

The Design of Network Support System for Community Management

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Abstract

Based on modern information technology and network multimedia technology, to build network support systems is urgent needs for a civilized and harmonious community. System based on Microsoft.NET technology development platform, through dynamic web pages to interact with the database ADO.NET technology, using the three-tier architecture implementation framework. To achieve a community web site for information management, property management, Online Repair, Charges inquiries and other major functional. The system is interactive, good scalability and strong security features, the system contributes to the community information network management, community residents to facilitate dynamic information about the community, understand and listen to the voices of residents and enhance community social management.

Keywords: ASP.NET, ADO.NET, network database, network support systems

1. Introduction

With the urbanization of the population and accelerate the pace of social services, local communities have become urban residents basic living unit; in the same time, the development of information technology and the popularity of network services and improvement of people prefer to understand the external information through the network, access to appropriate services through the network, communication with each other through the network, so to speed up application development and network construction, network services is to enhance an important measure, the same time, the network application development and will also manage the various departments levels, service levels to provide technical support [1].

Community management as a last part of social services, connecting thousands of families, but because of lack of relevant inputs, making the community network of information technology is very weak, usually only with a simple office management software to solve everyday problems, and the system features a single, system closed, there is no network management or only support local network applications [2].

2. Research of system

2.1 System Functional Analysis

Web-based community management and service information platform contains a number of community residents, such as registration, login, information dissemination, document management, information search and other dynamic objects of development, dynamic web pages in the research project at the same time, to our school community property management

and resident fees and other application development model for the query, close to achieve a collection of technologies and applications for creating online communities, harmonious community, civilized community to provide technical support [3, 4]. Overall system block diagram shown in Figure 1.

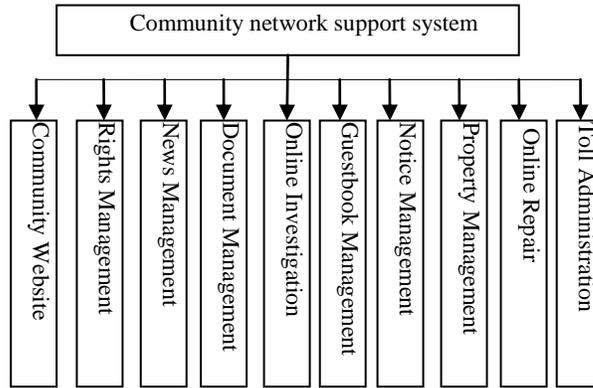


Figure 1. System function block diagram

2.2 System Development Platform

According to the system functional requirements, to the campus network as the basis, using Microsoft Visual Studio.NET2008 integrated development environment, it is a used to quickly develop, deploy web services and application development platform. The System pages and forms used ASP.NET technology through a series.aspx page to complete; program code and data binding using the event-driven development approach to achieve; the user interface and the complete separation of program code interface for easy reading and maintenance procedures; Program code is compiled, can greatly reduce server response time [5].

The choice of web authoring tools: Multimedia information including text, images, audio, video and animation. Multimedia technology combines voice processing technology, image processing, image processing, computer communications and data storage technologies. Web page to provide users of the system to use interface, users can page through the browser-related Community management support system each subsystem to the associated module. System Web pages using Dreamweaver, VS.NET2008 hybrid design from their website design process shown in Figure 2.

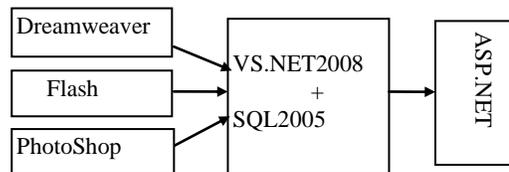


Figure 2. development tools

2.3 System Structure Analysis

System uses a three-tier architecture framework to enable business logic and data separation, so that software has security, maintainability, reconfigurable, fast response. The ASP.NET System Model shown in Figure 3. Web layer is responsible for interacting with the

user, receiving user input and presents data from the server to the client; logic layer is responsible for receiving Browser request and the request came to pass data layer, while the results are returned to the browser [6, 7]; Manipulation of data through the ADO.NET data layer logic layer provides data services. ASP.NET in a three-layer structure so that the project structure is more clear and more explicit division of labor, is conducive to the maintenance and upgrade later [8].

