

# Czech University of Life Science Prague

Department of Economics  
Faculty of Economic and Management  
Informatics



Diploma Thesis

**E-COMMERCE - DESIGNING  
CONTENT MANAGEMENT SYSTEM**

Author: Tran Minh Tuan

Supervisor: Doc. Ing. Mansoor Maitah Ph.D. et Ph.D.

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**Declaration**

I declare that I have worked on my diploma thesis titled “E-commerce – Designing content management system” by myself and I have used only sources mentioned at the end of the thesis.

In Prague,.....

.....  
Tran Minh Tuan

## **Acknowledgement**

I would like to thank to Doc. Ing. Mansoor Maitah Ph.D. et Ph.D. for his advice and supervision of my diploma thesis. I would also like to thank my friends and family for their support.

E-commerce: Design Content Management System  
Internetový Obchod

## Summary

The numbers of computers on the Internet are redoubling every year and thus the value of the Internet is increasing for all users. People read news everyday and most of news website has a Content Management System (CMS).

CMS have been increasing in number and scale over the past decades. Our purpose with this thesis was to implement a CMS, which contains basic functions. In order to design our own custom Content Management System we need to know a lot about what type of functionality we expect in a web site. To achieve this goal, we specify a set of requirements for the news agency. Different kinds of methods like web development and data gathering methods have been used.

We provide a detailed description of a CMS, and then proceed to design an architecture that could be used. The particular solution that we have designed consists of several web technologies. Technologies include: HTML, CSS, etc..

Finally, we built a ready to use CMS where contributors and news agency's staffs can add, edit, and publish the content on the website.

**Keywords:** Content Management System (CMS), web development, architecture, HTML, CSS.

# Souhrn

Počty počítačů připojených k internetu se zdvojnásobí každý rok, a tím hodnota internetu roste pro všechny uživatele. Lidé čtou noviny každý den a většina zpravodajského webu má Content Management System (CMS).

V posledních desetiletích se využití CMS zvyšuje jak v počtu, tak rozsahu. Naším cílem této práce bylo implementovat CMS, který obsahuje základní funkce. Pro navržení vlastního Content Management Systému potřebujeme vědět hodně o tom, jaký typ funkcí očekáváme na webových stránkách. K dosažení tohoto cíle musíme určit sadu požadavků na zpravodajské agentury. V této práci byly použity různé druhy metod, jako je vývoj webových aplikací a sběr dat.

Nabízíme podrobný popis CMS a následné navržení architektury, která by mohla být použita v praxi. Zejména řešení, které jsme navrhli se skládá z několika webových technologií. Mezi tyto technologie patří: HTML, CSS, atd..

Nakonec, jsme navrhli funkční CMS, který je možné použít v praxi. V tomto systému mohou přispívající uživatelé a zaměstnanci zpravodajské agentury přidávat, upravovat a publikovat obsah na podporovaných webových stránkách.

**Klíčová slova:** Content Management System (CMS), web development, architektura, HTML, CSS

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# 1. Introduction

From last two decades the Internet has become the household source of information, the way we communicate with the others, doing research and shopping. However one of the most important activities on the web is reading news.

“

*There is so much media now with the Internet and people, and so easy and so cheap to start a newspaper or start a magazine, there's just millions of voices and people want to be heard.”*  
Rupert Murdoch [1].

Just a few years ago, publishers did not have many options. They had to build themselves or use a Content Management System of third party vendor. Today, there are plenty of content management solutions such as Drupal, Joomla, and Wordpress.

This thesis is about how to build a content management system where an author can create, publish, and present content to publish through a website.

## 1.1 Background

Content management systems are web-based applications for creating and managing the content of a website. There are many news websites available on the Internet that use a content management system. According to w3techs.com, WordPress is used by 15.9% of all the websites, which is a content management system market share of 53.8%.

Why we need content management system?

- CMS allows for faster updates of Web pages.
- CMS provides an interface where content owners do not need to know HTML.

- Content managers can track logins and changes to various pages within the site easily.

*“Content management is a significant business issue for any organization that maintains a website that has a large number of pages or has frequently changing content provided by multiple providers” [14].*

Bob Boiko has broken the complexity of a content problem into four areas of concern. [4]

<p>Too much content</p> <ul style="list-style-type: none"> <li>• Content items</li> <li>• Content type</li> </ul>	<p>Too many contributors</p> <ul style="list-style-type: none"> <li>• Diverse authors</li> <li>• Complex sources</li> </ul>
<p>Too much change</p> <ul style="list-style-type: none"> <li>• Content change</li> <li>• Design revision</li> </ul>	<p>Too many publications</p> <ul style="list-style-type: none"> <li>• Content channels</li> <li>• Personalization</li> </ul>

Table 1 Complexity of content problem

A content management system may then become necessary to help organization fix above problems.

## 1.2 Purpose

The purpose of this thesis is to learn how to build and implement a system where:

- The owner of business can promote their content.
- Users can access the content from everywhere with Internet connection.
- User’s right are managed effectively (for editor, publisher).

This system can be used in a news agency or an organization of journalist established to provide reports to a news online system or it can be used as a typical company web site, an e-commerce site, or a membership site.

### 1.3 System Requirement Specification

The system should provide following functions:

- Log in interface for both groups: Administrator, Editors, and Reporters
- Creating account for new member.
- The staff has functions to:
  - Create new content.
  - Upload media.
  - Edit their content.
  - Add tag to content.
- The editor has functions to:
  - Edit content in his area.
  - Publish content.
  - Unpublished content.
- The administrator has functions to
  - Adding member.
  - Active / deactivate member.
  - Edit member information.
  - Roles manager.
  - Add member to Role(s).
  - Edit groups of content.
  - View submitted content.
  - Delete content or user.

## 2. Methodology

Building a system from the beginning is considered quite a large project. We then need to abstract the project into lower levels and identify all the sub components. Therefore, a top down approach from literature reviews has been used in this project. Since the system is a web application the three-tier model concept was selected as the system architecture; presentation, application and data.

To achieve the objective above, the following steps or procedures will be taken. Firstly, we have to identify the proposed system and plan an approach to address it. The objectives of this thesis have been put in the section 1.2. Furthermore, a plan will be formulated about how the objectives can be achieved.

The second step is gathering the data about the requirements of a CMS; functionalities and layouts. Based on the requirements of the system, we moved to third step where we analyze all the data; design a database and the conceptual models. To keep HTML code clean from styling, a CSS was used to manage the design and styling of the web.

Next step is to implement a solution and gather results by testing and verification that is check to ensure that the system fits exactly the requirements specified.

All implementation and testing will be made on a local computer. That requires an installation of IIS and SQL Server 2005 to run ASP.NET locally. To make the implementation successful, the developer tool Visual Studio 2005 was selected. In order to administer the SQL database, the MS SQL Studio was used. Our choice of using ASP.NET was based on its strength and the author of this thesis is familiar with C# .NET. The name of the implementation product is “The News Today”.

The result is a system where author can promote their content; the end user can read and search the content amongst others. The system included an administrative interface for managing the content for the CMS.

# 3. Literature Review

## 3.1 Content Management System

The last decade has seen a remarkable level on web development. Content Management Systems (CMS) have become one the Internet's most powerful web developer tools.

### **What is Content?**

Computers were built to process data. Data consists of small snippets of computer information (numbers, words, images, sounds, etc..).

In the ICT area, content is digital information. It can be text, images, video, sound, documents or anything in digital format.

### **What is Content Management?**

Content Management is the management of the content described above, by collecting, managing and publishing.

### **What is a Content Management System?**

The purpose of web content management system (CMS) is to simplify web publishing and separate site content from site design. Our goal is to make web publishing as simple as managing your e-mail.

A web content management system will provide the following functions:

- Allow staffs to write, edit, and manage Web content.
- Publish information to Web sites for mobile device.
- Dynamically update information of Web sites.

- Provide a centralized content.
- More easily back-up and restore data.
- Easy to change the design of Website.

To combine all the above, we can say: A CMS is a tool that enables non technical staff to create, edit, manage and finally publish (in a number of formats) a variety of content (such as text, graphics, video, documents etc), whilst being constrained by a centralized set of rules, process and work-flows that ensure coherent, validated electronic content.[2]

### **How does it work?**

A typical CMS works like this:

1. A professional web developer designs a web page format - typically with a logo at the top, and standard navigation options across the top, down the left hand side, and/or at the foot of the page.
2. This new format is used to create a master template.
3. All the web developers in the organization get to use special software that lets them add text and images to web pages, automatically using the master template.
4. Each completed page is submitted to an editor, who might make changes. When the page is OK, the editor clicks an on-screen PUBLISH button and uploads the page to the web server, so that the world can read it.
5. Each page is usually saved on a text database. Most web pages have file names that end in .htm (usually implying Microsoft origin) or .html (usually implying Unix), but sometimes you will see pages ending in other file extensions, such as .php or .cfm or .asp. These are often generated by content management systems. However, some CMSs will generate plain .html pages, which are more easily found by search engines.

The best candidates for a CMS will meet all or most of the following criteria [9]:

- Database orientation
- Multiple volumes
- Multiple editions



- Multiple authors, contributors, and editors

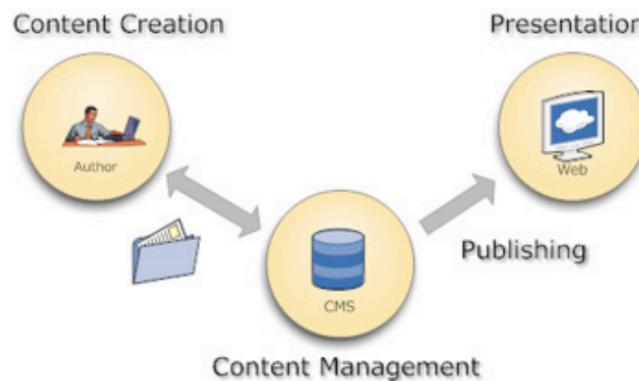


Figure 3.1.0 Content Management System

Source: <http://www.contentmanager.eu.com>

### 3.1.1 Content Creation

Content creation is a CMS tool to create or update a page without having the technical knowledge in his specialization. For instance, a reporter of ‘World News’ can post an article into ‘World News’ category. He can update / edit his article until it is published.

### 3.1.2 Content Management

Once a page has been created. It is stored into a central repository in the CMS, and it is automatically sent to the manager for approval.

### 3.1.3 Publishing Content

When a page is ready, it can then be published to website or intranet. The content might be published in several sources provided by the CMS. Each page has its own design defined by the CMS. For example, it can be viewed in web-browser in a computer or in a mobile device, so the author does not worry about layout - how the page looks like - thus, he can concentrate on writing.

### 3.1.4 Presentation

Our ready content can be displayed in a browser of computer or mobile device, or it can be displayed in an application as well.

## **3.2 Web Application Architecture Principles**

A little more than a decade ago at CERN, Tim Berners-Lee presented a proposal for an information management system that would enable the sharing of knowledge and resources over a computer network. The system then was called World Wide Web. This chapter describes some fundamental knowledge of Web technology.

