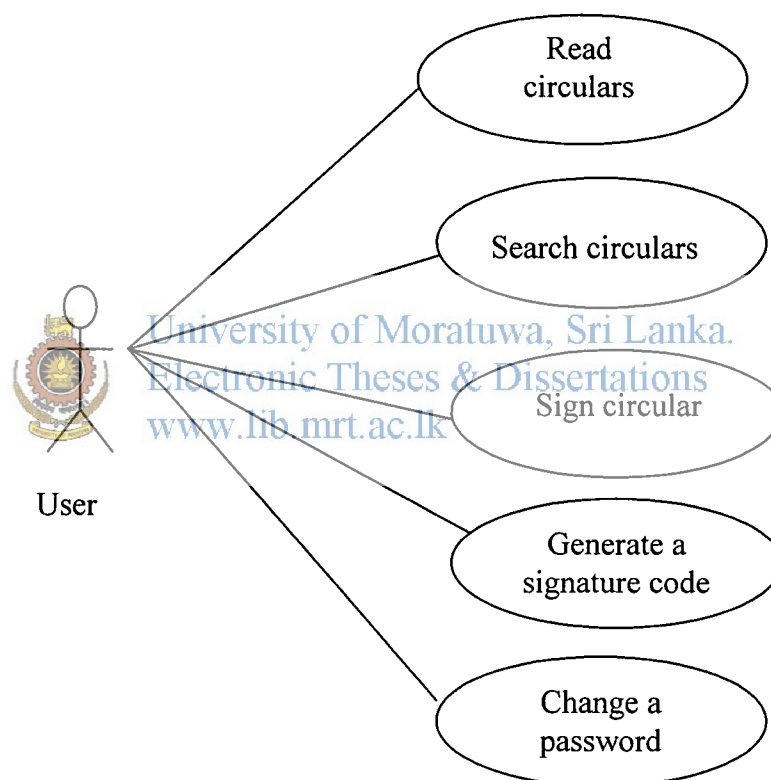


Figure A 1: User use case diagram

Use case: Read circulars

User can login the system using the password and click on the Read button. Then display the unsigned circulars.

Initial Step-By-Step Description

Before this use case can be initiated, the user has already connected to the network

- The user log in to the system
- The user click on Read button.
- The user selects the unread circular
- The user insert the security code for reading the circular
- Click ok button

Use case: Sign circular

When user inserts the security code and then opens the circular.

Initial Step-By-Step Description

User can see the unread circulars in the list

- User click on the ok button after inserting security code
- Circular marks as signed
- System sent a receipt

Use case: Search circulars

User can search published circulars through the system

Initial Step-By-Step Description

There are two options available to search circulars

- User selects the search options
- User type the relevant field to find circular
- Click ok button

Use case: Change the password

Users login the system they can change their password using the old password

Initial Step-By-Step Description

- User login using their own password
- Click on the change password button
- Type the old password in text box
- Type the new password in text box

- Con firm the password in next text box
- Click ok button to change the password

Use case: Generate a signature code

User can create security code inserting their information. Such a code generate only existing users in the system

Initial Step-By-Step Description

- User login the system using their password
- Click on the signature create button
- Show the possession of the user
- Fill the relevant information
- Click on create button
- Display the signature code
- User must remember this code
- Click save button



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2 Editor Use case diagrams

Editor has to do two functions. Those are create circulars and make corrections

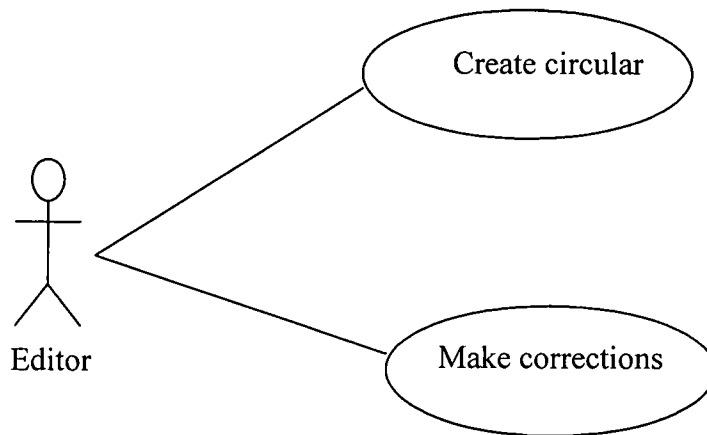


Figure A 2: Editor use case diagram

Use case: Create circular

Editor can prepare the circulars. The text area display to edit the document

Initial Step-By-Step Description

- Log in to the system using user name and the password
- Select the Create circular button
- The system display the text area to type the document
- The editor click the save button

Use case: Make corrections

Editor can make the corrections of prepared document

Initial Step-By-Step Description

- Editor click on the Make correction button
- Display the document with comments
- Make corrections of the document
- Click on the save button



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3 Authorize officer use case diagrams

Authorize officer has given facilities for Authorization, Forward for corrections and Forward for approval

