2013

MCAST 2HND5s

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[TECHNICAL DOCUMATATION]

Contents

Requirements

Software

- Windows Server 2008 r2 or greater
    - IIS 7.5 or greater
    - ASP.NET 4.0
- Microsoft Studio Visual Studio 2012 (Debugging and Development environment)
- MS SQL 2012 Developer
- Firebug (JavaScript debugging)
- Browser
- Google Drive – Back Up

Hardware

- Web Server : MVC Website (Presentation Layer) with at least 5 GB space
- 6 Server to run each service with good performance
- Data Server containing Data Access class and SQL server: fast connection in and out of the server to reduce bottlenecks to zero.

Configuration

The website needs access to webservicex.net for the currency conversion rates.

A folder named ICS_Client in business layer should be created, this folder use by the appointment service to generates the ICS file before adding the file as an attachment.

In the bin directory of the MVC application a folder name toPDF needs to be created with the wkhtmltopdf used to convert Html pages to PDF.

Security Write permission for the ASP.NET user in bin and Ap_data directory.

Structure

Design

Number	Component	Description
1	Database	The database will contain the system data. **Entities**: *Account, AccountRate, AccountType, Appointment, CaseType, CipherType, Client, ClientAccount, Currency, Logs, Rate, Role, Transaction*
2	Data Access	Consists of the data repository used to access the database layer, all method use LINQ to get the data, and the query
3	Decryption Library	A library used be the user encryption app and by the system to encrypt and decrypt a string code using a pin known only by the system and the user. **Encryption methods:** Rijndael, TripleDes, DES, RC2
4	Business Layer	Consists of the logic and code validation this layer uses WCF services. Consists of 6 service:
4.1	Account Service	Account Service: • **GetUserAccounts:** Get all the accounts of the user • **GetAllAccountTypeView:** Get all the accounts type (i.e Current, Savings...) • **AddUserAccount**: Save a new account in the system • **AccountExists**: Check whether an account exists • **GetCurrencyShortAccount**: Get the accounts currency type • **EditUserAccount**: Edit a specific account • **GetRate**: (if fixed) Get the rate associated with the account • **GetMonths**: (if fixed) Get the months • **CloseAccount**: Closes an account
4.2	Appointment Service	Appointment Service • **GetAllAppointments**: Gets all the appointment of the user (if admin get all the appointments in the database) • **GetAllCaseTypeView**: Get all the case type of the appointment • **AddAppointment:** Adds a new appoint in the system • **UpdateCase:** Update the case of an appointment and sends an email to the client to inform about the appointment status
4.3	Cipher Type Service	Cipher Type Service (used only be the desktop application) • **GetAllCipherTypes:** Gets all the cipher types (I.E , 3DES... etc) • **GetCipherByUsername:** Get the users cipher id
4.4	Client Service	Client Service (used in both) • **CheckifClientExits**: Check whether if the client exists • **User_SaveToken**: Saves the token of the user in database • **GetUser:** Gets the user form the database • **GetUserRoles:** Get the role of the user • **OpenLink:** Open a link to the data access using a

		random encryption to generate a random encrypted string. • **CloseLink:** Closes the link to the data access.
4.5	Currency Service	Currency Service • **GetAllCurrencyView**: Get all supported currency from the database
4.6	Log Service	Log Service • **GetAllLogs**: Get all logs in the system • **GetAccountId**: Gets a list of account id • **GetUserId**: Get all the user ids
4.7	Transaction Service	Transaction Service • **GetUserTransactions**: Get all the user transactions found in the system. • **AddTransactions**: Add a new transaction in the system
5	Presentation Layer	MVC 4 with ASPX engine was used to create the presentation layer. 4 controller represent each section of the site. • **HomeController:** Login and Logout • **ProfileController:** Account, Transaction, Request, Currency Convert • **AdminController**: View Logs, View Appointments • **ErrorController**: Server Error , 404
6	Currency Convert Service	A currency convert service from webservicex.net is used to get the latest rate when convert money, in transaction, accounts and currency convert page
7	Encryption Library	A library used be the user encryption app and by the system to encrypt and decrypt a string code using a pin known only by the system and the user. **Encryption methods:** Rijndael, TripleDes, DES, RC2
8	Desktop Application	The application is installed on the clients application, Has 2 section • **Application 1:** Generate a random 8 character string and send the decrypted code to the server • **Application 2:** User will enter a generated code from the browser and the application will decrypt the code using the encrypt saved in the database

Technologies

4.0 Framework: The application is built on this framework, For this application is enough because new libraries in 4.5 are not used.

LINQ: All data submitted and gather from the database is available by using LINQ and LINQ is also used at the presentation layer when using list for fast processing. Mainly used for filtering and sorting.

MVC 4: The latest MVC. This version integrates better with JQUERY and JavaScript therefore making it the ideal when using $.AJAX.

Wkhtmltopdf.exe: An open source application designed to convert HTML to PDF, it similar to Itextsharp but the HTML is process in the application not in the same application.

ICalender: Used to create appointments, this is a small file which is sent with the email and it is cross platform with all email providers.

WCF service: An upgrade to the previous web services uses SOAP and data can be passed through both HTTP and TCP.

Security

As with all application not all systems are 100% safe. Although the best was taken to ensure that the system is as secure as possible by using different encryption algorithms.

The application uses RNGcrytposerviceprovider to generate random number which is less predictable than normal random sequence.

An uses 4 different algorithm to randomize and increase change of decryption because will be less likely to guess if samples are different.

Weakness

The main weaknesses for the application is denial of service attacks on the services that do not require the username and the deciphered code.

Other weaknesses are middle man attack during data received from the services, because data sent from the services are generally sensitive, such as transaction, accounts and client details. This can be greatly reduced by using SSL to transfer data. Main treats are during login and when open links are requested with the services.