

A Web Application to Create a Virtual Campus for Students at Petroleum and Gas University, Ploiesti

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1. Introduction

In the recent years, the web site has become a necessity for organisations everywhere. Dynamic Web pages, which interact with the user, have become a semi-mandatory requirement for any Web site. An efficient application, easy to use and maintain, together with a robust database and a friendly interface represents the ideal of any programmer.

Web applications are the ones that provide the functionality from a server to client machines by means of the Internet. Web applications make up answers to some interrogations that are found on the server. These resources may be, for instance, the executable code that runs on the server, Web Forms, HTML pages, multimedia images or files [9]. The codification of Web applications are made in a programming language that is sustained by browsers, such as HTML, JavaScript, AJAX or ASP.net.

Web applications have become very popular because of their possibility to execute updating and maintenance operations without interfering, in any way, upon a large number of client computers. Currently, we meet such applications in various domains, such as electronic commerce, electronic auctions, Webmail, Weblogs, online encyclopaedias, search engines or the resource management of an organisation.

The hereby paper is trying to present such a Web application, developed by the authors in order to create a virtual campus for the students of Petroleum-Gas University in Ploiesti, who will have access, in this way, to the email service, academic record, announcements, the administration of the school fields of study and communication with the titular professors, as well as to a section dedicated to rating the involved teaching stuff. This platform was created out of the necessity to offer the students, especially to those who attend long-distance education, a unitary vision upon their academic evolution and upon the available services in the university, which are easy to extend and improve by adding supplementary modules.

In order to make the application, there were used the ASP.net technology [4] and SQLServer 2005 tools [5], together with the Microsoft Visual Web Developer 2005 integrated development

environment [3], both of them being available, free of charge, in the Express Edition variant.

2. The evolution of Web applications [6]

At the beginning of the Web, sites were made out only of static pages which drastically limited interaction with users. In the 1990s, these limitations started to disappear when Web servers were changed, in order to allow communication with specific scripts for servers. Thus, Web pages have been given a new aspect and common users were allowed, for the first time, to interact with the application.

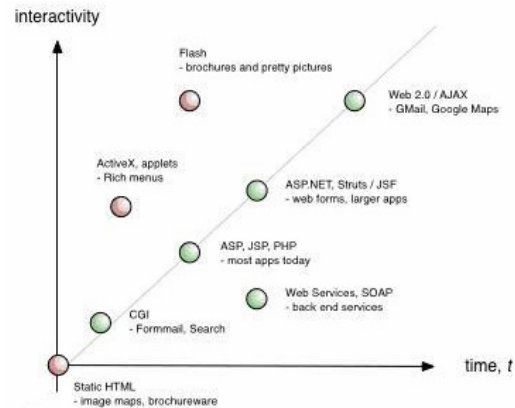


Fig.1 –The evolution in time of Web application interactivity

Reaching this extremely important stage in the evolution of the Web as we know it today made possible the appearance of many applications, such as those designed for the electronic commerce (Amazon, eBay), email (Hotmail, Yahoo or Google), Internet Banking, blogs, online share transactions, forums or virtual communities.

The increasing tendency of interactivity keeps being felt today, with the emergence of Web 2.0. Tim O'Reilly, from the publishing house with the same name, organised the first Web 2.0 conference and described this term as being “an attitude, not a technology”, and, more recently, he redefined Web 2.0 as being “the network as platform”. The Internet has become a means of transportation for conversation, and the conversation is taking place, more and more, in real time, Blogging, podcasting, information publishing, programming – all these have become omnipresent in a more and more interactive and user-centred Internet. [8]

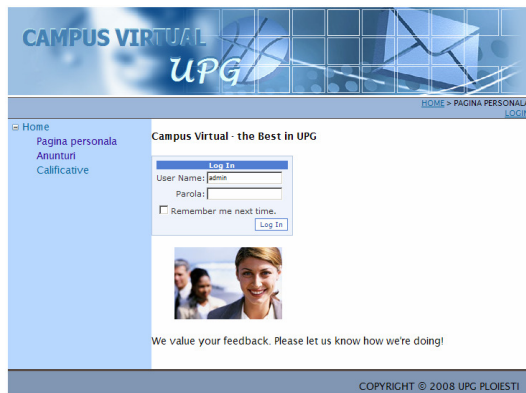
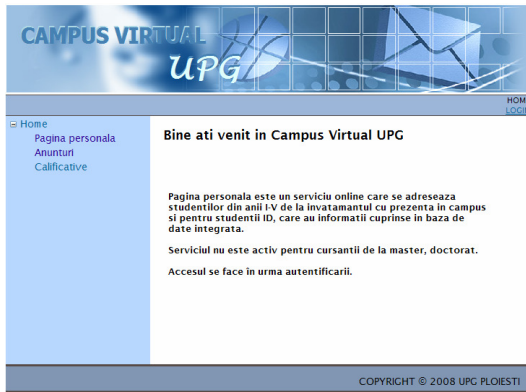