### **3.2.1 The Origins of the Web**

At the first time when Tim Berners-Lee promoted originally WWW as a virtual library, a document control system for sharing information among the researchers. The document can be accessed via unique address call URL (Universal Resource Locator) and it can be cross-reference via hypertext link. The exponential growth of the Web when people can make personal publishing. The fundamental technology of Web is very simple, a computer connected to Internet, running a Web server, was all necessary to serve documents.

### **3.2.2 Fundamentals of HTTP**

HTTP is an application level protocol in the TCP/IP protocol suite, using TCP as the underlying Transport Layer protocol for transmitting messages.

The fundamental of things of HTTP protocol and structure of HTTP messages are:

- The uses the request/response, an HTTP client program sends an HTTP request message to a server, server returns an HTTP response message.
- The structure of request and response messages consists of a group of lines containing headers, then a blank line, then by a message body.
- HTTP is a stateless protocol, meaning that it has no explicit support for the notion of state.

A sample of the structure of HTTP messages:

```
METHOD /path-to-resource HTTP/version-number
Header-Name-1: value
Header-Name-2: value
[ optional request body ]
```

A sample of the structure of HTTP response:

```
HTTP/version-number status-code message
Header-Name-1: value
Header-Name-2: value
[ response body ]
```

### **3.2.3 Web Server**

The most common use of web servers is to host websites, but there are other uses such as gaming, data storage or running enterprise applications.

A Web server contains a collection of documents or other information. The documents are organized in a tree structure, like in a computer's file system. Nowadays, Web server can serves dynamic data.

Dynamic data comes from variety of sources. The most approach based on open standards is the Common Gateway Interface (CGI). There are many CGI have risen: PHP, Cold Fusion, Microsoft's Active Server Pages (ASP), and Sun's Java Server Pages (JSP), as well as Sun's Java Servlet API.

In the practical part of this thesis, we will use IIS Web Server.

### **3.2.4 Web Browsers**

The main responsibilities of a browser are:

- Generate and send requests to Web servers on the user's behalf.

- Accept responses delivered by Web servers and interpret them to produce the visual representation to be viewed by the user.

- Render the results in the browser window.

The major web browsers currently are Firefox, Google Chrome, Internet Explorer, Opera, and Safari.[4]

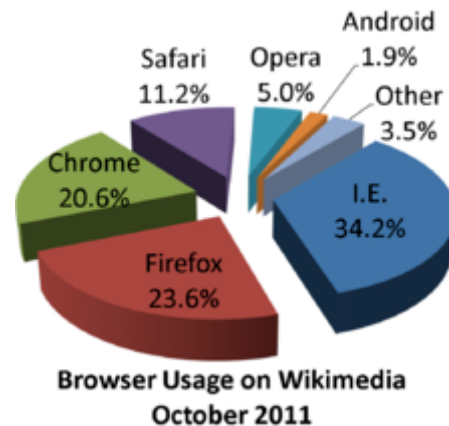


Figure 3.2.4 Web browser usage on Wikimedia servers

Source: Wikipedia

### 3.2.5 Application Architecture of Dynamic Web Applications

In an interview for Wired magazine, Steve Jobs, of Apple, Inc., observed that the Web is moving through several stages of evolution. Stage zero represented the most primitive state of the Web, wherein most sites were document-centric and essentially static. After that, Web quickly grew out of that stage and into stage two, wherein the client and the server were made smarter. This meant evolving mechanisms to link the user experience to databases in the back-end, essentially starting to make every application accessible through a browser. [14]

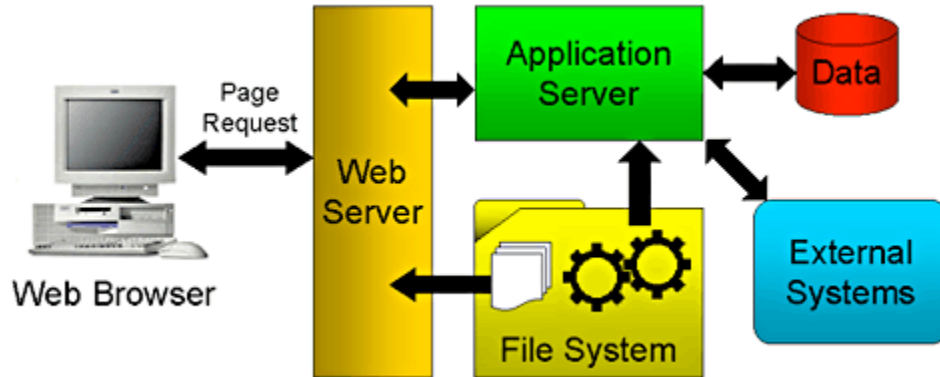


Figure 3.2.5 Web architecture

Source: <http://www.ibm.com>

A Web application is a client-server application that uses the Web browser as its client. Browsers send requests to servers, and the servers generate responses and return them to the browsers.

### 3.2.6 RSS

RSS (Rich Site Summary) is a format for delivering regularly changing web content. RSS solves a problem for people who regularly use the web. It allows user to stay informed by retrieving the latest content from the sites you are interested in. Users no need to visit each site individually.

What does RSS look like?

```
<rss version="0.91">
  <channel>
    <description>XML.com features a rich mix of information and services for
the XML community.</description>
    <language>en-us</language>
    <item>
      <title>Normalizing XML, Part 2</title>
      <link>http://www.xml.com/pub/a/2002/12/04/normalizing.html</link>
      <description>In this second and final look at applying relational
normalization techniques to W3C XML Schema data modeling</description>
    </item>
  </channel>
</rss>
```

```
</channel>  
</rss>
```

## 3.3 Overview on the Main Tools

*This chapter contains the overview of technical background which the practical parts will use.*

### 3.3.1 HTML

One of the most important things of Web is HTML - a simple markup language. Over the last 20 years, the HTML specification has gone through a number of transformations. The first published specification for a HTML was published in 1993 [5] . The latest of HTML (HTML 5) was released in May 2011 as a Working Draft. [6]



Figure 3.3.1 HTML 5 logo

*Source: Wikipedia*

A valid HTML document must contain a reference to the HTML version, a header section containing document declarations, and the body of the document.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<HTML>
  <HEAD>
    <TITLE>Lorem ipsum</TITLE>
  </HEAD>
  <BODY>
    <P>Lorem ipsum dolor sit amet. <P>
  </BODY>
```



</HTML>

### Sample HTML 4.01 compliant document

HTML provides elements for presenting text, lists, tables, pictures etc into a web document. An element comes with two important properties, attributes and content. Each HTML page start with <HTML> tag and end with </HTML> tag. The follow the header is meta keys, title, stylesheet, javascript, etc. The content of an HTML starts with <BODY> tag and end with </BODY> tag.

### 3.3.2 CSS

Cascading Style Sheets (CSS) is a mechanism for controlling style (e.g. fonts, colors, spacing) for HTML. A style sheet is made of rules, which apply to HTML tag hierarchically. CSS gives designer the possibility to create their own style of how the document display in the browser.

The main approach of CSS is to provide the separation of document content with the design of a web page.

CSS has various levels and profiles. Each level of CSS builds upon the last, typically adding new features and typically denoted as CSS1, CSS2, CSS3, and CSS4. [7]

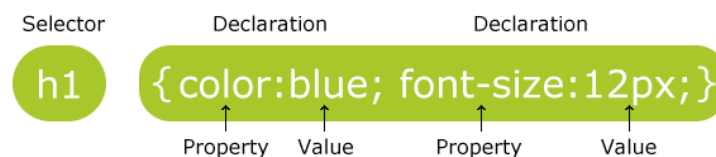


Figure 3.3.2 CSS Syntax

Source: W3School

There are 3 ways to insert CSS to a HTML document:

- External CSS: A CSS file is referenced from the header of a document. CSS files are inserted into HTML documents using the following syntax:

```
<link rel="stylesheet" href="http://example.com/css/style.css"
type="text/css" />
```

- Embedded style: CSS blocks are inside the document:

```
<head>
<style type="text/css">
hr {color:sienna;}
p {margin-left:20px;}
body {background-image:url("images/back40.gif");}
</style>
</head>
```

- Inline styles. By using the style attribute for example:

```
p {color:red;text-align:center;}
```

### 3.3.3 JavaScript

JavaScript is a scripting language; it works in almost browser such as Internet Explorer, Firefox, Safari, Chrom and Opera.

What is JavaScript? [8]

- JavaScript was designed to add interactivity to HTML pages.
- JavaScript is a scripting language.
- A scripting language is a lightweight programming language.
- JavaScript is usually embedded directly into HTML pages.
- JavaScript is an interpreted language (means that scripts execute without preliminary compilation).
- Everyone can use JavaScript without purchasing a license.

What can JavaScript do?

- *JavaScript gives HTML designers a programming tool* - HTML authors are normally not programmers, but JavaScript is a scripting language with a very simple syntax! Almost anyone can put small "snippets" of code into their HTML pages.

- *JavaScript can react to events* - A JavaScript can be set to execute when something happens, like when a page has finished loading or when a user clicks on an HTML element.
- *JavaScript can read and write HTML elements* - A JavaScript can read and change the content of an HTML element.
- *JavaScript can be used to validate data* - A JavaScript can be used to validate form data before it is submitted to a server. This saves the server from extra processing.
- *JavaScript can be used to detect the visitor's browser* - A JavaScript can be used to detect the visitor's browser, and - depending on the browser - load another page specifically designed for that browser.
- *JavaScript can be used to create cookies* - A JavaScript can be used to store and retrieve information on the visitor's computer.

An example of JavaScript inside a webpage:

