Pengantar Ilmu Komputer

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Matematika - Fakultas Sains dan Teknologi
Gasal 2020/2021

Tentang Perkuliahan

- Kuliah ini akan membahas pemrograman berbasis web

- PIK -> Dasar Pemrograman
- PK 1 -> Algoritma dan Logic membuat program
- PK 2 -> Pengembangan aplikasi dengan interface yang menarik

Tentang Perkuliahan

- Perkuliahan dilakukan secara online
- Selalu buka elearning.uin-malang.ac.id
- Perkuliahan melalui zoom dilakukan sebulan sekali
- Presensi/kehadiran akan dilihat dari log aktifitas atau pengumpulan tugas di elearning

Tentang Perkuliahan

Evaluasi

Tugas-tugas	30%
UTS	35%
UAS	35%

UTS dan UAS berupa project (individu maupun kelompok)

Pendahuluan

Hisyam Fahmi

Pemrograman Komputer II

Matematika - Fakultas Sains dan Teknologi

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Introduction

- The Internet and web programming technologies are designed to be portable, allowing you to design web pages and applications that run across an enormous range of Internet-enabled devices.
- ***Client-side programming*** technologies are used to build web pages and applications that are run on the client (i.e., in the browser on the user's device).
- ***Server-side programming***—the applications that respond to requests from client-side web browsers, such as searching the Internet, checking your bank-account balance, ordering a book from Amazon, bidding on an eBay auction and ordering concert tickets.

Introduction

Client-side Web Programming

- Programmers not familiar with web development should start here

Server-side Web Programming

- Programmers familiar with HTML, CSS, and JavaScript should start here

HTML5, CSS3, JavaScript

- HTML (Hyper Text Markup Language) is a special type of computer language called a markup language designed to specify the content and structure of web pages (also called documents) in a portable manner.
- HTML5, now under development, is the emerging version of HTML.
- HTML enables you to create content that will render appropriately across the extraordinary range of devices connected to the Internet—including smartphones, tablet computers, notebook computers, desktop computers, special-purpose devices such as large-screen displays at concert arenas and sports stadiums, and more.

HTML5, CSS3, JavaScript

- Cascading Style Sheets (CSS) are used to specify the presentation, or styling, of elements on a web page (e.g., fonts, spacing, sizes, colors, positioning)
- CSS was designed to style portable web pages independently of their content and structure.
- By separating page styling from page content and structure, you can easily change the look and feel of the pages on an entire website, or a portion of a website, simply by swapping out one style sheet for another.
- CSS3 is the current version of CSS under development.

HTML5, CSS3, JavaScript

- JavaScript helps you build dynamic web pages (i.e., pages that can be modified "on the fly" in response to events, such as user input, time changes and more) and computer applications.
- It enables you to do the client-side programming of web applications.

Web Browsers

- **Web Browsers and Web-Browser Portability**
- Ensuring a consistent look and feel on client side browsers is one of the great challenges of developing web-based applications.
- Currently, a standard does not exist to which software vendors must adhere when creating web browsers
- Although browsers share a common set of features, each browsers might render pages differently

Web Basics

- In its simplest form, a web page is nothing more than an HTML (Hyper Text Markup Language) document (with the extension .html or .htm) that describes to a web browser the document's content and structure.
- HTML documents normally contain hyperlinks, which, when clicked, load a specified web document.
- Both images and text may be hyperlinked.
- When the user clicks a hyperlink, a web server locates the requested web page and sends it to the user's web browser.
- Similarly, the user can type the address of a web page into the browser's address field and press Enter to view the specified page.