Fig.4 – a.The main page; b.The Sign-in area

Once signed in, the student will find a short presentation of his personal data and his current academic record (faculty, year of study and the group he/she is in), as shown in figure 5a. A potential implementation of this functionality with an ASP.net DetailsView control is:

```
<asp:DetailsView ID="DetailsView1"
runat="server" AutoGenerateRows="False"
BackColor="White"
BorderColor="#3366CC"
BorderWidth="0px" CellPadding="4"
DataSourceID="SqlDataSource1"
Height="50px" Width="247px">
    <FooterStyle
        BackColor="#99CCCC"
        ForeColor="#003399" />
    <RowStyle BackColor="White"
        ForeColor="#003399" />
    <PagerStyle BackColor="#99CCCC"
        ForeColor="#003399"
        HorizontalAlign="Left" />
    <Fields>
        <asp:BoundField DataField="Nume"
            HeaderText="Nume"
            SortExpression="Nume" />
        <asp:BoundField DataField="Prenume"
            HeaderText="Prenume"
            SortExpression="Prenume" />
```

```
<asp:BoundField DataField="Facultate"
    HeaderText="Facultate"
    SortExpression="Facultate" />
<asp:BoundField DataField="Specializare"
    HeaderText="Specializare"
    SortExpression="Specializare" />
<asp:BoundField DataField="An"
    HeaderText="An" SortExpression="An" />
<asp:BoundField DataField="Grupa"
    HeaderText="Grupa"
    SortExpression="Grupa" />
</Fields>
<HeaderStyle BackColor="#003399"
    Font-Bold="True" ForeColor="#CCCCCC" />
<EditRowStyle BackColor="#009999"
    Font-Bold="True" ForeColor="#CCFF99" />
</asp:DetailsView>
```

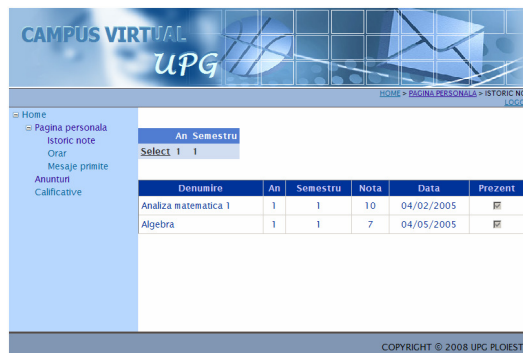


Fig.5 – a. Summary of the academic record; b. The record of the grades

The record of the grades is made with the help of two GridView controls associated to the tables containing the personal information, the fields of study and the obtained grades. A potential implementation of the interconnection between the two components may be:

```
string query = "SELECT Discipline.Denumire,
Discipline.An, Discipline.Semestru, Catalog.Nota,
Catalog.Data, Catalog.Prezent FROM
aspnet_Users INNER JOIN Catalog ON
```

```
aspnet_Users.UserId = Catalog.UserId INNER
JOIN Studenti ON aspnet_Users.UserId =
Studenti.UserId INNER JOIN Discipline ON
Catalog.MaterieId = Discipline.MaterieId WHERE
(aspnet_Users.UserName = @UserName AND
Discipline.An = @An AND Discipline.Semestru =
@Semestru) ORDER BY Discipline.An,
Discipline.Semestru";
```

```
GridView2.DataKeyNames.SetValue("An", 0);
GridView2.DataKeyNames.SetValue("Semestru",
1);
```

```
SqlDataSource datasrc = new SqlDataSource();
```

```
Parameter userN = new Parameter();
userN.Name = "UserName";
userN.DefaultValue =
Profile.UserName.ToString();
Parameter paramAn1 = new Parameter();
paramAn1.Name = "An";
paramAn1.DefaultValue =
GridView2.SelectedDataKey.Values[0].ToString();
```

```
Parameter paramSem1 = new Parameter();
paramSem1.Name = "Semestru";
paramSem1.DefaultValue =
GridView2.SelectedDataKey.Values[1].ToString();
datasrc.SelectParameters.Add(paramAn1);
datasrc.SelectParameters.Add(paramSem1);
datasrc.SelectParameters.Add(userN);
```

```
datasrc.ConnectionString =
ConfigurationManager.ConnectionStrings["con1"].
ConnectionString.ToString();
datasrc.SelectCommand = query;
GridView1.DataSource = datasrc;
GridView1.DataBind();
```

An interesting section is that related to the one in which the professor or the secretary add grades to a student. The associated interface is shown in figure 6. We may notice the presence of several interconnected GridView components, as well as of a calendar, a DropDown list and of a confirmation button.