```
<html>
<body>
<h1>My First Web Page</h1>
<script type="text/javascript">
document.write("<p>" + Date() + "</p>");
</script>
</body>
</html>
```

The above code of JavaScript will write current date in side HTML document.

### 3.3.4 ASP.NET

ASP.NET is a development framework developed by Microsoft for building web pages with HTML, CSS, JavaScript and server-side scripting. It was first released in January 2002 with version 1.0 of the .NET Framework.

What is ASP.NET?

- More flexible successor of Active server page.
- Dynamic Web pages that can access server resources.

- Server-side processing of Web-form.
- Browser independent.

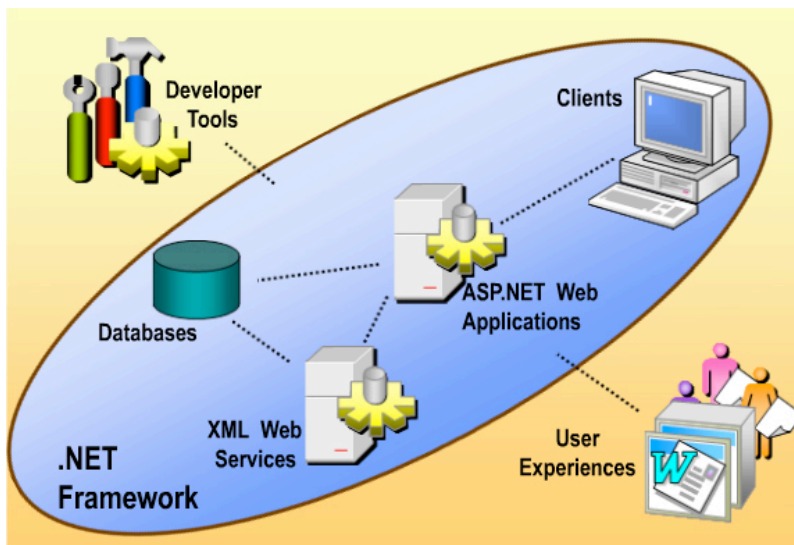


Figure 3.3.4 ASP.NET

Source: MSDN

Benefits of using ASP.NET:

- Based on web standard and practices.
- Functionality of .NET classes is universal available.
- Code is organized to hierarchical name-spaces and classes.
- Language is independent.

### 3.3.5 IIS

Internet Information Services (IIS) is a Microsoft product and it is designed to use with Windows Server products. Internet Information Services (IIS) was initially available with Windows NT 3.51. Internet Information Services (IIS) 2.0 was available with Windows NT 4.0. The support for server side scripting Active Server Pages (ASP) for dynamic content was included in IIS 3.0.

Internet Information Services (IIS) 7 is a major upgrade of IIS, and it is available with Windows Vista and Windows 2008 Server. It includes several new functionalities and some of them are listed below.

- The ability to have HttpModules and HttpHandlers participate in all requests to a server. No need to map requests to the ASP.NET ISAPI in order to write managed modules that participate in requests.
- Integration of the ASP.NET configuration system with IIS. IIS now uses the same web.config configuration model as ASP.NET, which means you can have both ASP.NET and IIS configuration settings in the same file together.
- An integrated management tool that manages both IIS and ASP.NET settings together.
- Better request auditing and error debugging available.
- Better configuration APIs and command-line tools.

### 3.3.6 SQL

Structured Query Language, or SQL, is the most powerful and the most significance language used in the world. SQL is a standard language for accessing and manipulating databases. The ANSI (American National Standard Institute) and the ISO (International Standard Organization) developed in 1986 the first SQL version with the name SQL1. In 1992 the new extended standard SQL2 established. The lasted standard, include XML called SQL3. With SQL, the migration from one system to another system becomes easier for users. In SQL the terms, row and column are synonyms for relation. To create a new relation in the database we start with the *CREATE TABLE* command.

For example:

```
CREATE TABLE table_name  
(  
column_name1 data_type,
```

```
column_name2 data_type,  
column_name3 data_type  
)
```

That command will create a table with the name: “table\_name” and it has 3 columns. The “data\_type” is the format of that column contains the data. The most command which is use the most in SQL is *SELECT* command.

For example:

```
SELECT * FROM table_name
```

The SELECT statement is used to select data from a database. The star (\*) means user wants to select all the data of a table. The result is stored in a result table, called the result-set.

## Data Manipulation

There are two sorts of data manipulation commands in SQL. The first type are only used for database queries and do not alter the tables. The second type is used for adding, updating or deleting values in a database.

- Basic database queries
- SQL Insert, Delete and Update

### 3.3.7 SQL Management Studio Express

Microsoft SQL Server Management Studio Express (SSMSE) is a free, easy-to-use graphical management tool for managing SQL Server 2005 Express Edition and SQL Server 2005 Express Edition with Advanced Services. SSMSE can also manage instances of the SQL Server Database Engine created by any edition of SQL Server 2005.

### 3.3.8 Visual Studio Express

Microsoft Visual Studio Express products are free software development tools to help developer build web, Windows, and Windows Phone applications.

# 4. System analysis and implementation

## 4.1 Collecting the information

The CMS in this thesis has some features available which include:

- Create user accounts to perform selected tasks based on permissions.
- Each head of department will be responsible for the content displayed in their area.

Based on the news agency, the system has four types of users:

- Administrator: who has highest system authority, can add or edit other users or control the whole system.
- News controller: User who can publish news in the area that user has the right to access.
- News reporter: User can post or edit his article in case that article not published.
- Reader: User who surfs the web.

### 4.1.1 Requirements

The requirements for the CMS in this thesis include:

- Contents divided into many categories. In a category, it has sub-category. For example, in the News category, we have Euro news and Asia News.
- Each post belonging to one category.
- A post (can) which has many tags. A tag is the simply the word(s) that post related.
- User that can make comment(s) to a post.
- A post that can contain many videos record.
- A facility that allow for one photo related to that post, one header and body text. In the body, a user can have more than one photo (Allows for slight custom html editing).

- A tool to upload a file: Upload any kind of file format to the web server, give it a header and description and pick the file. Once loaded, surfers can browse to the page and download the files that you have uploaded. (Allow for custom html editing).
- The owner of an article that can edit the post if it's not published.
- URL friendly link - url which contains meaningful text.
- An easy to change layout
- RSS provider.

## 4.2 The Database

All system contents are stored in database. The database structure consists of 22 tables.

The tables Users, Profile, Membership, UsersInRoles, Applications, Paths, Roles, PersonalizationPerUser, PersonalizationAllUsers are almost independent from the others and it was generated by Microsoft ASP.NET. It is a part of **SqlMembershipProvider**.

The tables Post, Category, CategoryType, Comment, Video has one or more foreign and primary keys related with them.

Some main tables are:

- *aspnet\_Users*: contains information of all user
- *aspnet\_Roles*: contains roles of system, there will be 4 roles: Administrator, News\_Staff, News\_Controller, Visitor.
- *category*: contains categories of post
- *post*: contains posts related with category, tag, and user
- *tag*: contains tags of a post.
- *comment*: contains all comments of posts

All the queries of our CMS stored in *Stored Procedures* of the database. This helps us separate queries from our code and makes the code 'clean'.

This query will return all the sub-categories of a category:

```
ALTER proc [dbo].[BXD_GetCategoriesFrom_CatetoryType]
@category_type_id int
```



```
as
select c.category, c.url, c.category_id from category c
where c.category_type_id = @category_type_id
```

This query will return posts from a category:

```
ALTER proc [dbo].[BXD_TrangChu_SelectTop1CategoryType]
    @Category_Type_Id int
```

As