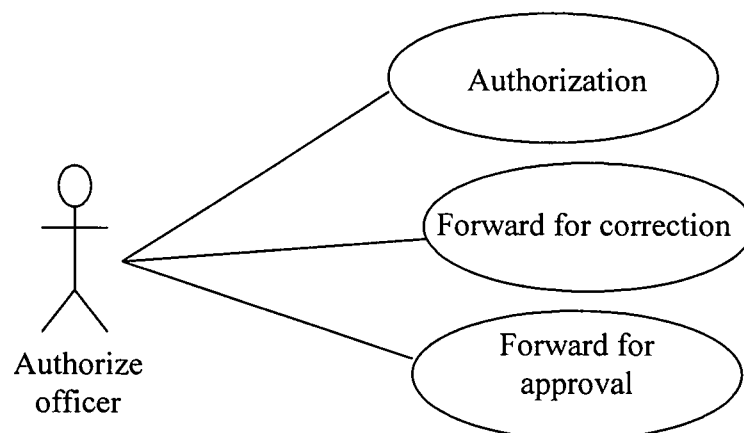


Figure A 3: Authorize officer use case diagram

Use case: Forward for correction

If there are any corrections of prepared document then forward to correction

Initial Step-By-Step Description

- Select the document and click on it
- Add comments of input box
- Click ok button

Use case: Authorization

The completed document is added the signature for authorization

Initial Step-By-Step Description

- Select the document for authorization
- Click on the authorize button
- Add security code to input box
- Click ok button

Use case: Forward to approval

Authorized document should be forwarded to the relevant Department or to the approval officer

Initial Step-By-Step Description

- Click on forward to approval button
- Display the input box
- If need to forward to other department for authorize select the relevant department
- Select the department from combo box
- Click on forward button

4 Approval officer use case diagrams

Approval officer has given facilities to Approve and publish the final circular

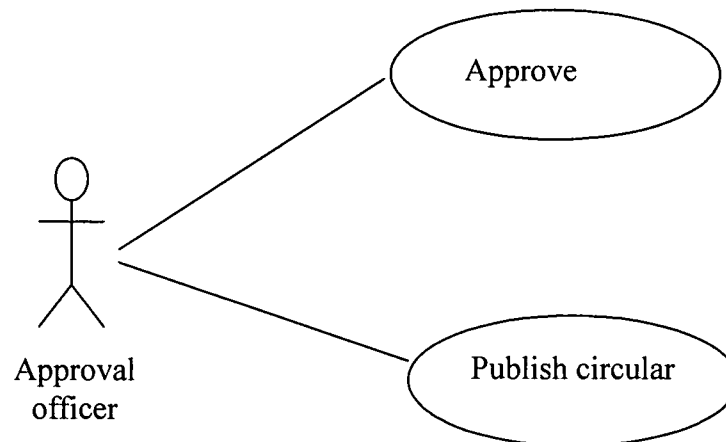


Figure A 4: Approval officer use case diagram

Use case: Approve

Signature should be added for approval of the final document



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Initial Step-By-Step Description

- Approval officer select the document for approve
- Select the document
- Click on the document
- Add signature code to approve
- Click ok button

Use case: Publish circular

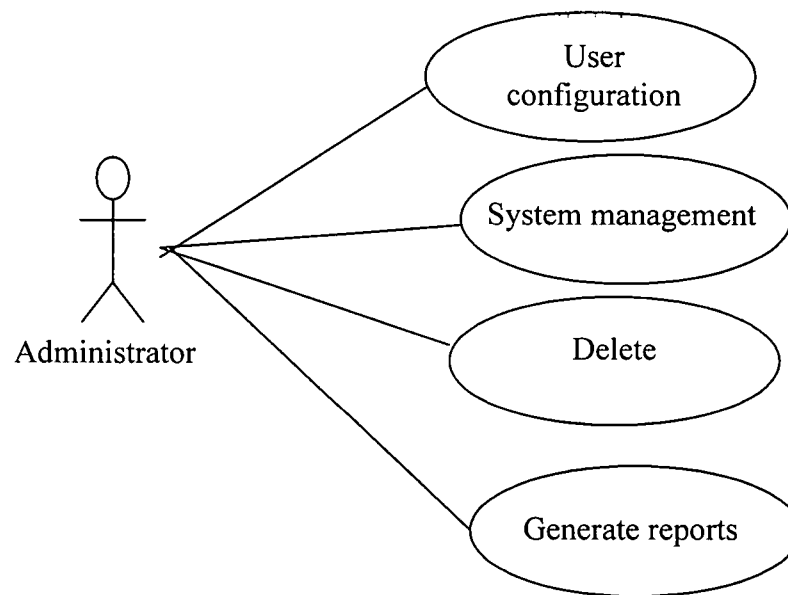
Circular will be opened for users

Initial Step-By-Step Description

- Click on the final document
- Click on publish button
- Show the message and click ok button

5. Administrator use case

The key person is the system. The Administrator has the following sets of use cases. User configuration, system management, deletes and generates reports.