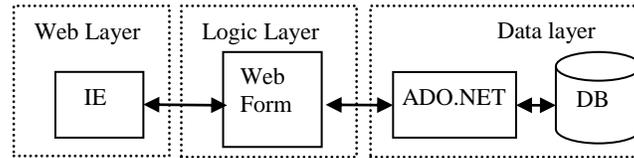


Figure 3. System Structure block diagram

3. Dynamic web pages interact with the database

3.1 Data Access object

In the system implementation process, the key technology is dynamic web page access to the database. Also, this is the system in the important and difficult to achieve [9]. WEB database using ADO.NET to achieve the operation shown in Figure 4.

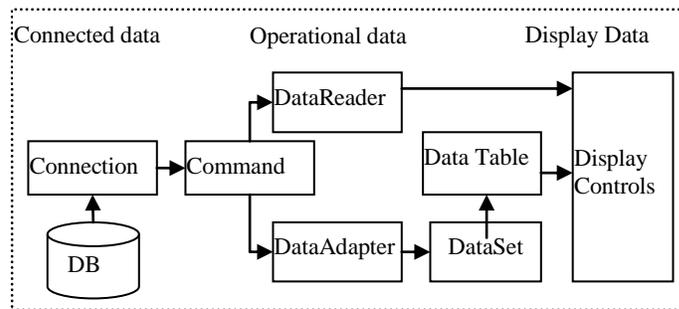


Figure 4. Dynamic web access to the database

First, through Connection object to establish connection to the database.

Secondly, the use of Command object to execute SQL commands, the command may be executed query data.

Third, the use of successive DataReader object to obtain the data obtained Command object or Command object to the data obtained by the DataAdapter object is transferred to the DataTable object in the DataSet object.

Finally, the DataReader object or DataTable object as the data source of data, the use of Web controls, and the corresponding data binding technology to display data in a database.

In addition, we can see from Figure 4, the DataAdapter objects can also be without connection object, command object is to establish contacts directly with the database [10].

3.2. Operation of the database with ADO.NET

For example, the water management module, use SQL Server2005 database relational database. User module of the query to achieve user data, including the water of a query in a particular month, and payment information for all inquiries month; administrator module to achieve the main residential building number and room number to add, delete, and modify, according to which the user belongs room information the user accounts of the current month's water charges, and user information with the query, delete and modify functions. System data flow diagram, shown in Figure 5. The following fees management and query to achieve the main code [11, 12].

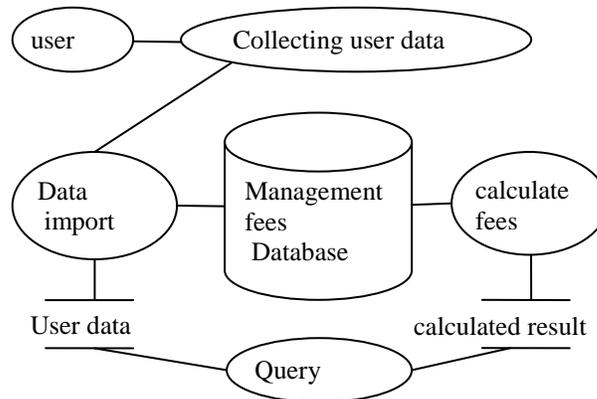


Figure 5. Database system data flow diagram

3.2.1. Implement add, delete and update operations: execSql method used to perform the data table to add, delete and update operations, the method returns a Boolean value to indicate whether the strsql statement executed successfully. This method is called when the need to pass a string type of parameter for the need to execute the SQL statement

```
public static bool execSql (string strsql)
{
    SqlConnection con = createCon (); //Create the database connection object
    con.Open (); //Open database connection
    //Create a SqlCommand object
    SqlCommand com = new SqlCommand (sql, con);
    //Get the value returned by the ExecuteNonQuery method
    int isEx = com.ExecuteNonQuery ();
    con.Close (); //Close the database connection
    if (isEx > 0) {return true;}
    else {return false;}
}
```

3.2.2. Returns the column data : Custom getTier method returns the specified column value. Calling this method need to pass a string variable, the variable that need to execute SQL statements. This method returns a string variable, the variable that the query string out of the column value.

```
public static string getTier (string sql)
{
    SqlConnection con = createCon ();
    con.Open ();
    SqlCommand com = new SqlCommand (sql, con);
    // Create a SqlDataReader object
    SqlDataReader sdr = com.ExecuteReader ();
    // Read a record
    sdr.Read ();
    // Get the value of the first column
    string tier = sdr [0]. ToString ();
    return tier;
}
```