```
Select top 1 p.post_id,title, body,link,images_name,post_date, ct.category_type_id,
ct.category_type_name,c.category,p.modified_Date
From post p, post_category pc,category_type ct, category c
Where c.category_Id = pc.category_Id
and p.post_Id = pc.post_Id
and ct.category_type_id = c.category_type_id
    and ct.category_type_id = @Category_Type_Id
    and p.deleted = 0 and p.draft = 0
Order by p.modified_date desc
```

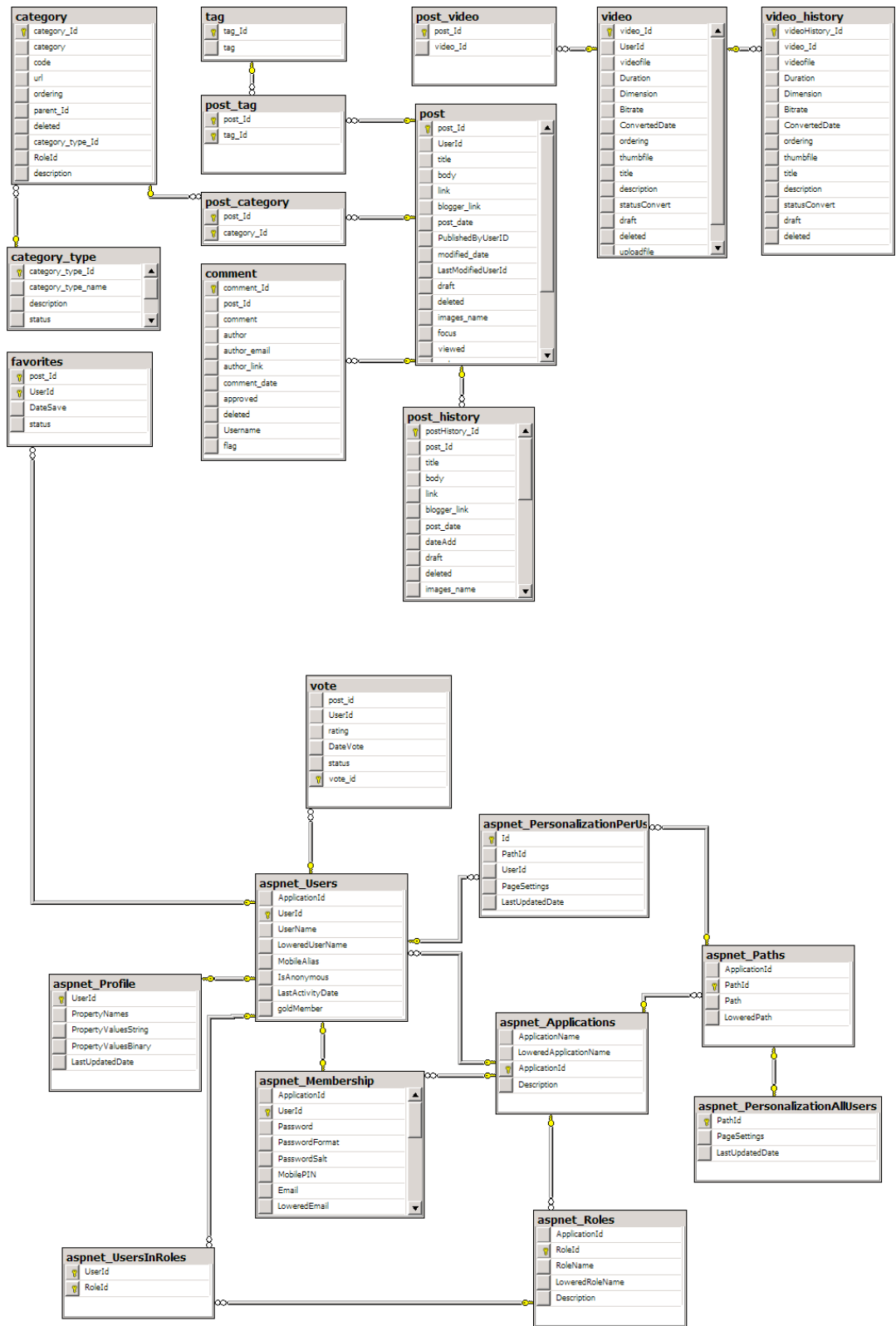


Figure 4.2.0 System database diagram

### 4.3 System Structure

The presentation section includes the interface for the users to interact with the system accounts and the interface to public webpage where the content of the system will be published for the readers. The application section handles all data processing in the system. All data is stored into the database in the data section.

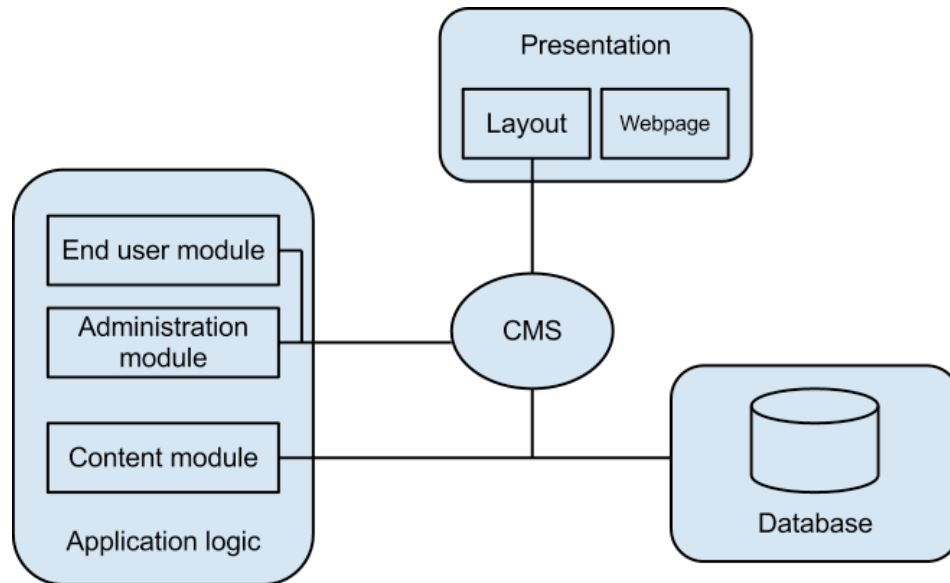


Figure 4.3.0 System structure

3-Tier Architecture is an Approach to separate the Business logic, Data Access and User Interface. It helps to make the logics and validations simpler, separate from Database logics and still keeping the Data access code reusable.

This following diagram describes a general process of our web application that presents data that comes from a database. Business Logic Layer or BLL is the bridge between the Presentation layer and the next layer: the Data Access Layer or the DAL. This DAL then talk to the database to perform selects, inserts, updates and deletes.

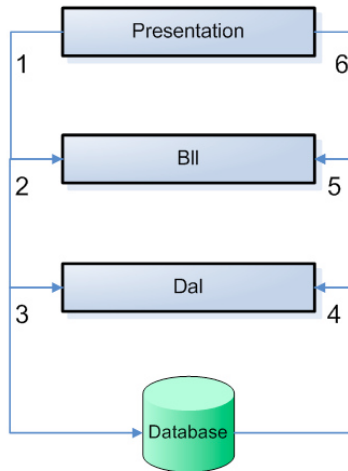


Figure 4.3.1 3-Tier Layers in our System

Source: MSDN

Here is our data access layer (DAL)

The screenshot shows the following details for each table and adapter:

- category** table: columns include category\_id, category, code, url, ordering, deleted, post\_id, category\_type\_id, RoleId, Category\_GUID. Adapter: `categoryTableAdapter` with methods like `GetCategories (@post_id)`, `AddPostToCategory (@post_id, @category_id)`, etc.
- post** table: columns include post\_id, body, title, link, blogger\_link, post\_date, modified\_date, comments, draft, deleted, review, code, UserId, images\_name, category\_id. Adapter: `postTableAdapter`.
- comment** table: columns include comment\_id, post\_id, comment, author, author\_email, author\_link, comment\_date, deleted, approved, title, link. Adapter: `commentTableAdapter` with methods like `GetCommentsByPost (@post_id)`, `AddComment (@post_id, @comment, @author, @au...)`, etc.
- tag** table: columns include tag, tag\_id. Adapter: `tagTableAdapter` with methods like `GetTags (@post_id)`, `ClearTagsFromPost (@original_post_id)`, etc.
- category\_type** table: columns include category\_type\_Id, category\_type\_name, description, status, ordering, homepage. Adapter: `category_typeTableAdapter` with method `Fill, GetCategoryType ()`.

Figure 4.3.2 Data access layer

## 4.4 Application Logic

This section contains the logic and process for each type of user: Administrator, end-users and explains the interaction between these.

#### 4.4.1 Login Process

Users should be restricted from accessing administrator area in the system. The login system allows users to login to their accounts. To get access to the system, users must submit a form with their username and password. By using ASP.NET login-control, a login can be easily created.

When a user hits the submit button in the form, the browser will create an HTTP post to the server containing his username and password. The validated data is processed by a function, which compares the submitted data with the data in database. If the username and password is correct, the user will be redirected to the account page, else the user is redirected back to the login page.

The system needs to keep track of the login user state between http requests; hence it uses cookies to keep their state. If the session variable is set, the user is still logged in, else the user is logged out or has an expired session.

Depending on the role (or group) of a specific user, the system will prepare the user interface that belongs to that role (or group).

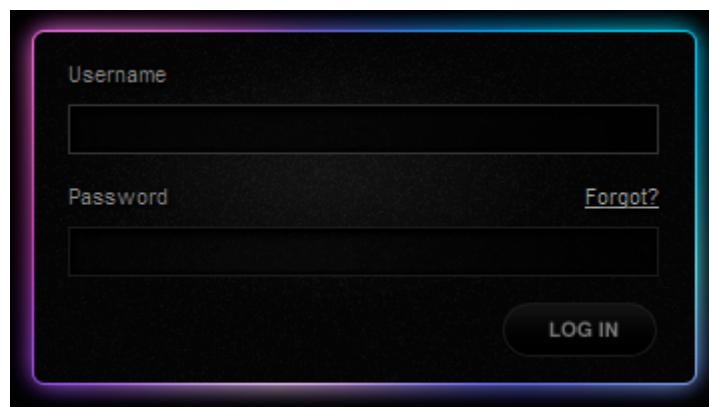
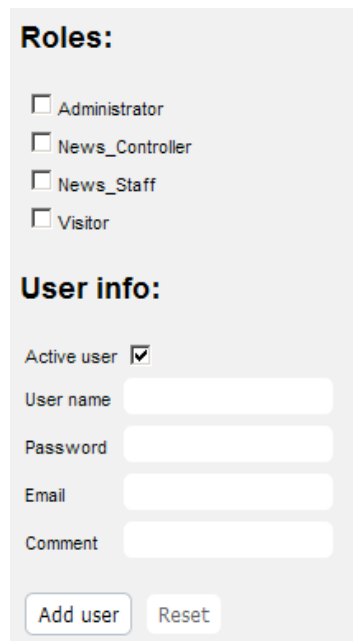
The image shows a login form with a dark background and a glowing blue border. It contains two text input fields: one for 'Username' and one for 'Password'. To the right of the password field is a link labeled 'Forgot?'. At the bottom right of the form is a rounded rectangular button with the text 'LOG IN' in all caps.

Figure 4.4.1The login form

## 4.4.2 Adding a User

The system provides only one way to create a new user via administrator. The administrator fills the form to create a new user. A user can have many roles. The administrator can also edit information an existing user.



**Roles:**

- Administrator
- News\_Controller
- News\_Staff
- Visitor

**User info:**

Active user

User name

Password

Email

Comment

Figure 4.4.2 Adding a user

## 4.4.3 Roles Management

Roles give you flexibility to change permissions and add and remove users without having to make changes throughout the site. The primary purpose of establishing roles is to give you an easy way to manage access rules for groups of users. You create users and then assign the users to roles.

Role management allows the administrator to treat a groups of users as a unit by assigning users to roles such as News Controller, News Staff, and Visitor. After the roles are established, the administrator can create access rules in the application. Our site includes a set of pages that some of them displayed only to members. [12]