Web Basics

- Hyperlinks can reference other web pages, e-mail addresses, files and more
- If a hyperlink's URL is in the form mailto:emailAddress, clicking the link loads your default e-mail program and opens a message window addressed to the specified e- mail address.
- If a hyperlink references a file that the browser is incapable of displaying, the browser prepares to download the file, and generally prompts the user for information about how the file should be stored

Web Basics

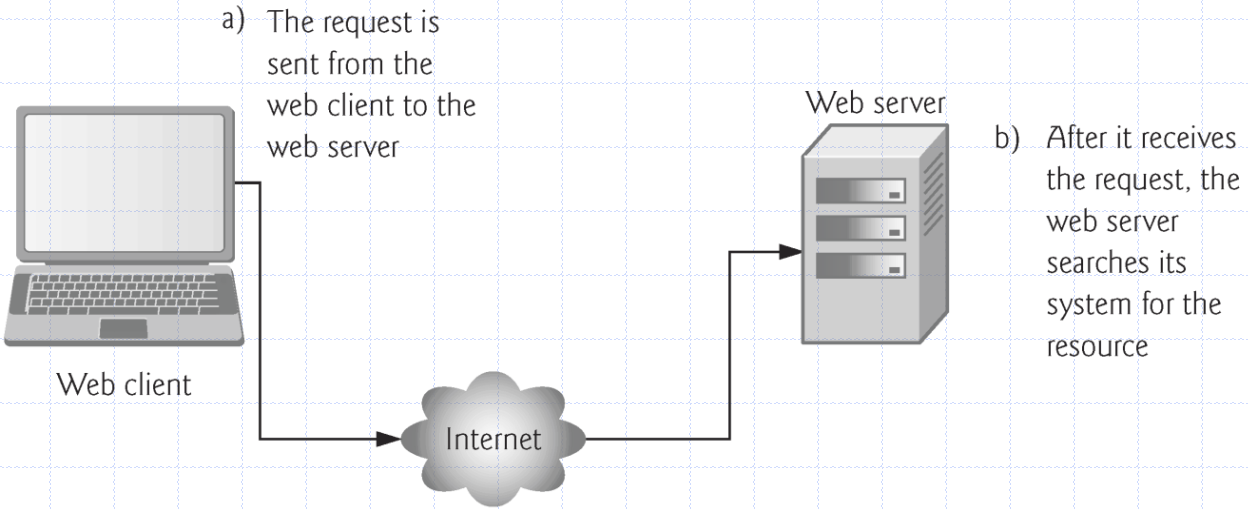
- **URIs and URLs**
- URIs (Uniform Resource Identifiers) identify resources on the Internet.
- URIs that start with http:// are called URLs (Uniform Resource Locators).
- **Parts of a URL**
- A URL contains information that directs a browser to the resource that the user wishes to access.
- Web servers make such resources available to web clients.
- Popular web servers include Apache's HTTP Server and Microsoft's Internet Information Services (IIS).

Web Basics

- The remainder of the URL (/books/downloads.html) specifies the resource's location (/books) and name (downloads.html) on the web server.
- The location could represent an actual directory on the web server's file system. For security reasons, however, the location is typically a virtual directory.
- The web server translates the virtual directory into a real location on the server, thus hiding the resource's true location.

Web Basics

- Making a Request and Receiving a Response (HTTP Transactions)



Web Basics

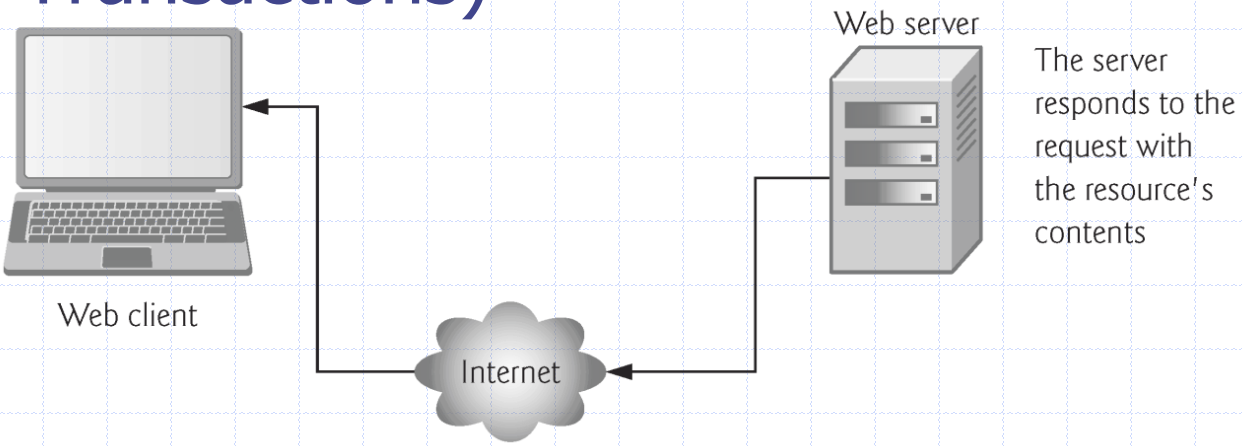
- the web browser sends an HTTP request to the server. The request (in its simplest form) is

