



## Web Database Development

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**Abstract:** Web database development is simple the development of web page with a database to store the information generated from the web page which is also known as dynamic web pages. One of the most common types of dynamic web pages is the database driven type. This means that you have a web page that grabs information from a database (the web page is connected to the database by programming), and inserts that information into the web page each time it is loaded. If the information stored in the database changes, the web page connected to the database will also change accordingly (and automatically), without human intervention. While delivering the requested information, the inner mechanisms must work quickly and efficiently, thus providing the database-driven application with the most sophisticated results. During web development, things change when an HTML page is not stored as it is, but is dynamically generated using information located in the database and continuously updated. A dynamic web interface running in your web browser allows you to actually change the data in the database, which might be stored on a server located thousands miles away from your desktop computer.

**Key words:** Web Development, Database, Dynamic web page

Published by  
Africa Research Corps Network (ARC�)

in Collaboration with  
International Academic Journal for Global Research (iajgr) Publishing (USA)



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## INTRODUCTION

Web development is a broad term for the work involved in developing a web site for the Internet (World Wide Web) or an intranet (a private network). Web development can range from developing the simplest static single page of plain text to the most complex web-based internet applications, electronic businesses, and social network services. A more comprehensive list of tasks to which web development commonly refers, may include web engineering, web design, web content development, client liaison, client-side/server-side scripting, web server and network security configuration, and e-commerce development. Among web professionals, "web development" usually refers to the main non-design aspects of building web sites: writing markup and coding. Most recently Web development has come to mean the creation of content management systems or CMS. These CMS can be made from scratch, proprietary or open source. In broad terms the CMS acts as middleware between the database and the user through the browser.

Web programming, also known as web development, is the creation of either a static web page or a dynamic web applications. In most cases, when we talk about dynamic web applications, we mean database-driven web applications, as databases offer the most reliable, flexible and feature-rich means of data storage and handling. Computing means calculation. Calculation results in data. Data has to be stored, or it will be lost when you switch off your computer.

A database is, however, much more than an information repository. Modern databases are integrated with powerful tools (database engines) that allow their users to handle data in different ways: for example, to organise it, and to retrieve portions of it at any time. While delivering the requested information, the inner mechanisms must work quickly and efficiently, thus providing the database-driven application with the most sophisticated results.

Database is very necessary for any interactive website. Designing a database is the most crucial part of development. It is necessary to be designed before the actual coding begins for a high performance application.

Below are some of the reasons which give the reasons of importance of good database design while website designing:-

- When a database is designed properly, only relevant data and the required information are stored. So the data is in consistent form as the layout of the table allows the data to be consistent.
- Also cascading allows in data consistency. By implementation of cascading on a parent or child table, it will be ensured that only those child records which have valid parent record will exist.
- Always a good database design is normalized. Data redundancy gets reduced and duplication is removed because of normalization which ultimately leads to lessen the size of the database. Database is stored in the server computer and every time user requests, server responds with the help of the database.

- If the database is well designed, than the queries fired will be equally simple and its execution will be simple and fast.
- The overall performance will be affected by the database design. In short the performance of the application is dependent on the design of the database.
- Also it should be well-designed so that the maintenance is easy. This is the most important issue amongst all.

So, there are many benefits of a well-planned and designed database. Before starting with the coding part of an application spending a good time with the designing of the database is a good practice.

### **Web Development Overview**

The visible content of a web file is called a web page. If a web page is prepared according to the HTTP protocol, it can be transferred from a host computer using appropriate software to a requesting client through the Internet. Most pages are prepared by means of the tag-based language HTML, frequently supplemented with some additional tools. If the requesting client has the necessary browser software installed, the file received can be displayed and, if wanted, a new request can be generated. A web site is usually a set of web files hosted by a computer running a web server.

There are two broad divisions of web development – front-end development (also called client-side development) and back-end development (also called server-side development).

Front-end development refers to constructing what a user sees when they load a web application – the content, design and how you interact with it. This is done with three codes – HTML, CSS and JavaScript.

HTML, short for Hyper Text Markup Language, is a special code for ‘marking up’ text in order to turn it into a web page. Every web page on the net is written in HTML, and it will form the backbone of any web application. CSS, short for Cascading Style Sheets, is a code for setting style rules for the appearance of web pages. CSS handles the cosmetic side of the web. Finally, JavaScript is a scripting language that’s widely used to add functionality and interactivity to web pages.

Back-end development controls what goes on behind the scenes of a web application. A back-end often uses a database to generate the front-end. Back-end scripts are written in many different coding languages and frameworks, such as...