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Figure A 5: Administrator use case diagram

User case: User configuration

User configurations are included user profile creation, deleting user and assign roles etc.

Initial Step-By-Step Description

- The administrator log on to the system and click on user configuration button
- Insert the user profile information
- Assign the roles to user
- Click ok button to create a new user

User case: System management

Mean that adding new features for the system.

Initial Step-By-Step Description

- The administrator log on to the system and click on user system configuration button
- Insert the relevant information to system
- Click on the add button and close the window

Use case: Delete

Remove the unnecessary circulars or letters from the system.

Initial Step-By-Step Description

- Click on the delete circular or circular letter button
- Select the unnecessary one
- Click delete button and close the window

Use case: Generate reports

To analyze the statistical data, report-generating is very useful option on the system



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Initial Step-By-Step Description

- Click on the generate reports button
- Display the information table
- Select relevant information form the table
- Prepare the necessary reports and get print copies

Activity Diagrams

Activity diagram for user create letter

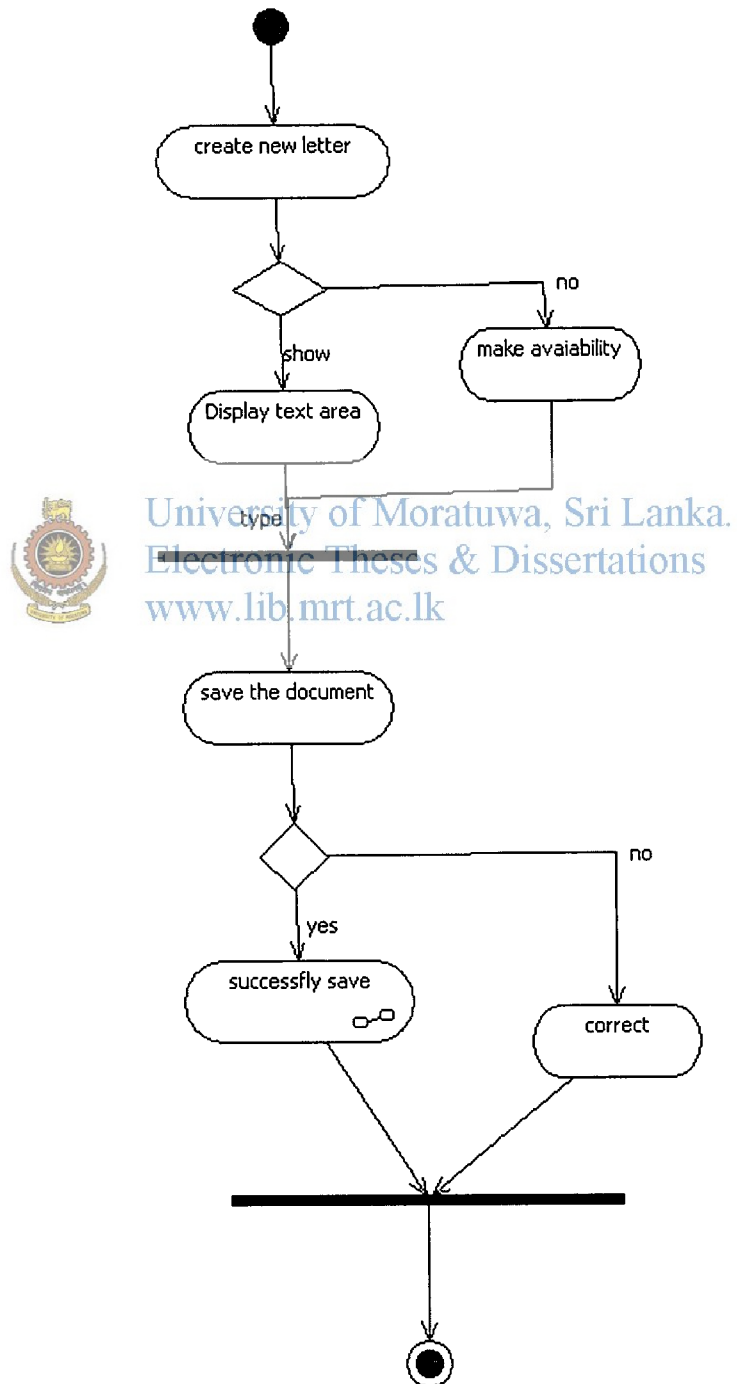


Figure B 1: Activity diagram create letter

Activity diagram for Authorization

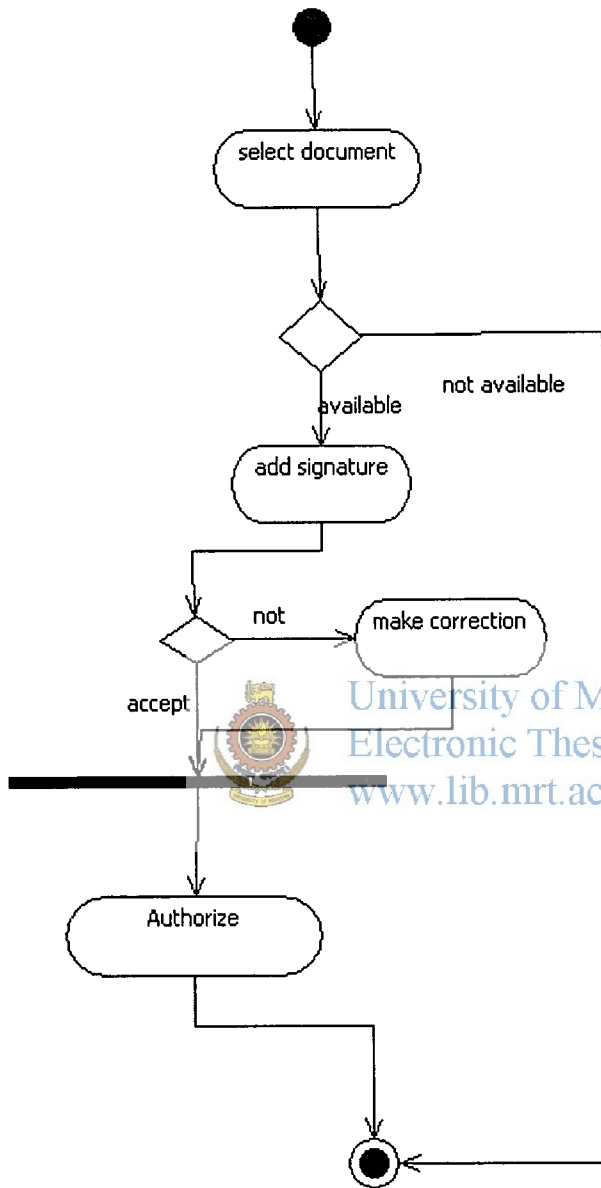


Figure B 2: Activity diagram for Authorization

Activity diagram for Read circular

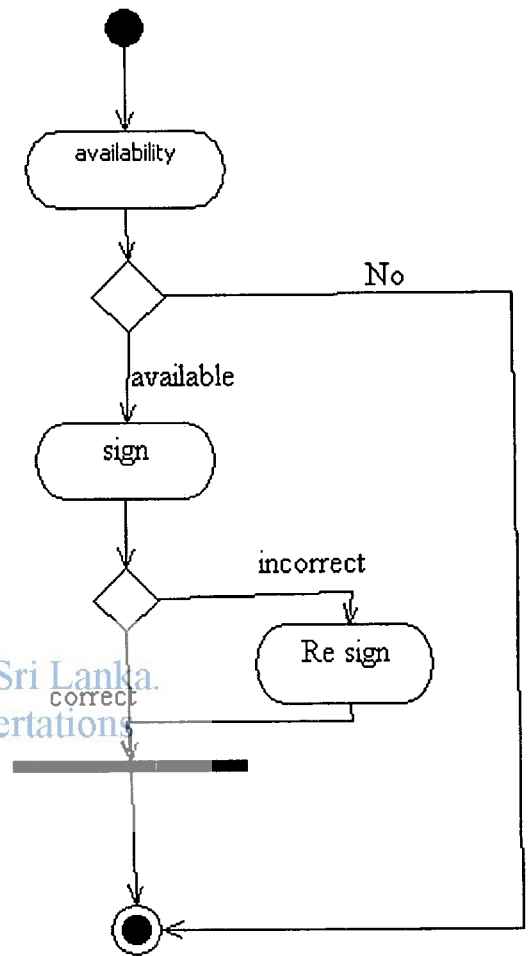
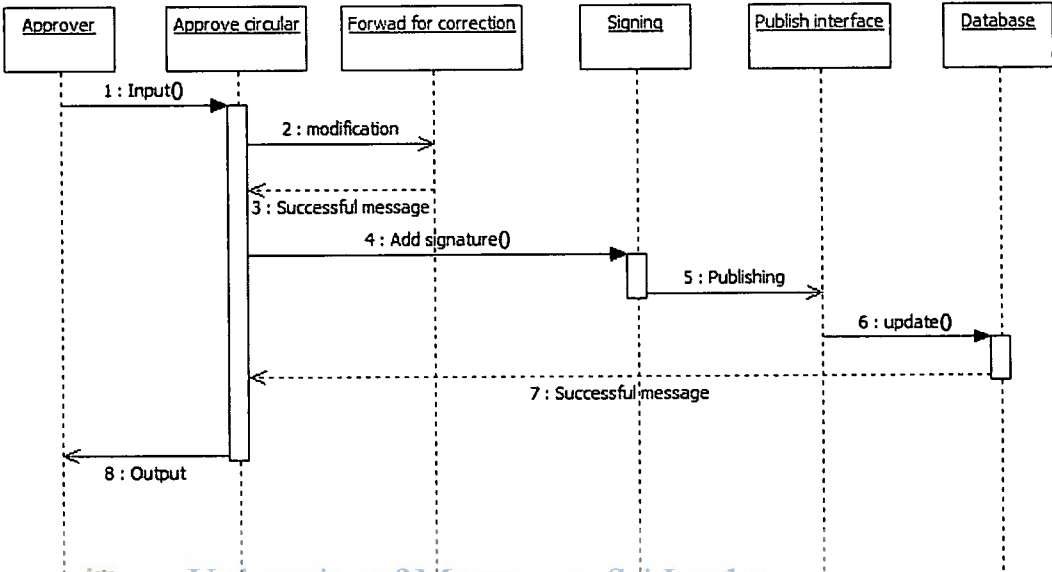