Fig.6 –Grade fill in

The interconnection of the GridView components in order to answer correctly the interrogations with the database may be implemented with a code sequence of the type:

```
protected void
GridView2_SelectedIndexChanged(object sender,
EventArgs e)
```

```
{
    GridView3.DataSource = null;
    GridView3.DataBind();
    GridView4.DataSource = null;
    GridView4.DataBind();
```

```
DropDownList5.Enabled = false;
Button1.Enabled = false;
Calendar1.Enabled = false;
```

```
string query = "SELECT Grupa FROM Studenti
WHERE Facultate=@Facultate AND An=@An
GROUP BY Grupa";
```

```
GridView1.DataKeyNames.SetValue("Facultate",
0);
GridView2.DataKeyNames.SetValue("An", 0);
```

```
Parameter Fac = new Parameter();
Fac.Name = "Facultate";
Fac.DefaultValue =
GridView1.SelectedDataKey.Values[0].ToString();
```

```
Parameter An = new Parameter();
An.Name = "An";
An.DefaultValue =
GridView2.SelectedDataKey.Values[0].ToString();
SqlDataSource datasrc = new SqlDataSource();
datasrc.SelectParameters.Clear();
datasrc.SelectParameters.Add(Fac);
datasrc.SelectParameters.Add(An);
```

```
datasrc.SelectCommand = query;
```

```
datasrc.ConnectionString =
ConfigurationManager.ConnectionStrings["con1"].
ConnectionString.ToString();
GridView3.DataSource = datasrc;
GridView3.DataBind();
GridView3.SelectedIndex = -1;
}
```

```
protected void
GridView3_SelectedIndexChanged(object sender,
EventArgs e)
```

```
{
    GridView4.DataSource = null;
    GridView4.DataBind();
```

```
DropDownList5.Enabled = false;
Button1.Enabled = false;
```

```

Calendar1.Enabled = false;

string query = "SELECT Nume+' '+Prenume
AS Nume_prenume FROM Studenti WHERE
Facultate=@Facultate AND An=@An AND
Grupa=@Grupa ORDER BY Nume";

GridView1.DataKeyNames.SetValue("Facultate",
0);
GridView2.DataKeyNames.SetValue("An", 0);
GridView3.DataKeyNames.SetValue("Grupa", 0);

Parameter Fac = new Parameter();
Fac.Name = "Facultate";
Fac.DefaultValue =
GridView1.SelectedDataKey.Values[0].ToString();

Parameter An = new Parameter();
An.Name = "An";
An.DefaultValue =
GridView2.SelectedDataKey.Values[0].ToString();

Parameter Grupa = new Parameter();
Grupa.Name = "Grupa";
Grupa.DefaultValue =
GridView3.SelectedDataKey.Values[0].ToString();

SqlDataSource datasrc = new SqlDataSource();
datasrc.SelectParameters.Clear();
datasrc.SelectParameters.Add(Fac);
datasrc.SelectParameters.Add(An);
datasrc.SelectParameters.Add(Grupa);

datasrc.SelectCommand = query;

datasrc.ConnectionString =
ConfigurationManager.ConnectionStrings["con1"].
ConnectionString.ToString();
GridView4.DataSource = datasrc;
GridView4.DataBind();
GridView4.SelectedIndex = -1;
}

```

5. Conclusions

The Web applications of the type “virtual university campus” are more and more often met with on the sites of the educational institutions. The hereby paper presents a potential modality of implementation of such a Web application, using the ASP.net at the Petroleum-Gas University in Ploiesti. The platform represents the endeavours of the authors to offer reliable information management systems referring to a virtual university campus, as well as efficient and safe interfaces with the user, in order to modernise and optimise the access to this type of information.

6. References

- [1] Welling, L., Thomson, L., „Dezvoltarea aplicațiilor Web cu PHP si MySQL”, Ed.Teora, 2005.
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- [3] <http://www.microsoft.com/express/2005/>
- [4] <http://www.asp.net/>
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- [6] http://www.owasp.org/index.php/What_are_web_applications%3F
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