Internet Essentials

Internet Applications, ID1354

Contents

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- A node dedicated to retransmitting packets across subnet borders is called a router.

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- Normally, an IP address must be unique, assigned only to one node.
- Some addresses, like 192.168.X.X are dedicated to private networks and can be used freely. Such an address is not transmitted on the public internet. Instead, it is translated to a public address by a router.

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  - There are no lost packets.

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- TCP handles ports, which makes it possible to have multiple connections with the same IP address open simultaneously. A port is identified by a number. An endpoint of a TCP connection has an IP address and a port number.

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- The translation between numbers and names is managed by DNS, Domain Name System.

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  4. A path, which identifies the resource's location on the server. `http://www.kth.se:8080/abc/index.html`

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Section

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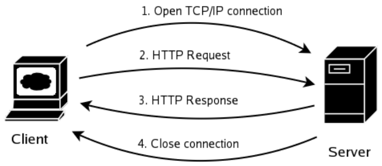
- HTTP is based on TCP, which means a TCP connection is established for each browser-server communication.

The Request-Response Cycle



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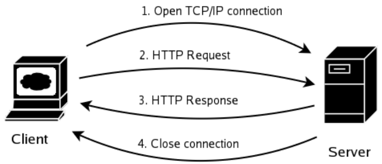

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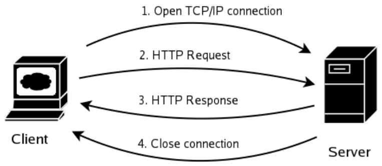

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1. The client opens a TCP connection to the server.
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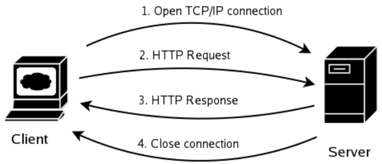

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3. The server sends a response to the client. Also the response consists of HTTP headers, and data if the response required data.
4. The server closes the TCP connection.

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- HTTP is stateless. Neither server nor browser remembers anything about previous request-response cycles. Session handling must be added in server-side code.
- To establish a TCP connection is expensive. Therefore, TCP connections might be kept alive and reused for multiple request-response cycles. This is specified with the **`keep-alive`** HTTP header, se below.

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- Cookies can be used to store the user’s settings, for example display language.

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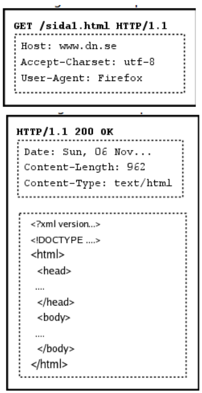
- If a request has a cookie with a session identifier, it identifies the user. If there is no such cookie, the user does not have a running session.
- On the server, the session id can be associated with any amount of data related to the user with that session. This is called conversational state.

HTTP Message Format



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GET /sida1.html HTTP/1.1
Host: www.dn.se
Accept-Charset: utf-8
User-Agent: Firefox
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HTTP/1.1 200 OK
Date: Sun, 06 Nov...
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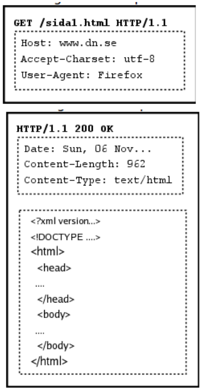

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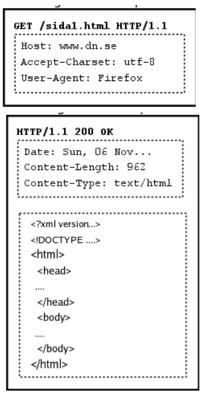

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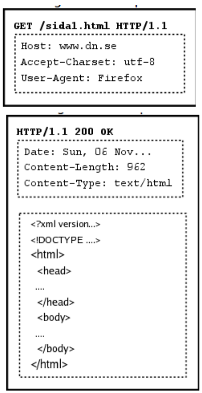

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- Sample request (top) and response (bottom) messages are depicted to the left.

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- **`GET`** and **`POST`** are the most common methods and the only ones we will use in this course.

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- **`POST`** is not idempotent. If you submit the same purchase order multiple times in a web shop you will probably by multiple items. The purchase is typically a **`POST`** request.

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  - You want to be able to write the entire request, including data, in the browser. This is useful when debugging.

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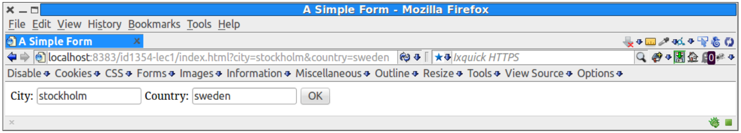
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localhost:8383/id1354-lec1/index.html?city=stockholm&country=sweden

City: stockholm Country: sweden OK

File Edit View History Bookmarks Tools Help
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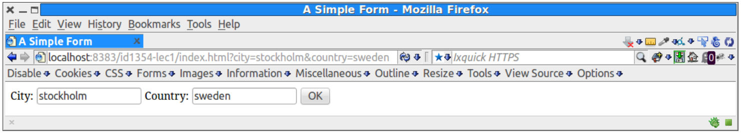
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- When using the **`POST`** method, parameters are included in the message body.

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Content-Length	Message body length in bytes.
Content-Type	Media Type (see below) of response.

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- Some media types are:

text/html	HTML markup
text/plain	Plain text
image/png	A png image
video/ogg	A ogg video.

Section

Web Browsers

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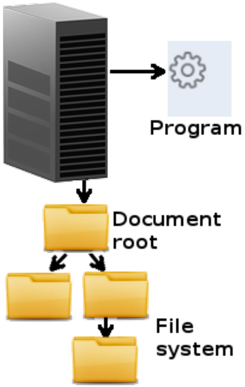
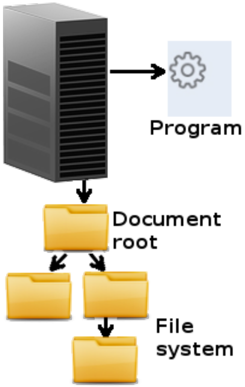
- Browsers behave differently, and you should expect that some break specifications.

Web Servers



- The web server can deliver static content and also call server-side programs, like PHP, Java or .NET programs.

Web Servers



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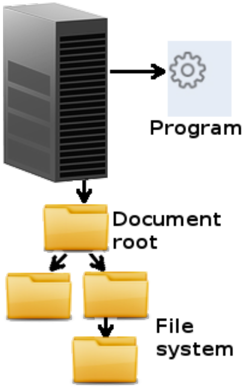
- The most commonly used web server is apache, ***https://httpd.apache.org/***

Web Servers



- The web server can deliver static content and also call server-side programs, like PHP, Java or .NET programs.
- The most commonly used web server is apache, *https://httpd.apache.org/*
- Other common web servers are nginx, ***http://wiki.nginx.org/Main*** and Microsoft IIS.

Web Servers (Cont'd)

- You need to install a web server on your laptop. All labs will be reported on your own laptop, there is no web server in ICT school where you can run all the labs.

Web Servers (Cont'd)

- You need to install a web server on your laptop. All labs will be reported on your own laptop, there is no web server in ICT school where you can run all the labs.
- It might take time to get the web server running. You are advised to start installing the web server now.