Roles			
Role name	User count	Role ID	Delete role
Administrator	1	4542fef3-a0a7-4e72-bd07-39339e2c8dc2	Delete role
News_Controller	1	313105da-158a-4c3a-a702-f457f7407d1b	Delete role
News_Staff	1	56f1740d-9557-434a-a72e-07fc2135bf45	Delete role
Visitor	1	6631f85b-155d-4c51-a46c-c639463d95e0	Delete role

New role

Figure 4.4.3 Role management

Our system has 4 Roles:

- Administrator
- News\_Controller
- News\_Staff
- Visitor

#### 4.4.4 Creating Content

The main purpose of a CMS is providing the system with content. Adding content is handled by administrative section */admin*. The page consists of a number of web forms where staff can name the content, add images and edit the body of the content.

It also includes a file upload control where users can select a file from a local PC and upload it to the server. The file can be an image, a pdf document or anything in digital format. When the user click “Add New” the content will be saved into database.

In the body-content, users can edit it with a friendly interface that is similar to an office application. This feature is very important for users who are familiar with creating content with MS Office or Open office.

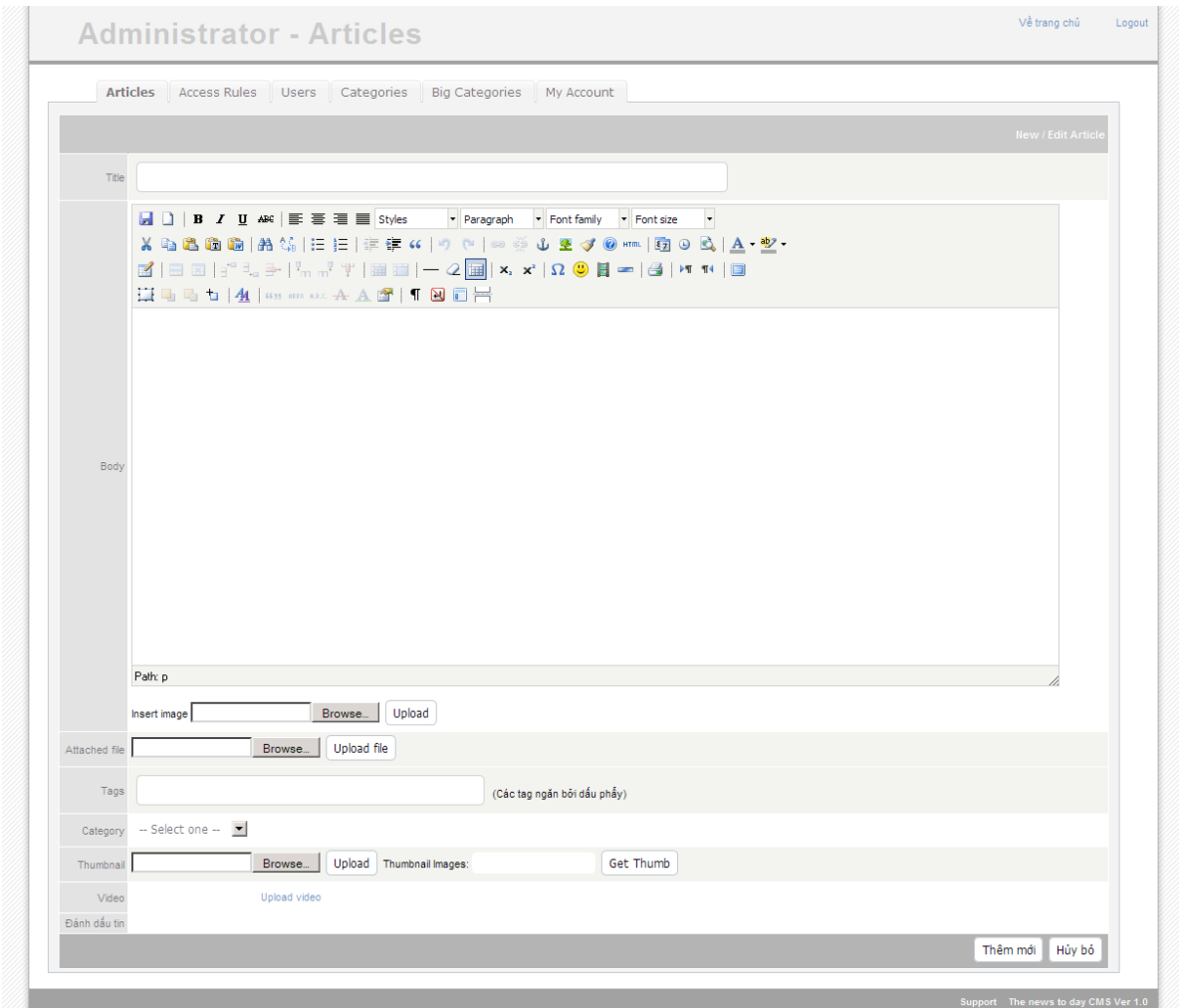


Figure 4.4.4 Adding new content

#### 4.4.5 Publishing

The default state of a submitted content is always ‘Unpublished’. When the user of role *News staff* clicks on Publish, the content will be published to the web. From this moment, the content state is changed to ‘Published’ and the author cannot edit his page.

Administrator can sort the contents by title, post date, category or by author. He can also mark a post to the top of the public section by clicking ‘Top Home’ button. A category filter was also implemented.



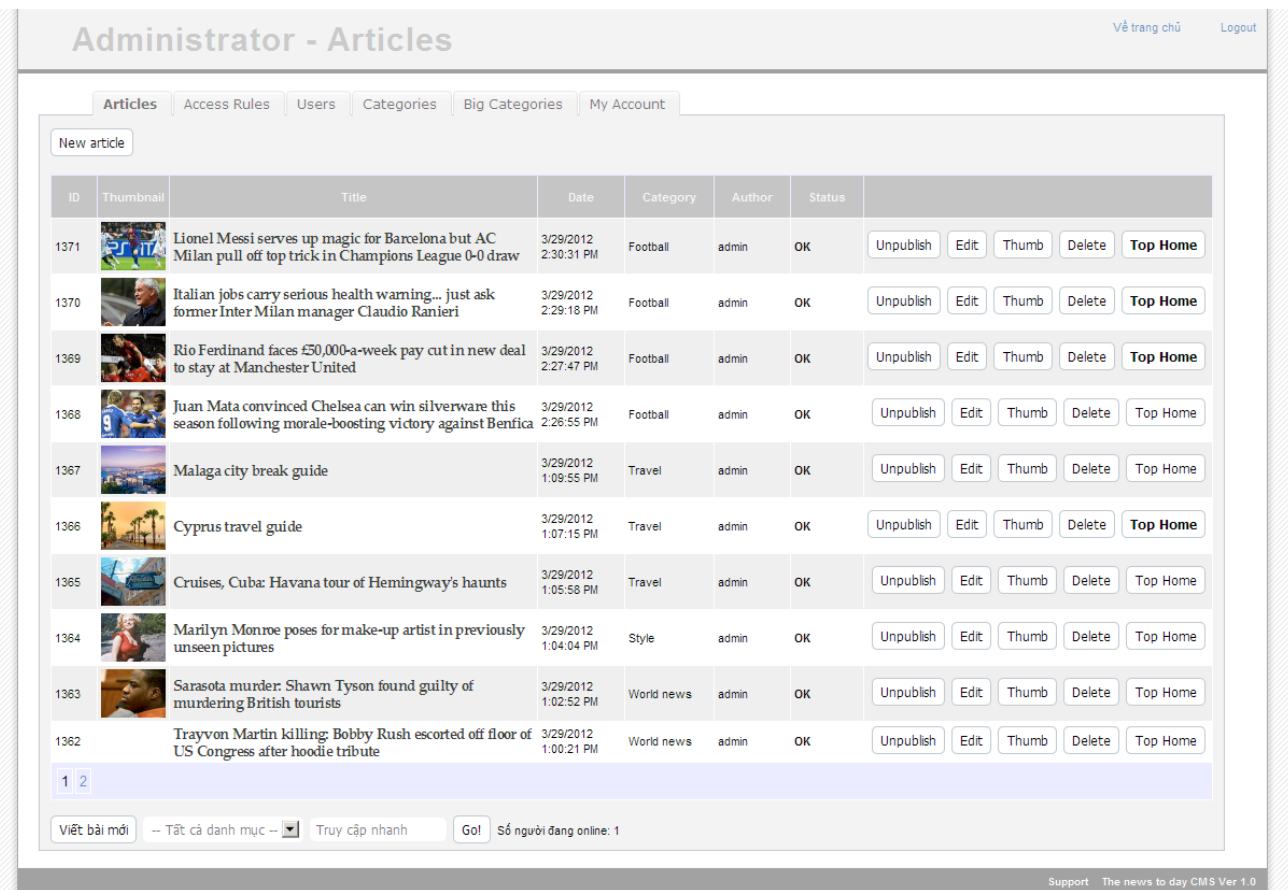


Figure 4.4.5 Articles management layout

## 4.4.6 Page Template

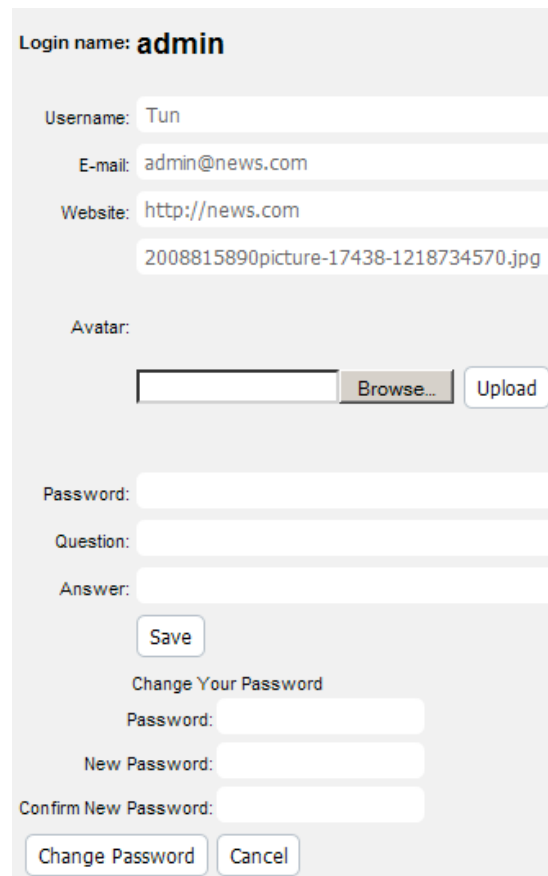
In the public section we have 3 pages:

- A page for home page: Contains some of the newest posts or recommended posts from all categories.
- A page for category page: Contains most new of all the categories.
- A page for displaying the details content of a post.

In the administration, a template was used and applied to all the administration sections. All the image of website is processed by image handler. This means image can be in any size without recreate or resize it manually. This feature helps us change the layout easily with different size of image of the template.

#### 4.4.7 Managing profile page

Members of our system need a way to promote themselves and their contents. Thus, the entire member has a profile page. On this page, it is possible to change password, profile, security question and their avatar.



The screenshot shows a web form for managing a user profile. At the top, it displays the login name 'admin'. Below this, there are several input fields: 'Username' with the value 'Tun', 'E-mail' with 'admin@news.com', and 'Website' with 'http://news.com'. A file upload section shows a selected image file named '2008815890picture-17438-1218734570.jpg'. The 'Avatar' section includes a text input field, a 'Browse...' button, and an 'Upload' button. Below these are fields for 'Password', 'Question', and 'Answer'. A 'Save' button is positioned below the 'Answer' field. A section titled 'Change Your Password' contains three input fields: 'Password', 'New Password', and 'Confirm New Password'. At the bottom of this section are 'Change Password' and 'Cancel' buttons.

Figure 4.4.7 Profile page

#### 4.5 End User Modules

This module is the public section of the system; this is what public users see when they arrived to the system. The web server generates web pages with the data from the database in the layout of our template.

#### 4.6 Administration Modules

The administration module controls all users, roles and categories of the system. Super User or Administrator user will view website information, add/modify/delete users and roles, control permission levels. Administrator also can assign levels of access to web site.

ID	Category	Code	Link	Ordering	Parent	Delete	Category ID	Description	Role	
318	Economic	Economic	Economic/Default.aspx	318	0	<input type="checkbox"/>	13	.	News_Staff	<a href="#">Edit Delete</a>
321	World news	WorldNews	WorldNews/Default.aspx	321	0	<input type="checkbox"/>	12	.	News_Staff	<a href="#">Edit Delete</a>
346	Football	Football	Football/Default.aspx	341	0	<input type="checkbox"/>	14	.	News_Staff	<a href="#">Edit Delete</a>
356	Travel	Travel	Travel/Default.aspx	352	0	<input type="checkbox"/>	18	.	News_Staff	<a href="#">Edit Delete</a>
357	Style	Style	Style/Default.aspx	353	0	<input type="checkbox"/>	18	.	News_Staff	<a href="#">Edit Delete</a>
368	Web information	Web	Web/Default.aspx	222	0	<input type="checkbox"/>			Administrator	<a href="#">Edit Delete</a>
370	Finance	Finance	Finance/Default.aspx	222	0	<input type="checkbox"/>	13		News_Staff	<a href="#">Edit Delete</a>
371	Politics	Politics	Politics/Default.aspx	333	0	<input type="checkbox"/>	12		News_Staff	<a href="#">Edit Delete</a>
372	Health	Health	Health/Default.aspx	444	0	<input type="checkbox"/>	18		News_Staff	<a href="#">Edit Delete</a>

Figure 4.6.0 Categories management

## 4.7 The Sitemap

The sitemap provides a list of links to user accessible pages on our website. The sitemap is implemented with SiteMapDataSource class. Our structure of content described by an XML file - Web.sitemap - as following

