HTTP Response

HTTP/1.1 400 Bad Request

Content-Type: text/html; charset=us-ascii

Server: Microsoft-HTTPAPI/2.0

Date: Sat, 07 Jan 2017 17:21:16 GMT

Connection: close

Content-Length: 334

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML
    4.01//EN""http://www.w3.org/TR/html4/strict.dtd">

<HTML><HEAD><TITLE>Bad Request</TITLE>

<META HTTP-EQUIV="Content-Type" Content="text/html; charset=us-
    ascii"></HEAD>

<BODY><h2>Bad Request - Invalid Hostname</h2>

<hr><p>HTTP Error 400. The request hostname is invalid.</p>

</BODY></HTML>

Exercise 1.4

Important Features of HTTP

- Persistent connection (in HTTP 1.1)

    - only one connection is required to transfer, e.g., a number of inline images (prior to HTTP 1.1, one connection per object was required)

- Stateless

    - Each operation or transaction makes a new connection

    - Each operation is unaware of any other connection

    - each click is a new connection

    - After completion of requests, no information about those is retained -> how do those shopping carts work?

- Proxy caching

    - Can be cached by Web servers

- Content negotiation

    - For example, the client and server can agree on a gzip encoding of the HTML page

Web Servers

- A **Web Server** is an implementation of HTTP

  - It runs on some machine/device (server, toaster, router, …)

- Widely used Web servers: Apache, MS Internet Information Server/Services

- Serving dynamic Web content requires some server-side programming

  - PHP

  - ASP.NET

  - Ruby on Rails

  - …

- DIY Web Server?

A simple Web Server in node.js

- Node.js is an open-source runtime environment for executing server-side JavaScript

```javascript
const http = require('http');

const hostname = '127.0.0.1';
const port = 3000;

const server = http.createServer((req, res) => {
  res.statusCode = 200;
  res.setHeader('Content-Type', 'text/plain');
  res.end('Hello World\n');
});

server.listen(port, hostname, () => {
  console.log(`Server running at
http://${hostname}:${port}/`);
});
```

The Deep Web

- Web Servers cannot be found using search engines

Source: https://politicsbulletin.wordpress.com/2015/08/25/the-dark-side-of-the-internet/

- The are different types of the Deep Web (more in the exercise to come)

The Dark Side of the Web?

- The darknet is part of the Deep Web

  - overlay network (network logically/physically built on top of another network)

  - can be accessed using special software, non-standard protocols, and/or ports

  - P2P or privacy network

Source: http://lego.wikia.com

Source: www.brickmerge.de

Exercise 1.5