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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- A Uniform Resource Identifier, URI is either a URL or URN.

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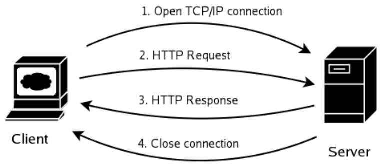
- HTTP is based on TCP, which means a TCP connection is established for each browser-server communication.

The Request-Response Cycle



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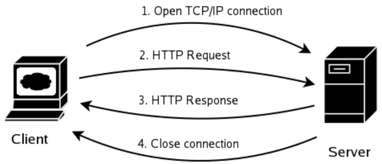

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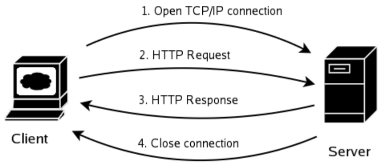

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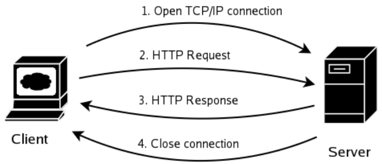

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4. The server closes the TCP connection.

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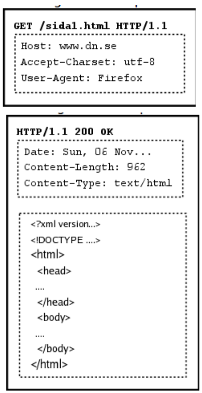
- If a request has a cookie with a session identifier, it identifies the user. If there is no such cookie, the user does not have a running session.
- On the server, the session id can be associated with any amount of data related to the user with that session. This is called conversational state.

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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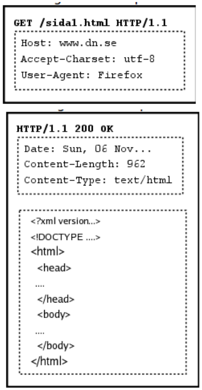

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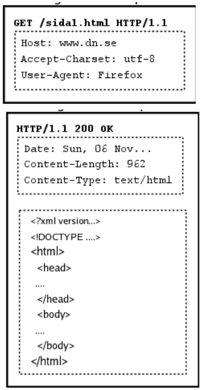

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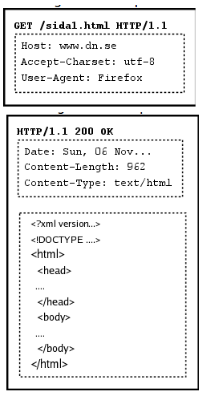

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- Sample request (top) and response (bottom) messages are depicted to the left.

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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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- **GET**, **HEAD**, **PUT**, **DELETE**, **OPTIONS** and **TRACE** are idempotent methods, which means the same request can be sent multiple times without any side-effects on the server.
- **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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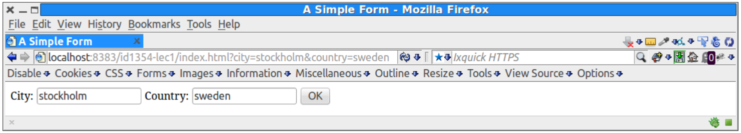
A Simple Form - Mozilla Firefox
File Edit View History Bookmarks Tools Help
A Simple Form
Ixquick HTTPS
Disable Cookies CSS Forms Images Information Miscellaneous Outline Resize Tools View Source Options
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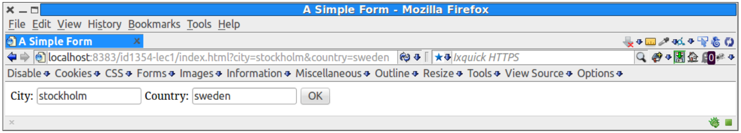
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- When using the **GET** method, parameters are appended to the URL as a query string, **`http://some.domain/some/path?city=stockholm&country=sweden`**

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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.

Web Browsers

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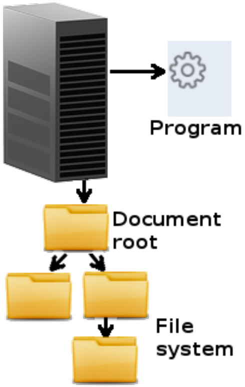
- Browsers behave differently, and you should expect that some break specifications.

Web Servers



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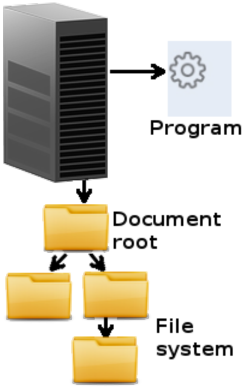

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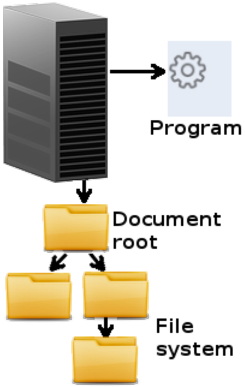

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- The most commonly used web server is apache, `https://httpd.apache.org/`
- Other common web servers are nginx, `http://wiki.nginx.org/Main` and Microsoft IIS.

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.

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- 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.