Figure B 3: Activity diagram for Read circular

Sequence Diagrams

Sequence diagram for Approve the circular



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Figure C 1: Sequence diagram for Approve the circulars

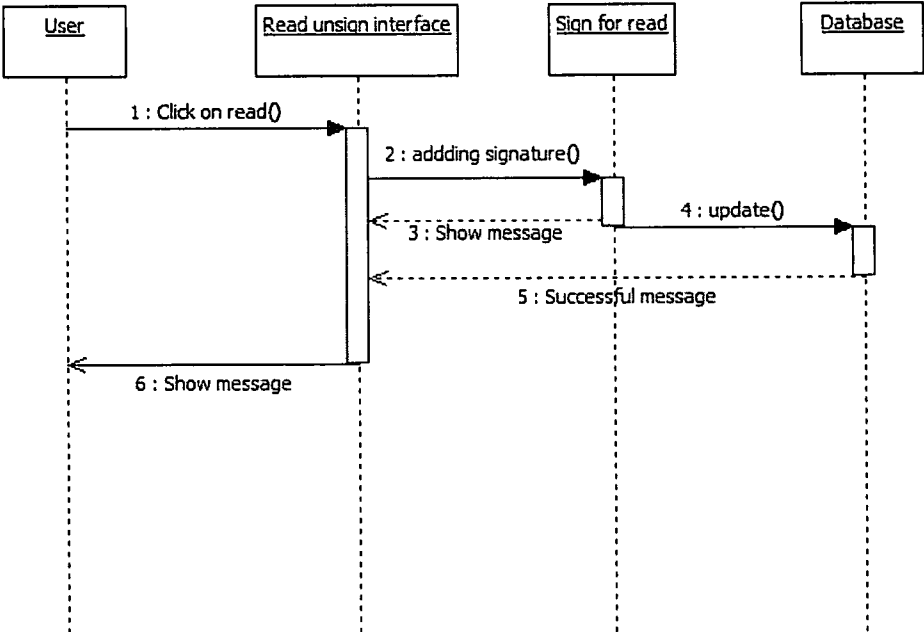


Figure C 2: Sequence diagram for Approve the circulars

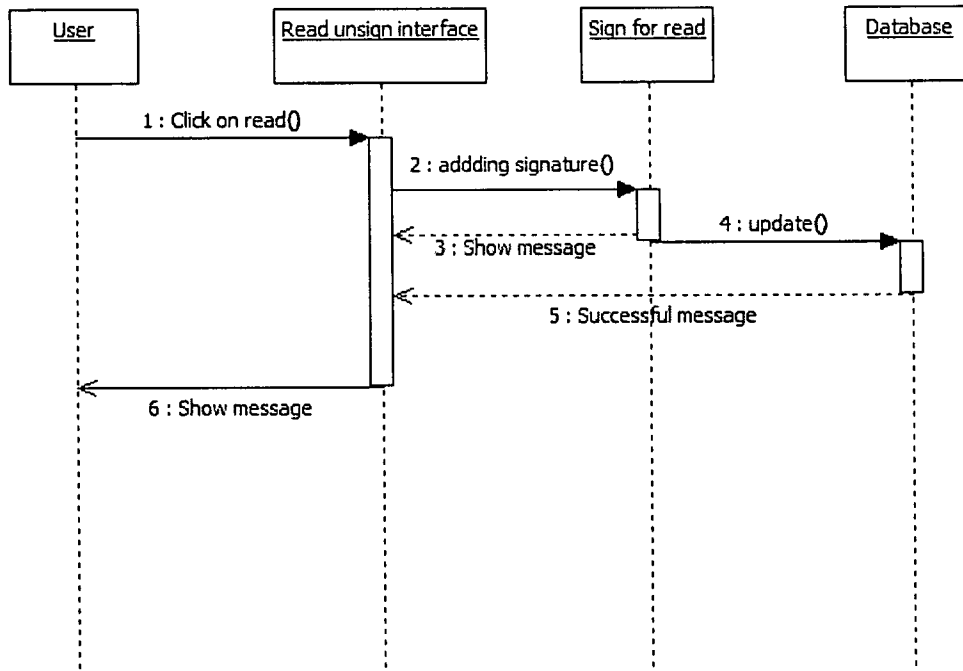


Figure C 3: Sequence diagram for sign and Read circular

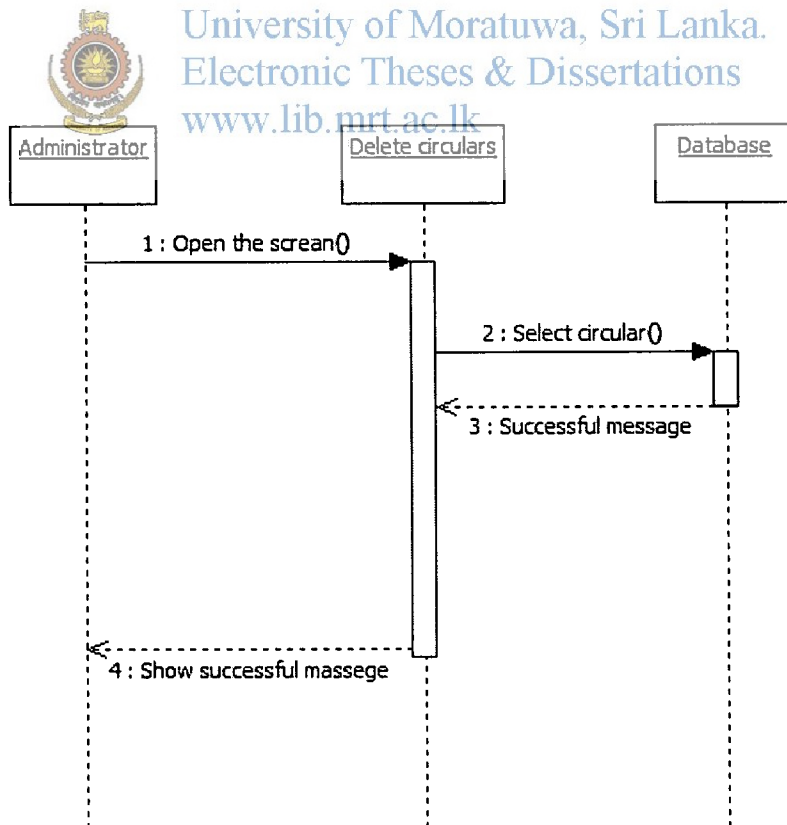


Figure C 4: Sequence diagram for Delete circular

User Interface and related coding

1. User Login page



Figure D 1 User Login screen
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2. User interface for viewing circulars, signed circular and search circulars