3.2.3. Return all the data in the table : Custom getRows method used to return all the data in the table, the method returns a DataTable object.

```
public static DataTable getRows (string sql)
{ DataSet ds; // Create a DataSet object
    SqlConnection con = createCon ();
    con.Open ();
    // Create a SqlDataAdapter object
    SqlDataAdapter sda = new SqlDataAdapter (sql, con);
    ds = new DataSet (); //Instance of the DataSet object
    sda.Fill (ds); //Fill the DataSet object
    con.Close ();
    return ds.Tables [0]; }
```

4. Import Excel worksheet in ASP.NET

Management of community charges, water charges, gas charges, Heating fees, property management fees, usually accustomed to using excel spreadsheet form, then through the network platform, to import the excel file to SQL server database to facilitate online statistics and query [13]. The code of Import Excel worksheet in ASP.NET into SQL server database is as follows.

```
public partial class sa_shuifei: System.Web.UI.Page
{
string strConn = ConfigurationManager.ConnectionStrings ["strConn"]. ToString ();
protected void Page_Load (object sender, EventArgs e) { }
public DataSet ExecleDs (string savePath, string filename, string IsXls)
{ string strConn;
if (IsXls == ". xls") // Excel 97-2003
{ strConn = "Provider = Microsoft.Jet. OleDb. 4.0; " + "data source = " + savePath + ";
Extended Properties = 'Excel 8.0; HDR = YES; IMEX = 1'"; }
else // Excel 2007
{ strConn = "Provider = Microsoft.ACE.OLEDB.12.0; Data Source = " + savePath + ";
Extended Properties = 'Excel 12.0 Xml; HDR = YES;'"; }
OleDbConnection conn = new OleDbConnection (strConn);
conn.Open ();
DataSet ds = new DataSet ();
OleDbDataAdapter odda = new OleDbDataAdapter ("select * from [Sheet1 $]", conn);
odda.Fill (ds, table);
return ds;
}
protected void Button1_Click (object sender, EventArgs e)
{ the if (FileUpload1.HasFile == false)
// the HasFile used to check FileUpload whether the specified file
{Response.Write ("<script> alert ('Please select the Excel file') </ script>");
return ; // when no file to return
}
// get the file name.
string strFileName = Server.HtmlEncode. (FileUpload1.FileName);
// file extension
string IsXls = Path.GetExtension (strFileName). ToString (). ToLower ();
if (IsXls! = ". xls" && IsXls! = ".xlsx")
{Response.Write ("<script> alert ('you can only select the Excel file') </ script>");
return ;// when not selected Excel file returns }
SqlConnection cn = new SqlConnection (strConn);
cn.Open ();
// the renamed Execle file name
```

```
string filename = DateTime.Now.ToString ("yyyymmddhhMMss") + strFileName;
// Server.MapPath virtual server relative path
string savePath = Server.MapPath ("~ \\ upfiles \\") + filename) ;
// SaveAs will upload the contents of the file saved on the server
FileUpload1.SaveAs (savePath);
DataSet ds = ExecleDs (savePath, filename, IsXls); // call custom methods
DataRow [] dr = ds.Tables [0]. Select (); // define a DataRow array
int rowsnum = ds.Tables [0]. Rows.Count;
if (rowsnum == 0)
    { Response.Write ("<script> alert ('Excel table to an empty table, no data!') </
Script>"); // prompt the user when the Excel table is empty, }
    else
        { for (int i = 0; i <dr.Length; i ++ )
            { string name = dr [i] ["name"]. ToString ();
              string id = dr [i] ["id"]. ToString ();
              the string water=dr [i] ["water"]. ToString ();
              string money = dr [i] ["money "].ToString ();

              string sqlcheck = "select count (*) from sf where name = '" + name + "' And id = '" +
id + "'"; // check if the user exists

              SqlCommand sqlcmd = new SqlCommand (sqlcheck, cn);
              int count = Convert.ToInt32 (sqlcmd.ExecuteScalar ());
              if (count <1)

                  { string insertstr = "insert into sf (name, id, water, money) values ('" + name + "', '" +
id + "', '" + water + "', '" + money + "') ";

                  SqlCommand cmd = new SqlCommand (insertstr, cn);

                  Try { cmd.ExecuteNonQuery ();} // catch exceptions
                  catch (MembershipCreateUserException ex)

{Response.Write ("<script> alert ('import content:" + ex.Message + "') </ script>");} }
                else

                    { Response.Write ("<script> alert ('content to repeat! Prohibited import'); </ script>
</ script>");
                      continue; } }
                Response.Write ("<script> alert ('Excle Table Import'); </ script>"); }
                cn.Close (); }
            }
        }
```