```
<?xml version="1.0" encoding="utf-8" ?>
<siteMap xmlns="http://schemas.microsoft.com/AspNet/SiteMap-File-1.0"
enableLocalization="true" >
  <siteMapNode>
    <siteMapNode description="Exposed Nodes">
      <siteMapNode title="The news today" url="~/Default.aspx"
resourceKey="welcome">
        <siteMapNode provider="KhamPhaSitemap"></siteMapNode>
      </siteMapNode>
      <siteMapNode title="Footer" resourceKey="footernav" roles="*">
        <siteMapNode url="~/SiteMap.aspx" title="Site Map"/>
      </siteMapNode>
      <siteMapNode title="Admin Area" url="~/Admin/default.aspx"
resourceKey="admin" roles="Administrator">
        <siteMapNode
url="~/Admin/WebManager/TinTuc/Default.aspx" title="Articles"
roles="News_Staff"/>
        <siteMapNode url="~/Admin/access/access_rules.aspx" title="Access
rules" roles="Administrator" >
```

```

        <siteMapNode url="~/admin/access/roles.aspx" title="Roles"
roles="Administrator"/>
        <siteMapNode url="~/admin/access/add_user.aspx" title="Add user"
roles="Administrator"/>
        <siteMapNode url="~/admin/access/access_rule_summary.aspx"
title="Access Rule" roles="Administrator"/>
        <siteMapNode url="~/admin/access/locked_users.aspx" title="Looked
users" roles="Administrator"/>
        <siteMapNode url="~/admin/access/online_users.aspx" title="Online
users" roles="Administrator"/>
        <siteMapNode url="~/admin/access/users_by_role.aspx" title="Users
by role" roles="Administrator"/>
        <siteMapNode url="~/admin/access/active_users.aspx" title="Active
users" roles="Administrator"/>
        <siteMapNode url="~/admin/access/edit_user.aspx" title="Edit users"
roles="Administrator"/>
        <siteMapNode url="~/admin/WebManager/post_comments.aspx"
title="Comments" roles="Administrator"/>
    </siteMapNode>
    <siteMapNode url="~/admin/access/users.aspx" title="Users"
roles="Administrator" />
    <siteMapNode url="~/Admin/WebManager/cat/default.aspx"
title="Sub-Categories" roles="Administrator"/>
    <siteMapNode url="~/Admin/WebManager/cat/newsgroup.aspx"
title="Categories" roles="Administrator"/>
    <siteMapNode url="~/Admin/myAccount.aspx" title="My account"
roles="News_Staff"/>
    </siteMapNode>
</siteMapNode>
</siteMapNode>
</siteMap>

```

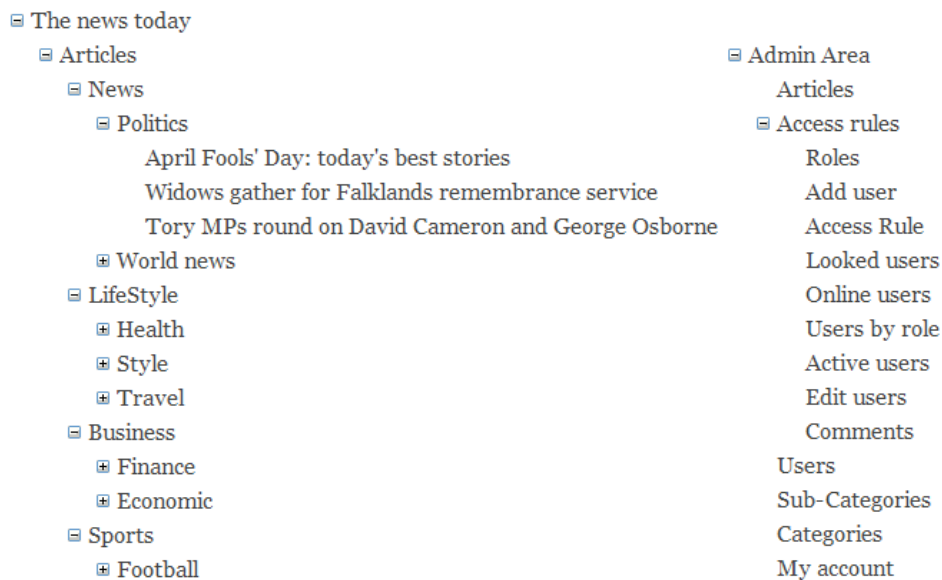


Figure 4.7.0 The sitemap

## 4.8 Implementation of the System

The system was implemented successfully with some sample data. The homepage can be viewed at the root of application. The administrative area can be accessed at: */admin* with an *admin* account: Admin and *password*: tintuc.

# 5. Result

## 5.1 Result

The work resulted in a content management system with three (3) groups of users and one (1) administrator. Two groups *News Staff* and *News Controller* are group creators of content; they can sign-in into the system, create and publish their content without knowledge of HTML or web design.

Members of groups *News Staff* and *News Controller* have administrative interface and consists of a menu with the following functions implemented from the requirement specifications.

- Create content
- Edit content
- Publish / unpublished content (for News Controller only)
- Upload image, files

A member of Administrator group can

- Manage users
- Manage roles
- Manage categories
- Manage access

The other group is visitors of the system.

MONDAY, MARCH 5, 2012

32° Partly cloudy

# The News Today

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And at the end of a throbbing evening in San Siro, AC Milan pulled off what is seemingly becoming the most difficult trick in football these days by stopping...

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Rio Ferdinand faces £50,000-a-week pay cut in new deal to stay at Manchester United

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Figure 5.1 Result: Homepage

## Travel



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## Style



### Stevie Nicks' Easter menu

There are so many rich traditions to plunder for Easter eating. Traditionally, on Good Friday no meat is eaten; in Spain, Portugal and France there are salt cod recipes...

Rose Prince's Easter Baking Club bonanza

Marilyn Monroe poses for make-up artist in previously unseen pictures

## Health



### What are the chances this baby will live to 100?

Am I going to make my century? It is a question more and more of us ask ourselves as 70 becomes the new 60, 80 the new 90 and 90 the new...

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Figure 5.2 Result: Category page



## In this section

Cypriot travel guide

Cruises: Cuba: Havana tour of Hemingway's haunts

## Malaga city break guide

By 8e825914-04aa-4de1-953d-9237baf809e 29/03/2012



The opening of the Picasso Museum in 2003 brought a new surge of energy to Malaga. Chic boutiques, gastrobars and cool cafés have sprung up alongside the traditional taverns in the winding lanes in the heart of the city. If you haven't been for a while, you'll be amazed at how it has been spruced up. Although there is plenty to see and do – and still more now the Carmen Thyssen Museum has opened – Malaga is really a place to kick back and just enjoy the laidback Mediterranean vibe.

## When to go?

It rarely gets really cold in Malaga, and it is often warm enough to sit at pavement cafés during the day even in December and January. Spring and autumn are the best times to visit. Although not as well known as Seville Holy Week, the Easter processions are among the most important in Spain.

## Getting there

## Flights

There is a huge range of scheduled and charter flights to Malaga departing from most UK airports. Airlines include Iberia (0870 609 0500, [www.iberia.com](http://www.iberia.com)); British Airways (0844 493 0787, [www.ba.com](http://www.ba.com)); Ryanair (0871 246 0000, [www.ryanair.com](http://www.ryanair.com)); EasyJet (0905 821 0905, [www.easyjet.com](http://www.easyjet.com)); Bmibaby (0905 8282828, [www.bmibaby.com](http://www.bmibaby.com)) and Monarch (0871 940 50 40, [www.monarch.co.uk](http://www.monarch.co.uk)).

## Transfers

Malaga airport ([www.aena.es](http://www.aena.es)) is five miles from the city centre. A taxi from the airport costs about €20 (£17). The airport bus service costs €2 and the train costs €1.35. All take around 15 minutes.

## Cruises

If you're arriving by cruise ship, Malaga port is right in the city centre and within easy walking distance of most places of interest. Since much of the centre's labyrinth of narrow lanes is pedestrianised, it is quicker to go by foot unless you have mobility problems. A short hop by taxi, from the port to the cathedral, for example, costs around €8. Look out for the tourist office in Plaza de la Marina, just after you leave the port area. A shopping centre is being built in the port itself at the moment.

## Trains

Travel to Paris with Eurostar ([www.eurostar.com](http://www.eurostar.com)), then take the train to Madrid (13 hours). From there, the Ave high-speed service to Malaga takes just 2hr 40min. Book tickets through Spanish Rail (020 7725 7063, [www.spanish-rail.co.uk](http://www.spanish-rail.co.uk)), which also sells the Golden Card (€5) that entitles the over-60s to a 40 per cent discount. Check timetables and fares on the website of Spanish rail network Renfe ([www.renfe.com](http://www.renfe.com)). You can also book through international Rail (0871 2310790, [www.internationalrail.com](http://www.internationalrail.com)), Railbookers (0844 4821010, [www.railbookers.com](http://www.railbookers.com)) and Rail Europe (0844 8484064, [www.raileurope.co.uk](http://www.raileurope.co.uk)). Seat61 ([www.seat61.com](http://www.seat61.com)) tells you everything you need to know about getting to Spanish destinations by train.

## Driving

Brittany Ferries (0871 2441400, [www.brittanyferries.co.uk](http://www.brittanyferries.co.uk)) sails to Santander twice times a week from Portsmouth (a 24-hour voyage) and once a week from Plymouth (a 20-hour voyage). There is also a twice-weekly service from Portsmouth to Bilbao (24 or 32-hour voyage). Driving to Malaga from the ferry ports at Santander or Bilbao takes nine or 10 hours.

## Getting around

## Walking

The city centre is compact enough to walk around.

## Buses

There is a €1.20 flat bus fare ([www.emtsam.es](http://www.emtsam.es)), and number 35 from Alameda Principal will take you up the hill to the Gibralfaro castle. There is also a useful hop-on-hop-off Malaga Tour bus ([www.malaga-tour.com](http://www.malaga-tour.com)), which calls at the port and stops at the cathedral, Alcazaba, Gibralfaro castle and other points of interest, including El Corte Inglés department store. The service runs every 30 minutes and costs €15 for a day ticket.

## Metro

A metro system is currently under construction.

## Taxis

These are plentiful and inexpensive. There is no need to use a car, unless you want to drive up to the Gibralfaro castle or to one of the beaches.











## Car hire

If you want to hire a car to do some day trips, try Europcar (00 34 902 105030, [www.europcar.es](http://www.europcar.es)), Malaga Car (00 34 952 176225; UK 0871 284 4700, [www.malagacar.com](http://www.malagacar.com)) or National Atesa (00 34 902 100101, [www.atesa.es](http://www.atesa.es)).

Figure 5.3 Result: Detail page

[Go to Homepage](#)   [Logout](#)

[Articles](#)   [Access Rules](#)   [Users](#)   [Categories](#)   [Big Categories](#)   [My Account](#)

ID	Thumbnail	Title	Date	Category	Author	Status	
1385		George Osborne says Indian tax plans could harm investment	4/2/2012 2:48:37 PM	Finance	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1384		Growth in UK manufacturing eases double-dip fears	4/2/2012 2:47:51 PM	Finance	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1383		What are the chances this baby will live to 100?	4/2/2012 2:46:02 PM	Health	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1382		Surgical implants and makeovers cannot solve all our problems	4/2/2012 2:44:54 PM	Health	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1381		Stevie Nicks' Easter menu	4/2/2012 2:43:03 PM	Style	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1380		Rose Prince's Easter Baking Club bonanza	4/2/2012 2:38:52 PM	Style	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1379		April Fools' Day: today's best stories	4/2/2012 2:37:38 PM	Politics	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1378		Widows gather for Falklands remembrance service	4/2/2012 2:36:22 PM	Politics	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1377		Tory MPs round on David Cameron and George Osborne	4/2/2012 2:31:59 PM	Politics	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>
1376		British travellers charged £186m in excess baggage fees	4/2/2012 2:29:21 PM	Travel	admin	OK	<input type="button" value="Unpublish"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Top Home"/>

 
 -- All categories --  
 By Post ID  
   
 Online: 1

Support   The news to day CMS Ver 1.0

*Figure 5.4 Result: Management page*

# 6

## Conclusion

E-commerce has revolutionarised business on the internet. It has brought benefits both to business and customers. The development of the content management system has become a very essential part of web development. In this project, we developed a CMS, to support the operation of a news agency. The news agency provides information about Business, Life Style, Politics, Finance, Advertisement, etc..

To achieve the objective of developing a CMS, we undertook the following procedures: Information gathering, architecture design, implementation and testing the system.

The work with this project has been very interesting and has given me huge experiences on web development. It is obviously that the separation of design and logic is great benefit. The project has been done with a result of a CMS with some basic functions.

Finally, further work could be done by adding videos streams, live report and iReport functionalities could be added to enhance the content of the system and website.

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# Appendix

## Source code

