ASP.NET TECHNOLOGY

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ABSTRACT

This work deals with Microsoft technology for dynamic HTML pages ASP.NET, which is a successor of the ASP (Active Server Pages) technology. I used this technology for creating internet database of WWW pages concerning electrical engineering. The pages are connected to MSDE database that holds all records. The users of these pages can make their own views, the administrator can operate records in the database, etc.

1   INTRODUCTION

The goal of the project is to introduce a new ASP.NET technology, which can be used for creating dynamic internet pages. It is a new technology and it has started to compete with technologies like PHP, ASP, Java etc. I have also tried using this technology for creating an internet database of WWW pages concerning electrical engineering. I have created this application as dynamic HTML pages, which are connected to a database to let users have this project available around the world. I have used the ASP.NET technology for maintaining the variability of pages.

2   ASP.NET TECHNOLOGY

2.1   INTRODUCTION TO ASP.NET

ASP.NET is part of the development platform .NET which, besides the ASP.NET (which serves for the development of internet pages), also contains resources for a Windows applications development. .NET architecture divides an application's translation to executable state into two phases. First the written application is compiled into Intermediate Language (IL) which is CPU independent, assembler like language. The compiled IL instructions are put directly in .exe or .dll files, but at the start of application IL has to be compiled Just In Time (JIT) into a real executable code and this code is executed. As a programming language we can use Microsoft languages such as Visual Basic .NET, C#, C++, Jscript, but some other languages from other companies can be used as well.

The basic resource for the development of .NET applications is the .NET Framework Software Development Kit (SDK). A great advantage of this technology is that we can

download this .NET Framework for free from Microsoft internet pages for the development of applications (Windows or internet). There are compilers for all basic languages named above in this SDK, though they are only compilers without the development environment. If someone needs the development environment, he will have to buy some additional products, for example Microsoft Visual Studio .NET. If we need to develop only internet applications, there is a WebMatrix program which is available to download for free, and which has the basic development environment (including a WYSIWYG editor).

2.2   MANAGED CODE

The managed code is created during the compilation of applications. This code is an analogy to an interpret language's code (like Java) that creates the IL mentioned above. As I have already written in the introduction, this code is compiled into the executable code at the time of application's execution. It means that the start of the application is slowed down, but on the other hand the application can be optimized for a concrete processor type (it arranges .NET Framework which must be installed on target PC). There is also a type of compilation, when only the needed parts of the program are compiled and when the memory runs short, redundant functions are removed. The functions have to be recompiled at the time of next call. All four languages mentioned in the introduction can generate the managed code. In addition, we can choose between the managed and the classic code in C++ language.

2.3   SECURITY ACCESS IN ASP.NET

If we create security applications (windows or internet), we will have to know some terms:

- **Authentication –** This process is intended to find out and check users' identities. The users have to prove trustworthy, that they are who they claim to be. The most common way of authentication is input for user's name and password. The result of the process is confirmation or disapproval of user's identity.

- **Authorization –** Authorization is a process used for verifying whether an authenticated user is allowed to access the requested resource. Output information from this process is the decision, whether the user is allowed to access the chosen source of information in the requested way (reading, writing etc.).

- **Impersonation –** When we use the impersonation, operations which the user does in the application are performed with other identity rather than the identity of the authenticated and authorized user. Whether the impersonation is used or not and which identity is used is based on the configuration file web.config in ASP.NET.

2.4   NAMESPACES IN FRAMEWORK.NET

The whole framework is conceived as a set of namespaces. Each namespace contains types which are used in the applications. These types can be classes, structures etc. Each namespace starts with a word System or Microsoft. Next words generally individualize what we can find in the namespace. For example: System.Data contains the classes and other types for work with data. Additionally it contains other namespaces specialized in various kinds of work with data. System.Data.OleDb is specialized in work with a database using ODBC and System.Data.SqlClient is specialized in access into SQL server. Analogically, for example System.Security serves for several aspects of security of application.

3   INTERNET PAGES USING ASP.NET TECHNOLOGY

3.1   GOAL OF PROJECT

The pages should have this appearance at the time of completion: Users log with their user names and passwords. Users' rights to manage database are differed (viewing, updating, erasing…). After successfully logging in, users are redirected to the starting page where they can choose the required functions from the menu. They can enter several details about each page, for example a page's owner (with his own details), the area of electrical engineering, which the page is concerned with, languages that are used on the page etc. Additionally, each user can create a list of his own keywords, assign them to the pages and then search according to them.

3.2   PROJECT REALIZATION

Project is realized with the aid of the described ASP.NET technology and MSDE, which is a simplified version of Microsoft SQL Server. MSDE is free and is used as a database. The database is created by database tables, relations between them are realized as 1:n or m:n, according to their usage (for example one page has only one owner, also a company, but one owner can own several pages, so relation 1:n. One page can contain date on several areas of electrical engineering, on the other hand, several pages can be related to one area so relation m:n).

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