5. The key techniques and skills

5.1. A method to solve IIS can't run ASP.NET

In the VS.NET installation, the order should be first installed IIS, then install Visual Studio, if installed in reverse order, or be re-installed IIS, IIS will not run ASP.NET, solution is: In the Visual Studio Command line window, run the "aspnet_regiis.exe-i" command to re-install IIS Mapping, to meet the match to aspx, asmx and other documents Extension.

5.2. The sharing and reuse

5.2.1. Configuring global variables : The Web config file in ASP.NET support in the top-down manner according to the configuration settings organizations. The following code defines the system through the connection to the database with the background, when the background database name, user name or password changes, simply modify the value here, but no longer need to modify the database access associated with the source files, both simple and efficient.

```
<add key=" Data source connection string " Value="server= Server Name; uid= user name; pwd= password; database= Database Name "/>
```

5.2.2. IFrame Frame Technology : Application framework technology IFrame on the same page can display the same content multiple times without having to repeat the content of this code. IFrame inline frames easier to control the navigation of the site, more used to the site admin.

5.2.3. Master page technology : Master pages can be viewed as a number of advanced features with page templates, page templates in the Web application can be common elements, such as site signs, billboards, navigation bar, copyright and other content into a unified This template.

In addition to the @ Master directive at the beginning and one or more ContentPlaceHolder server controls, master page is essentially similar to standard ASP.NET page.

5.3. Data binding

5.3.1. Call the DataBind method : ASP.NET supports hierarchical data binding model, which supports the parent server control properties and the relationship between the data source binding. All data binding expressions must be included in the <% # and %> characters.

```
<tagprefix: tagname property ="<%# data binding expression%" runat = "server" /> Or  
literal text <% # data binding expression%>
```

5.3.2. Use DataBinder.Eval () static method : The late-bound method of data binding expressions, and the results formatted as a string. Using this method, you can avoid many of the value is forced to perform the required data type must be an explicit cast operation. The method has three parameters: the naming container of data items, data field name and format string. In the template of the list (such as DataList, Dataview or Repeater), the naming container is always Container.DataItem.

```
<% # DataBinder.Eval (Container.DataItem, "IntegerValue", "{0: c}") %>
```

5.4 System security settings

System is to use SQL Server and Windows NT security integration, by the system administrator or database administrator to assign users access to the database.

System with the user password hash algorithm will be treated in summary form stored in the database. Hash algorithm generating a string based on the user password hash, the hash value is not reversible, that is, the hash value can't be obtained under plaintext user passwords. Change the password hash code as follow [14].

```
Unicodeencoding ue=new Unicodeencoding();  
// Get the user password characters  
Byte[ ] pwd = ue.getbytes(Txtpassword.Text);  
Sha1 sha =new sha1managed (); // used as the hash algorithm sha1  
Byte[ ] hashedpwd = sha.computehash(pwd) ; //change the user password hash
```

6. Summary

The project is in the form of a dynamic interactive site, created a news management, bulletin management, property management, fee information, online repair and other functional modules to achieve the community management of network and information services, standardization, not only improves the manager's job efficiency and improve service levels, easy to understand and listen to the voices of residents, create a civilized and harmonious home; and convenient community residents to understand the community dynamic information, online check water, gas, heating, property and other fees, for residents to participate in the community to build, to build a harmonious community, civilized community provides strong technical support.

System uses a new programming model and structure, with the design of new technology, security, performance, easy to modify the content for a wide range of advantages, the implementation process of the ADO.NET code key technology with excellent performance and high maintainability, the in the development of an interactive network system has been widely used. Community management services for more information local to enjoy, the database should be further unified planning to compile all the raw data, to find out the internal links and rules to establish the appropriate management model, stratified according to rights management, further expansion improve the system functions and expand the scope of application.

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