- PHP
- Ruby on Rails
- ASP.NET
- Perl
- Java

- Node.js
- Python

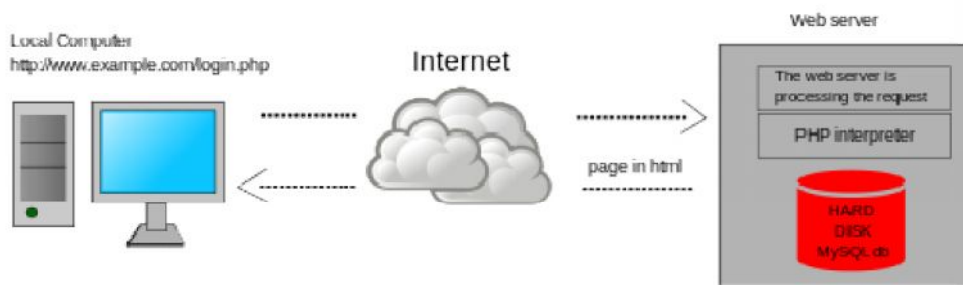
## How Web Databases Work

In our technological world, we use web-based database requests on a daily basis. We are constantly visiting web pages, clicking on links and using the menu to navigate us through our activity on that page. Using middleware, the web server passes a request on to a database query and the information is stored and passed along to the database server. The database server then uses this information to direct the page to where it was intended to go. CGI Script is another way information is passed along. They use instructions via a programming language and accept and return the websites data to the user. Active server pages are yet another example of scripts used commonly on websites. They are very similar to CGI Scripts, yet they are exclusive because they almost always use VBS script or Java script. PHP Hypertext processor is a language that is becoming more and more popular everyday. This script is extremely similar to CGI scripts and active server pages yet are more highly compatible with other programs. The script functions using PHP tags and html codes to get their job done. These scripts are just some examples of what is used today and how information is transmitted on a web server

## Architecture Of A Dynamic Web Page

A dynamic web page can be reloaded by the user or by a computer program to change some variable content. The updating information could come from the server, or from changes made to that page's DOM. This may or may not truncate the browsing history or create a saved version to go back to, but a *dynamic web page update* using Ajax technologies will neither create a page to go back to, nor truncate the web browsing history forward of the displayed page. Using Ajax technologies the end user gets *one dynamic page* managed as a single page in the web browser while the actual web content rendered on that page can vary. The Ajax engine sits only on the browser requesting parts of its DOM, *the* DOM, for its client, from an application server.

DHTML is the umbrella term for technologies and methods used to create web pages that are not static web pages. Client-side-scripting, server-side scripting, or a combination these make for the dynamic web experience in a browser.



### Web Database Development Lifecycle

A database is usually a fundamental component of the information system, especially in business oriented systems. Thus database design is part of system development.

There are various methods of how the different phases of information system design, analysis and implementation can be done.

### Database Planning

The database planning includes the activities that allow the stages of the database system development lifecycle to be realized as efficiently and effectively as possible. This phase must be integrated with the overall Information System strategy of the organization.

The very first step in database planning is to define the mission statement and objectives for the database system. That is the definition of:

- the major aims of the database system
- the purpose of the database system
- the supported tasks of the database system
- the resources of the database system

### Systems Definition

In the systems definition phase, the scope and boundaries of the database application are described. This description includes:

- links with the other information systems of the organization
- what the planned system is going to do now and in the future

- who the users are now and in the future.

The major user views are also described. i.e. what is required of a database system from the perspectives of particular job roles or enterprise application areas.

### **Requirements Collection and Analysis**

During the requirements collection and analysis phase, the collection and analysis of the information about the part of the enterprise to be served by the database are completed. The results may include eg:

- the description of the data used or generated
- the details how the data is to be used or generated
- any additional requirements for the new database system

### **CONCLUSION**

In conclusion web development is one of the trending computer applications because of its fascinating features and its effectiveness and efficiency in different areas, such as advertising, sales, education etc. The most appreciated web pages are the dynamic web pages because of their interactive nature. The primary role of a database is to store and display updated information in a web application. Registration websites, discussion forums and retail commerce websites are examples of web applications that depend upon a robust database component. Database applications are used to search, sort, filter and present information based upon web requests from users. Databases can also contain code to perform mathematical and statistical calculations on the data to support queries submitted from web browsers. Databases grant and limit access to data based upon criteria such as user name, password, region or account number. Databases also enforce data integrity by ensuring that data is collected and presented using a consistent format. A dynamic website displays updated information on web pages when the database is updated by the host or when users submit information using web forms. The database automatically updates web pages, eliminating the requirement to manually update the HTML code on individual pages.

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*My new Interactive Web Developer course (released in 2016) teaches you how to create database driven websites and much more! UPDATED: JUNE 2016, America Reads Spanish, September, 2016*