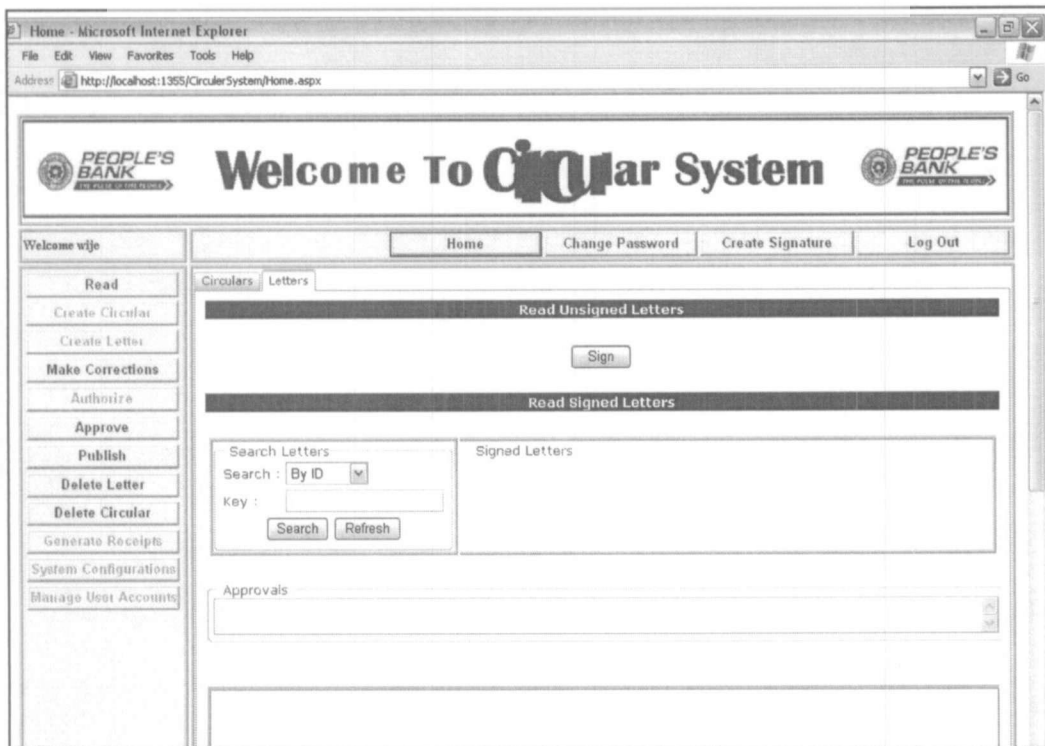


Figure D 2 user view circulars and letters

Source code related for the above screen

```
%@ Page Language="C#" MasterPageFile="~/MasterPage.master"
AutoEventWireup="true"
CodeFile="CreateSignature.aspx.cs" Inherits="CreateSignature" Title="Create
Signature" %>

<asp:Content ID="Content1" ContentPlaceHolderID="head" runat="Server">
  <style type="text/css">
    .style1
    {
      width: 100%;
    }
  </style>
</asp:Content>
<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1"
runat="Server">
  <table class="style1">
    <tr>
      <td align="center" bgcolor="#990000" style="color: #FFFFFF; font-weight:
bold">
        &nbsp;   
        Create Signature</td>
    </tr>
    <tr>
      <td>
        &nbsp;   
      </td>
    </tr>
    <tr>
      <td align="center">
        <asp:Panel ID="Panel2" runat="server" BorderStyle="None"
Width="500px"
Style="display: inherit;">
          <table class="style1">
            <tr>
              <td bgcolor="#FFFBD6" height="80" valign="top">
                <asp:UpdatePanel ID="UpdatePanel15" runat="server">
                  <ContentTemplate>
                    <table class="style1">
                      <tr>
                        <td align="right" width="140">
                          Position :
                        </td>
                        <td align="left" width="210">
                          <asp:Label ID="lblPosition"
runat="server"></asp:Label>
                        </td>
                      <tr>
                        <td align="left" width="150" colspan="2">
```

```

        &nbsp;
    </td>
</tr>
<tr>
    <td align="right">
        NIC :
    </td>
    <td>
        <asp:TextBox ID="txtNIC" runat="server"
Width="210px"></asp:TextBox>
    </td>
    <td align="left" width="40">
        <asp:RequiredFieldValidator
ID="RequiredFieldValidator4" runat="server"
        ControlToValidate="txtNIC" ErrorMessage="*"
ValidationGroup="btnCreate"></asp:RequiredFieldValidator>
    </td>
    <td align="left" width="110">
        <asp:RegularExpressionValidator
ID="RegularExpressionValidator1" runat="server"
        ControlToValidate="txtNIC"
ErrorMessage="Invalid NIC"
        ValidationExpression="\d{9}(V)"
ValidationGroup="btnCreate" Width="100px"></asp:RegularExpressionValidator>
    </td>
</tr>
<tr>
    <td align="right">
        Employee No :
    </td>
    <td>
        <asp:TextBox ID="txtEmpNo" runat="server"
Width="210px"></asp:TextBox>
    </td>
    <td align="left" colspan="2">
        <asp:RequiredFieldValidator
ID="RequiredFieldValidator7" runat="server"
        ControlToValidate="txtEmpNo"
ErrorMessage="*" ValidationGroup="btnCreate"></asp:RequiredFieldValidator>
    </td>
</tr>
<tr>
    <td align="right">
        Secret Question :
    </td>
    <td>
        <asp:TextBox ID="txtSQ" runat="server"
Width="210px"></asp:TextBox>
    </td>