  GET /books/downloads.html HTTP/1.1

- The word GET is an HTTP method indicating that the client wishes to obtain a resource from the server.
- The remainder of the request provides the path name of the resource (e.g., an HTML5 document) and the protocol's name and version number (HTTP/1.1).

Web Basics

- Making a request and receiving a response (HTTP Transactions)



Web Basics

- The server first sends a line of text that indicates the HTTP version, followed by a numeric code and a phrase describing the status of the transaction. For example,

  HTTP/1.1 200 OK

- indicates success, whereas

  HTTP/1.1 404 Not found

- informs the client that the web server could not locate the requested resource.

Web Basics

- The two most common HTTP request types (also known as request methods) are get and post.
- A post request typically posts (or sends) data to a server.
- Common uses of post requests are to send form data or documents to a server
- An HTTP request often posts data to a server-side form handler that
- processes the data.

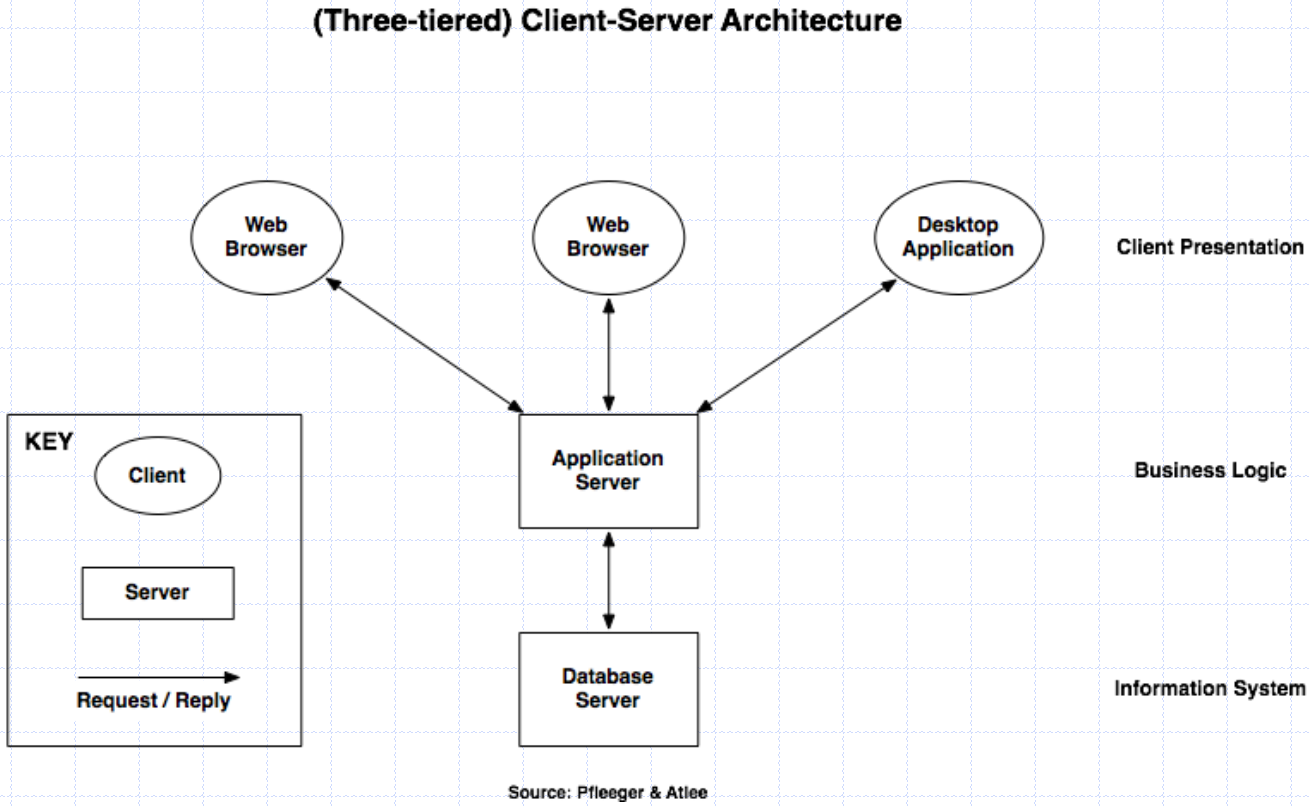
Web Basics

- A get request appends data to the URL, e.g.,
  www.google.com/search?q=deitel.
- In this case search is the name of Google's server-side form handler, q is the name of a variable in Google's search form and deitel is the search term.
- The ? in the preceding URL separates the query string from the rest of the URL in a request.
- A name/value pair is passed to the server with the name and the value separated by an equals sign (=).

Web Basics

- Client Side Catching
- Browsers often cache (save on disk) recently viewed web pages for quick reloading
- If there are no changes between the version stored in the cache and the current version on the web, this speeds up your browsing experience.

Multi-tiered Application Architecture



Client Side vs. Server Side Scripting

- Client-side scripting with JavaScript can be used to validate user input, to interact with the browser, to enhance web pages, and to add client/server communication between a browser and a web server.