```
/// Master page of CMS

<%@ Master Language="C#" AutoEventWireup="true" CodeFile="Master.master.cs"
Inherits="Design_Master" %>
<%@ Register Src="~/_controls/footer.ascx" TagName="Footer"
TagPrefix="Controls" %>
<%@ Register Src="~/_controls/header.ascx" TagName="Header"
TagPrefix="Controls" %>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
    <title>The News Today</title>
</head>
<body class="type-home">
    <form id="form1" runat="server">
        <div id="contain">
            <Controls:Header ID="header1" runat="server" />
            <div class="mod live-update"></div>
            <div id="main" role="main">
                <asp:ContentPlaceHolder ID="ContentPlaceHolder1"
runat="server"></asp:ContentPlaceHolder>
            </div>
            <Controls:Footer ID="footer1" runat="server" />
        </div>
    </form>
</body>
</html>
/// End of Master page of CMS

/// Global.asax

<%@ Application Language="C#" %>
<script runat="server">
    void Application_Start(object sender, EventArgs e)
    {
        Application["Users"] = 0;
    }
    void Application_End(object sender, EventArgs e)
    {
        // Code that runs on application shutdown
    }
    void Application_Error(object sender, EventArgs e)
    {
    }
}
```

```

void Session_Start(object sender, EventArgs e)
{
    int count;
    count = (int)Application["Users"];
    count = count + 1;
    Application.Lock();
    Application["Users"] = count;
    Application.Unlock();
}
void Session_End(object sender, EventArgs e)
{
    int count;
    count = (int)Application["Users"];
    count = count - 1;
    Application.Lock();
    Application["Users"] = count;
    Application.Unlock();
}
void Application_BeginRequest(Object sender, EventArgs e)
{
    String url = HttpContext.Current.Request.Url.AbsolutePath;
    string fileExtension = VirtualPathUtility.GetExtension(url);

    if (fileExtension.Equals(".aspx"))
    {
        string strCurrentPath;
        strCurrentPath = Request.Path;
        strCurrentPath = strCurrentPath.ToLowerInvariant();
        string qString = Request.QueryString.ToString();
        if (qString != string.Empty)
            qString = "&" + qString;

        if (HttpRequestuntime.AppDomainAppVirtualPath.Length > 1)
            url = url.Replace(HttpRuntime.AppDomainAppVirtualPath, "");
        if ((url.ToLower().Contains("/post/")))
        {
            string strCustomPath = "~/Article/post.aspx?pid=" +
SiteMap.CurrentNode.Key.Split('-')[1].ToString() + qString;
            HttpContext.Current.RewritePath(strCustomPath, false);
        }
        if ((url.ToLower().Contains("/category/")))
        {
            string strCustomPath = "~/Article/category.aspx?pid=" +
SiteMap.CurrentNode.Key.ToString() + qString;
            HttpContext.Current.RewritePath(strCustomPath, false);
        }
        if (
            (url.ToLower().StartsWith("/article/news/default")) ||
            (url.ToLower().StartsWith("/article/business/default"))
||
            (url.ToLower().StartsWith("/article/lifestyle/default"))
||
            (url.ToLower().StartsWith("/article/sports/default")))
        {
            string strCustomPath = "~/Article/cattype.aspx?pid=" +
SiteMap.CurrentNode.Key.ToString() + qString;

```

```

        HttpContext.Current.RewritePath(strCustomPath, false);
    }
}
}
string GetAppRoot(string pagePath)
{
    string appRoot = "";
    appRoot = pagePath;
    appRoot = appRoot.Replace(System.IO.Path.GetFileName(appRoot), "");
    return appRoot;
}
</script>
/// End of Global.asax

/// App_Code/SitemapProvider.cs
/// For sitemap of CMS

using System;
using System.Data;
using System.Configuration;
using System.Web;
using System.Web.Security;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;
using System.Collections.Generic;

using DS1080TableAdapters;

namespace DOTV.Providers
{
    public class KhamPhaSiteMapProvider : SiteMapProvider
    {
        private SiteMapNode _smnRoot;
        private SiteMapNodeCollection _smncCategory;
        private Dictionary<string, SiteMapNodeCollection> _dArticle;
        private object lockobj = new object();

        public void BuildNodes()
        {
            lock (lockobj)
            {
                _smnRoot = new SiteMapNode(this, "TheNewsToday", "~/Article/",
"Articles");
                _smncCategory = new SiteMapNodeCollection();
                _dArticle = new Dictionary<string, SiteMapNodeCollection>();

                DS1080TableAdapters.category_typeTableAdapter taCatType = new
category_typeTableAdapter();
                DS1080TableAdapters.postTableAdapter taBlog = new
DS1080TableAdapters.postTableAdapter();
                DS1080TableAdapters.categoryTableAdapter taCat = new
DS1080TableAdapters.categoryTableAdapter();

                DS1080.category_typeDataTable dtCatType = taCatType.GetCategoryType();

                foreach (DS1080.category_typeRow master_row in dtCatType.Rows)
                {

```



```

        DS1080.categoryDataTable dtCats =
taCat.AllCategoriesByCatType(master_row.category_type_Id);
        DS1080.postDataTable dtPost =
taBlog.AllLivePostByCatType(master_row.category_type_Id);

        foreach (DS1080.postRow row in dtPost.Rows)
        {
            SiteMapNode smnCatType = new SiteMapNode(this,
master_row.description, "~/Article/" + master_row.description + "/Default.aspx",
master_row.category_type_name);
            DS1080.categoryDataTable dtCat =
taCat.GetCategories(row.post_id);

            foreach (DS1080.categoryRow catrow in dtCat.Rows)
            {
                SiteMapNode smnNew = new SiteMapNode(this,
catrow.category_id.ToString() + "-" + row.post_id.ToString(), "~/Article/" +
master_row.description + "/Post" + row.link, row.title);
                //con
                if (!_dArticle.ContainsKey(catrow.code))
                {
                    SiteMapNode smnNewCat = new SiteMapNode(this,
catrow.code, "~/Article/" + master_row.description + "/Category/" + catrow.url,
catrow.category);

                    smnNew.ParentNode = smnNewCat;

                    _dArticle[catrow.code] = new SiteMapNodeCollection();
                    if (!_dArticle.ContainsKey(master_row.description))
                    {
                        _smncCategory.Add(smnCatType);
                        _dArticle[master_row.description] = new
SiteMapNodeCollection();

                    }
                    else
                    {
                        smnNewCat.ParentNode = smnCatType;
                    }
                    _dArticle[master_row.description].Add(smnNewCat);
                }
                else
                {
                    smnNew.ParentNode =
_dArticle[catrow.code][0].ParentNode;
                }

                _dArticle[catrow.code].Add(smnNew);
            }
        }
    }
}

public override void Initialize(string name,
System.Collections.Specialized.NameValueCollection attributes)
{
    base.Initialize(name, attributes);
    this.BuildNodes();
}

public override SiteMapNode FindSiteMapNode(string rawUrl)

```

```

    {
        String relUrl = rawUrl.ToLower();
        if (!relUrl.StartsWith("~/"))
            relUrl = HttpRuntime.AppDomainAppVirtualPath.Length > 1 ?
rawUrl.ToLower().Replace(HttpRuntime.AppDomainAppVirtualPath.ToLower(), "~/").ToLower()
: "~" + rawUrl.ToLower();

        int tries = 0;

        while (tries < 2)
        {
            tries += 1;

            if (_smnRoot.Url.ToLower() == relUrl || _smnRoot.Key == rawUrl)
                return _smnRoot;

            foreach (SiteMapNode smnCat in _smncCategory)
                if (smnCat.Url.ToLower() == relUrl || smnCat.Key == rawUrl)
                    return smnCat;

            foreach (SiteMapNodeCollection smncArticle in _dArticle.Values)
                foreach (SiteMapNode smnArticle in smncArticle)
                    if (smnArticle.Url.ToLower() == relUrl || smnArticle.Key ==
rawUrl)
                        return smnArticle;

            this.BuildNodes();
        }
        return null;
    }

    public override SiteMapNodeCollection GetChildNodes(SiteMapNode node)
    {
        if (_smnRoot.Key == node.Key)
            return _smncCategory;

        if (_dArticle.ContainsKey(node.Key))
            return _dArticle[node.Key];

        return null;
    }

    public override SiteMapNode GetParentNode(SiteMapNode node)
    {
        if (_smnRoot.Key == node.Key)
            return this.ParentProvider.FindSiteMapNode("~/Default.aspx");

        if (_dArticle.ContainsKey(node.Key))
            return _smnRoot;

        foreach (SiteMapNodeCollection smncArticle in _dArticle.Values)
            foreach (SiteMapNode smnArticle in smncArticle)
                if (smnArticle.Key == node.Key)
                    return smnArticle.ParentNode;

        return null;
    }

    protected override SiteMapNode GetRootNodeCore()
    {
        return _smnRoot;
    }
}

```

```

    public static string BuildLink(String title, DateTime date)
    {
        String allowed = "abcdefghijklmnopqrstuvwxyz0123456789";
        String link = date.ToString("/yyyy/MM/dd/");

        foreach (Char letter in title.ToLower())
        {
            String sLetter = new String(letter, 1);
            if (allowed.Contains(sLetter))
            {
                link = link.Insert(link.Length, sLetter);
            }
            else if (letter == ' ')
            {
                link = link.Insert(link.Length, "-");
            }

            if (link.Length > 150)
            {
                break;
            }
        }
        link += ".aspx";
        return link;
    }
}

```

/// End of SitemapProvider.cs

/// Business Logic Layer

/// NewsPostBLL.cs