    <td align="left" colspan="2">

```




```

</td>
</tr>
<tr>
<td align="center">
<asp:Panel ID="Panel2" runat="server" BorderStyle="None"
Width="500px"
Style="display: inherit;">
<table class="style1">
<tr>
<td bgcolor="#FFFBD6" height="80" valign="top">
<asp:UpdatePanel ID="UpdatePanel15" runat="server">
<ContentTemplate>
<table class="style1">
<tr>
<td align="right" width="140">
Position :
</td>
<td align="left" width="210">
<asp:Label ID="lblPosition"
runat="server"></asp:Label>
</td>
<td align="left" width="150" colspan="2">
&nbsp;
</td>
</tr>
<tr>
<td align="right">
NIC :
</td>
<td>
<asp:TextBox ID="txtNIC" runat="server"
Width="210px"></asp:TextBox>
</td>
<td align="left" width="40">
<asp:RequiredFieldValidator
ID="RequiredFieldValidator4" runat="server"
ControlToValidate="txtNIC" ErrorMessage="*"
ValidationGroup="btnCreate"></asp:RequiredFieldValidator>
</td>
<td align="left" width="110">
<asp:RegularExpressionValidator
ID="RegularExpressionValidator1" runat="server"
ControlToValidate="txtNIC"
ErrorMessage="Invalid NIC"
ValidationExpression="\d{9}(V)"
ValidationGroup="btnCreate" Width="100px"></asp:RegularExpressionValidator>
</td>
</tr>
<tr>
<td align="right">

```



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```

                Employee No :
            </td>
            <td>
                <asp:TextBox ID="txtEmpNo" runat="server"
Width="210px"></asp:TextBox>
            </td>
            <td align="left" colspan="2">
                <asp:RequiredFieldValidator
ID="RequiredFieldValidator7" runat="server"
                ControlToValidate="txtEmpNo"
ErrorMessage="*" ValidationGroup="btnCreate"></asp:RequiredFieldValidator>
            </td>
        </tr>
        <tr>
            <td align="right">
                Secret Question :
            </td>
            <td>
                <asp:TextBox ID="txtSQ" runat="server"
Width="210px"></asp:TextBox>
            </td>
            <td align="left" colspan="2">
                <asp:RequiredFieldValidator
ID="RequiredFieldValidator5" runat="server"
                ControlToValidate="txtSQ" ErrorMessage="*"
ValidationGroup="btnCreate"></asp:RequiredFieldValidator>
            </td>
        </tr>
        <tr>
            <td align="right">
                Secret Answer :
            </td>
            <td>
                <asp:TextBox ID="txtSA" runat="server"
Width="210px"></asp:TextBox>
            </td>
            <td align="left" colspan="2">
                <asp:RequiredFieldValidator
ID="RequiredFieldValidator6" runat="server"
                ControlToValidate="txtSA" ErrorMessage="*"
ValidationGroup="btnCreate"></asp:RequiredFieldValidator>
            </td>
        </tr>
        <tr>
            <td align="right">
                Your Signature :
            </td>
            <td align="left">
                <asp:Label ID="lblSignature"
runat="server"></asp:Label>

```