- Client-side scripting does have limitations, such as browser dependency; the browser or scripting host must support the scripting language and capabilities.
- Scripts are restricted from arbitrarily accessing the local hardware and file system for security reasons.

Client Side vs. Server Side Scripting

- Another issue is that client-side scripts can be viewed by the client by using the browser's source-viewing capability.
- Sensitive information, such as passwords or other personally identifiable data, should not be on the client.
- All client-side data validation should be mirrored on the server. Also, placing certain operations in JavaScript on the client can open web applications to security issues.

Web 2.0: Going Social

- In 2003 there was a noticeable shift in how people and businesses were using the web and developing web-based applications.
- Generally, Web 2.0 companies use the web as a platform to create collaborative, community-based sites (e.g., social networking sites, blogs, wikis).

Web 2.0: Going Social

- Web 1.0 (the state of the web through the 1990s and early 2000s) was focused on a relatively small number of companies and advertisers producing content for users to access (some people called it the "brochure web").
- Web 2.0 involves the users—not only do they often create content, but they help organize it, share it, remix it, critique it, update it, etc.
- One way to look at Web 1.0 is as a lecture, a small number of professors informing a large audience of students. In comparison, Web 2.0 is a conversation, with everyone having the opportunity to speak and share views.

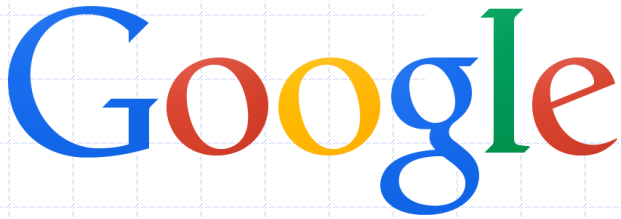
Web 2.0: Going Social

- Search Engines and Social Media
- Google
- Web Services
- AJAX
  - Ajax is one of the premier Web 2.0 software technologies (Fig. 1.12
  - Ajax helps Internet-based applications perform like desktop applications—a difficult task, given that such applications suffer transmission delays as data is shuttled back and forth between your computer and servers on the Internet.

Web 2.0: Going Social





Any Question?