```

using System;
using System.Data;
using System.Configuration;
using System.Web;
using System.Web.Security;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;

```

```
using DS1080TableAdapters;
```

```

/// <summary>
/// Summary description for NewsPost
/// </summary>
///

```

```

[System.ComponentModel.DataAnnotations]
public class NewsPostBLL
{
    private postTableAdapter _postTableAdapter = null;
    protected postTableAdapter Adapter
    {
        get {

```

```

        if (_postTableAdapter == null)
            _postTableAdapter = new postTableAdapter();
        return _postTableAdapter;
    }
}

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataObjectMethodType.Select, true)]
public DS1080.postDataTable getAllLivePost()
{
    return Adapter.AllLivePosts();
}

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataObjectMethodType.Select, true)]
public DS1080.postDataTable RecentPosts()
{
    return Adapter.RecentPosts();
}

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataObjectMethodType.Select, true)]
public DS1080.postDataTable GetPost(int post_id)
{
    return Adapter.GetPost(post_id);
}

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataObjectMethodType.Select, true)]
public DS1080.postDataTable GetPostByCatId(int cat_id)
{
    return Adapter.PostsByCategoryID(cat_id);
}

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataObjectMethodType.Select, true)]
public DS1080.postDataTable RecentPostByCatType(int cat_type_id)
{
    return Adapter.RecentPostByCatType(cat_type_id);
}

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataObjectMethodType.Select, false)]
public PagedDataSource GetPostsAsPagedDataSource(int pageIndex, int
page_size, int cat_id)
{
    DS1080.postDataTable posts = Adapter.PostsByCategoryID(cat_id);
    PagedDataSource pagedData = new PagedDataSource();
    pagedData.DataSource = posts.Rows;
    pagedData.AllowPaging = true;
    pagedData.CurrentPageIndex = pageIndex;
    pagedData.PageSize = page_size;
    return pagedData;
}

```

```

    }

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataOb
jectMethodType.Select, false)]
    public PagedDataSource GetPostsAsPagedDataSourceByCatType(int pageIndex,
int pageSize, int cat_type_id)
    {
        // Get posts
        DS1080.postDataTable posts =
Adapter.RecentPostByCatType(cat_type_id);
        PagedDataSource pagedData = new PagedDataSource();
        pagedData.DataSource = posts.Rows;
        pagedData.AllowPaging = true;
        pagedData.CurrentPageIndex = pageIndex;
        pagedData.PageSize = pageSize;
        return pagedData;
    }

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataOb
jectMethodType.Select, false)]
    public PagedDataSource GetPostsAsPagedByTag(int pageIndex, int pageSize,
int tagid)
    {
        DS1080.postDataTable posts = Adapter.PostsByTag(tagid);
        PagedDataSource pagedData = new PagedDataSource();
        pagedData.DataSource = posts.Rows;
        pagedData.AllowPaging = true;
        pagedData.CurrentPageIndex = pageIndex;
        pagedData.PageSize = pageSize;
        return pagedData;
    }

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataOb
jectMethodType.Select, false)]
    public PagedDataSource GetPostsAsPagedByUserId(int pageIndex, int
pageSize, string UserId)
    {
        DS1080.postDataTable posts = Adapter.PostsByUserId(new Guid(UserId));
        PagedDataSource pagedData = new PagedDataSource();
        pagedData.DataSource = posts.Rows;
        pagedData.AllowPaging = true;
        pagedData.CurrentPageIndex = pageIndex;
        pagedData.PageSize = pageSize;
        return pagedData;
    }

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataOb
jectMethodType.Select, false)]
    public PagedDataSource GetPostsAsPagedByLocation(int pageIndex, int
pageSize, int LocationID)
    {
        DS1080.postDataTable posts = Adapter.PostsByLocationID(LocationID);

```

```

        PagedDataSource pagedData = new PagedDataSource();
        pagedData.DataSource = posts.Rows;
        pagedData.AllowPaging = true;
        pagedData.CurrentPageIndex = pageIndex;
        pagedData.PageSize = pageSize;
        return pagedData;
    }

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataOb
jectMethodType.Select, false)]
    public PagedDataSource GetPostsAsPagedByKeyword(int pageIndex, int
pageSize, string s)
    {
        DS1080.postDataTable posts = Adapter.PostsByString(s);
        PagedDataSource pagedData = new PagedDataSource();
        pagedData.DataSource = posts.Rows;
        pagedData.AllowPaging = true;
        pagedData.CurrentPageIndex = pageIndex;
        pagedData.PageSize = pageSize;
        return pagedData;
    }

[System.ComponentModel.DataObjectMethodAttribute(System.ComponentModel.DataOb
jectMethodType.Select, false)]
    public DS1080.postDataTable AllNewsPostByRolesOfUser(object userid, int
pageIndex, int pageSize)
    {
        return Adapter.AllNewsPostByRolesOfUser(new Guid(userid.ToString()));
    }

    public DS1080.postDataTable
AllNewsPostByRolesOfUserAndByCategoryID(object userid, int pageIndex, int
pageSize, int category_id)
    {
        if (category_id < 0)
            return AllNewsPostByRolesOfUser(userid, pageIndex, pageSize);
        else
        {
            return Adapter.AllPost_ByRolesOfUser_ByCategoryID(new
Guid(userid.ToString()), category_id);
        }
    }

    public void g_Delete_A_Post(int post_id)
    {
        Adapter.g_Delete_A_Post(post_id);
    }

    public DS1080.postDataTable AllNewsByUserId(object userid)
    {
        return Adapter.AllNewsByUserId(new Guid(userid.ToString()));
    }

```

```

public DS1080.postDataTable AllNewsByUserIdAndByCategoryID(object userid,
int category_id)
{
    if (category_id < 0)
        return AllNewsByUserId(userid);
    else
    {
        return Adapter.AllNewsByUserId_ByCategoryID(new
Guid(userid.ToString()), category_id);
    }
}
}
/// End of NewsPostBLL.cs

```

```

/// Image handler - this code will generate image with any size from given
image
/// thumb.ashx

```

```

<%@ WebHandler Language="C#" Class="thumb" %>
using System;
using System.Web;
using System.Drawing.Imaging;
using System.Drawing;
using System.IO;
public class thumb : IHttpHandler {

    public void ProcessRequest (HttpContext context) {
        context.Response.ContentType = "image/jpeg";
        context.Response.Cache.SetCacheability(HttpCacheability.Public);
        context.Response.Cache.SetExpires (DateTime.Now.AddDays (3));
        GreatThumb (context);
    }
    enum AnchorPosition
    {
        Top,
        Center,
        Bottom,
        Left,
        Right
    }
    private void GreatThumb(HttpContext context)
    {
        string file = "";
        int x = 1;
        int y = 1;
        try
        {
            file = context.Request.QueryString["file"];
            x = Int32.Parse(context.Request.QueryString["x"]);
            y = Int32.Parse(context.Request.QueryString["y"]);
            if (x > 1200 || y > 800)
            {

```

```

        x = 130;
        y = 100;
    }
    string cachePath = Path.Combine(HttpRuntime.CodegenDir,
        file.Substring(file.LastIndexOf('/') + 1) + x.ToString() +
y.ToString() + ".jpg");
    if (File.Exists(cachePath))
    {
        context.Response.WriteFile(cachePath);
        return;
    }
    System.Drawing.Image thumbnailImage =
Crop(System.Drawing.Image.FromFile(context.Server.MapPath(file)),
    x, y, AnchorPosition.Center);

    using (MemoryStream memoryStream = new MemoryStream())
    {
        thumbnailImage.Save(memoryStream, ImageFormat.Jpeg);
        using (FileStream diskCacheStream = new FileStream(cachePath,
FileMode.CreateNew))
        {
            memoryStream.WriteTo(diskCacheStream);
        }
        thumbnailImage.Save(context.Response.OutputStream,
System.Drawing.Imaging.ImageFormat.Jpeg);
    }
    }
    catch (Exception ex)
    {
        context.Response.Write("Error" + ex.Message);
    }
}
public bool IsReusable {
    get {
        return true;
    }
}
private bool Abort()
{
    return false;
}
private System.Drawing.Image Crop(System.Drawing.Image imgPhoto, int
Width, int Height, AnchorPosition Anchor)
{
    int sourceWidth = imgPhoto.Width;
    int sourceHeight = imgPhoto.Height;
    int sourceX = 0;
    int sourceY = 0;
    int destX = 0;
    int destY = 0;

    float nPercent = 0;
    float nPercentW = 0;
    float nPercentH = 0;

    nPercentW = ((float)Width / (float)sourceWidth);

```



```

nPercentH = ((float)Height / (float)sourceHeight);

if (nPercentH < nPercentW)
{
    nPercent = nPercentW;
    switch (Anchor)
    {
        case AnchorPosition.Top:
            destY = 0;
            break;
        case AnchorPosition.Bottom:
            destY = (int)(Height - (sourceHeight * nPercent));
            break;
        default:
            destY = (int)((Height - (sourceHeight * nPercent)) / 2);
            break;
    }
}
else
{
    nPercent = nPercentH;
    switch (Anchor)
    {
        case AnchorPosition.Left:
            destX = 0;
            break;
        case AnchorPosition.Right:
            destX = (int)(Width - (sourceWidth * nPercent));
            break;
        default:
            destX = (int)((Width - (sourceWidth * nPercent)) / 2);
            break;
    }
}
int destWidth = (int)(sourceWidth * nPercent);
int destHeight = (int)(sourceHeight * nPercent);

Bitmap bmPhoto = new Bitmap(Width, Height,
PixelFormat.Format24bppRgb);
bmPhoto.SetResolution(imgPhoto.HorizontalResolution,
imgPhoto.VerticalResolution);

Graphics grPhoto = Graphics.FromImage(bmPhoto);
grPhoto.InterpolationMode =
System.Drawing.Drawing2D.InterpolationMode.HighQualityBicubic;

grPhoto.DrawImage(imgPhoto,
    new Rectangle(destX - 1, destY - 1, destWidth + 2, destHeight +
2),
    new Rectangle(sourceX, sourceY, sourceWidth, sourceHeight),
    GraphicsUnit.Pixel);

grPhoto.Dispose();
return bmPhoto;
}

```

```
private static void OutputCacheResponse(HttpContext context, DateTime
lastModified)
{
    HttpCachePolicy cachePolicy = context.Response.Cache;
    cachePolicy.SetCacheability(HttpCacheability.Public);
    cachePolicy.VaryByParams["file"] = true;
    cachePolicy.VaryByParams["x"] = true;
    cachePolicy.VaryByParams["y"] = true;
    cachePolicy.SetOmitVaryStar(true);
    cachePolicy.SetExpires(DateTime.Now + TimeSpan.FromDays(365));
    cachePolicy.SetValidUntilExpires(true);
    cachePolicy.SetLastModified(lastModified);
}
}
/// End of thumb.ashx
```

# References

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