```

</td>
<td align="left" colspan="2">
    &nbsp;&nbsp;&nbsp;</td>
</tr>
<tr>
<td align="center" colspan="4">
    <asp:Button ID="btnCreate" runat="server"
onclick="btnCreate_Click"
        Text="Create" ValidationGroup="btnCreate"
Width="70px" />
    <asp:Button ID="btnSave" runat="server"
Enabled="False" Text="Save"
        Width="70px" onclick="btnSave_Click" />
</td>
</tr>
</table>
</ContentTemplate>
</asp:UpdatePanel>
</td>
</tr>
</table>
</asp:Panel>
</td>

```



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Appendix E

Test Cases

1 Test case for user login authentication

Test case No.	Description	Expected out put	System created output	Status
01	User login with valid user name and password	Display the home page	Display the home page	Success
02	Enter valid user name and invalid password	“Invalid password” message prompt for the user login again	“Invalid password” message prompt for the user login again	Success
03	Enter invalid user name and valid password	“Invalid user name” message prompt for the user login again	“Invalid user name” message prompt for the user login again	Success
04	Enter invalid user name and invalid password	“Invalid user name” message prompt for the user login again	“Invalid user name” message prompt for the user login again	Success
05	Press the login button without any values	“Invalid user name” message prompt for the user login again	“Invalid user name” message prompt for the user login again	Success

Figure E 1 User login authentication

2 Test case for read unsigned circulars

Test case No.	Description	Expected out put	System created output	Status
01	Select a circular	High light the record	High light the record	Success
02	Click on Sign	Display the input box	Display the input box	Success
03	Enter valid signature code	Display the circular	Display the circular	Success
04	Enter invalid	“Signature code is	“Signature code	Success

	signature code	invalid” message prompt for the user	is invalid” message prompt for the user	
05	Press the Ok button without any value	“Signature code is invalid” message prompt for the user	“Signature code is invalid” message prompt for the user	Success

Figure E 2 Read unsigned circulars

3 Test case for search circulars

Test case No.	Description	Expected out put	System created output	Status
01	Select the search criteria by name and enter the key word	Display the sign relevant circulars	Display the sign relevant circulars	Success
02	Select the search criteria by ID and enter the key ID	Display the sign relevant circular	Display the sign relevant circular	Success
03	Select the search criteria by name and enter the invalid key	“No results” message prompt	“No results” message prompt	Success
04	Select the search criteria by ID and enter the invalid key	“No results” message prompt	“No results” message prompt	Success
05	Select the search criteria by ID or name and key is empty	“No results” message prompt	“No results” message prompt	Success

Figure E 3 Search circulars

4 Test case for change password

Test case No.	Description	Expected out put	System created output	Status
01	Insert valid old password, new password and confirm password	“Successfully changed” message prompt	“Successfully changed” message prompt	Success
02	Insert invalid old password, new password and confirm password	“Invalid password” message prompt	“Invalid password” message prompt	Success
03	Insert valid old password, new	“Invalid password” message prompt	“Invalid password”	Success

	password and invalid confirm password		message prompt	
04	Insert old password empty new password and invalid confirm password	“Invalid password” message prompt	“Invalid password” message prompt	Success
05	At least old password, new password or confirm password is empty	“Invalid password” message prompt	“Invalid password” message prompt	Success

Figure E 4 Change password

5 Test case for generate signature

Test case No.	Description	Expected out put	System created output	Status
01	Insert the valid NIC number	Not to show any message	Not to show any message	Success
02	Insert the invalid NIC number	“Invalid NIC” message prompt	“Invalid NIC” message prompt	Success
03	Insert the valid employee number	Not to show any message	Not to show any message	Success
04	Insert the invalid employee number	Display Message	Display message	Success
05	Insert the secret question	No message display	No message display	Success
06	Keep the empty question	Display “*” mark on left	Display “*” mark on left	Success
07	Insert the secret answer	No message display	No message display	Success
08	Keep the empty answer	Display “*” mark on left	Display “*” mark on left	Success
09	Create the signature button	Display Signature with character and numbers	Display Signature with character and numbers	Success
10	Save the signature	Empty the NIC, EmpNo, Sec question & answer	Empty the NIC, EmpNo, Sec question & answer	Success

Figure E 5 Generate signature

