HTTP Basics

HTTP Request & HTTP Response

SoftUni Team

Technical Trainers

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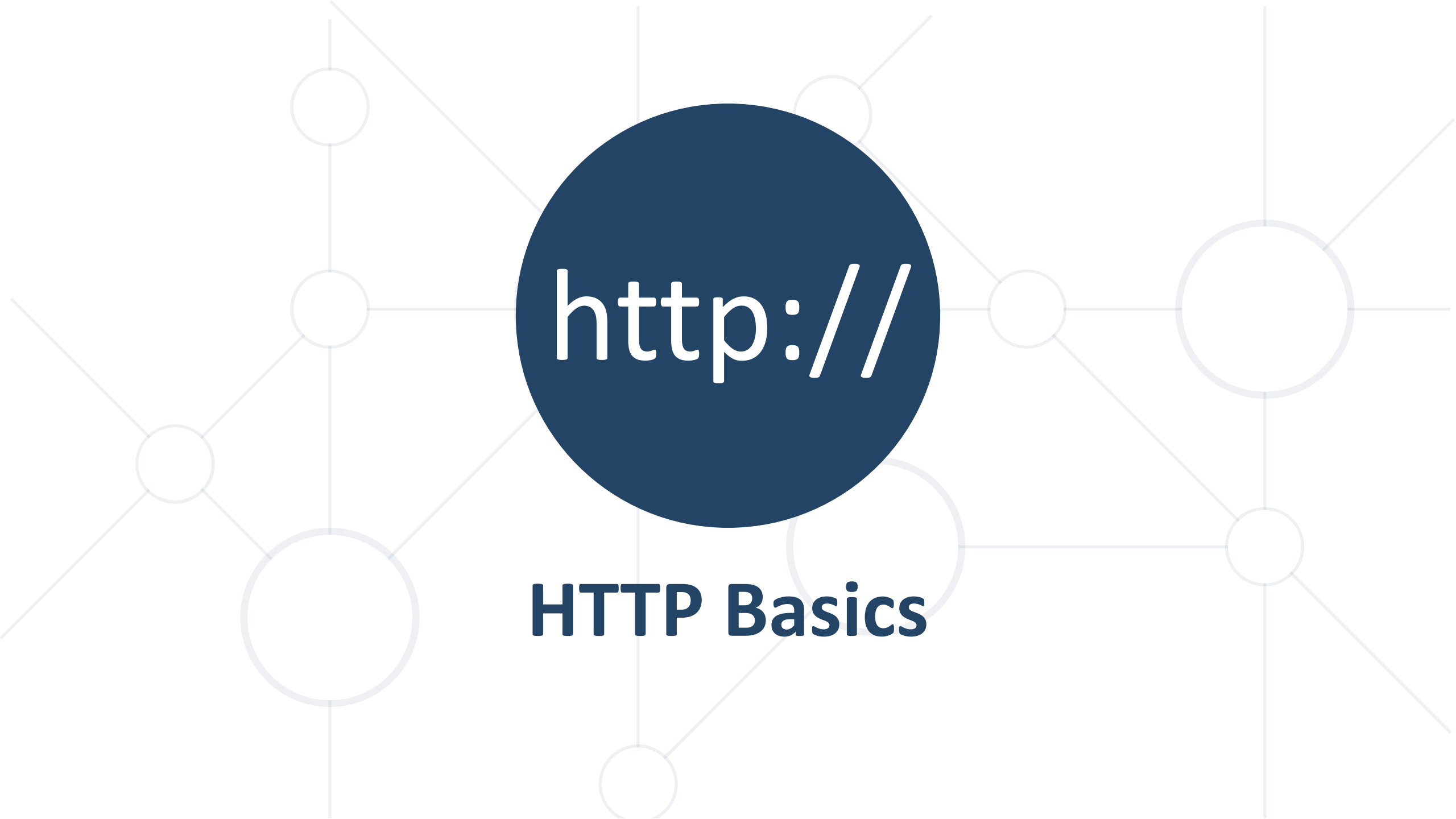
3. HTTP Response

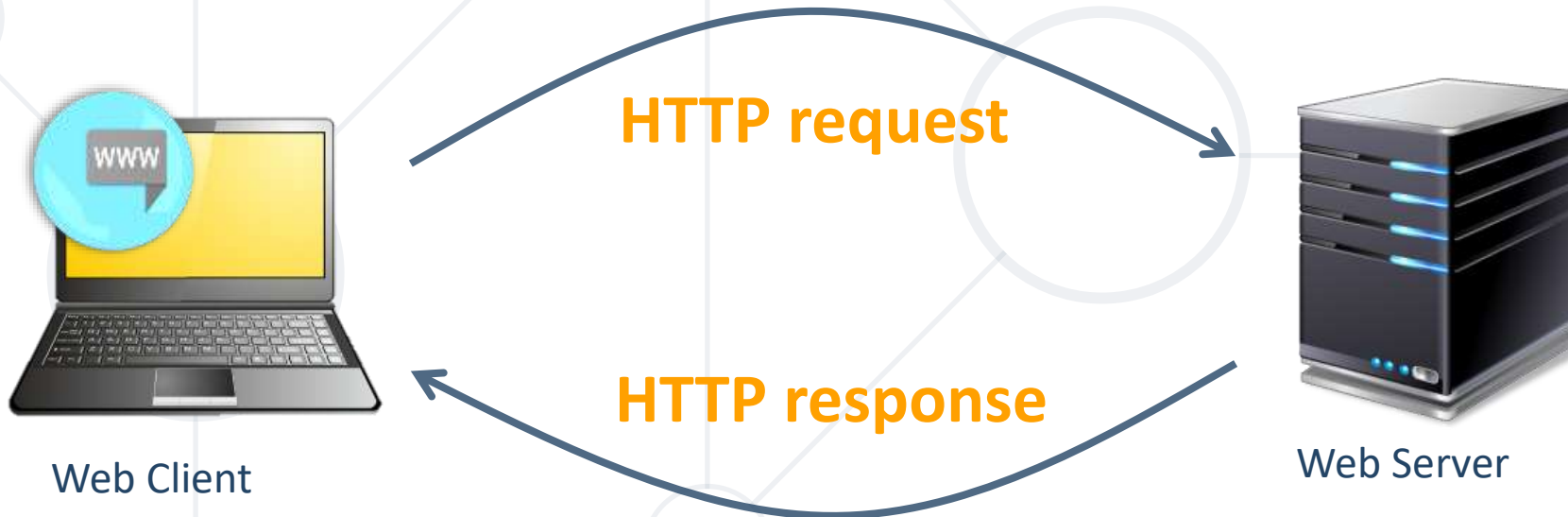4. URL

SoftUni
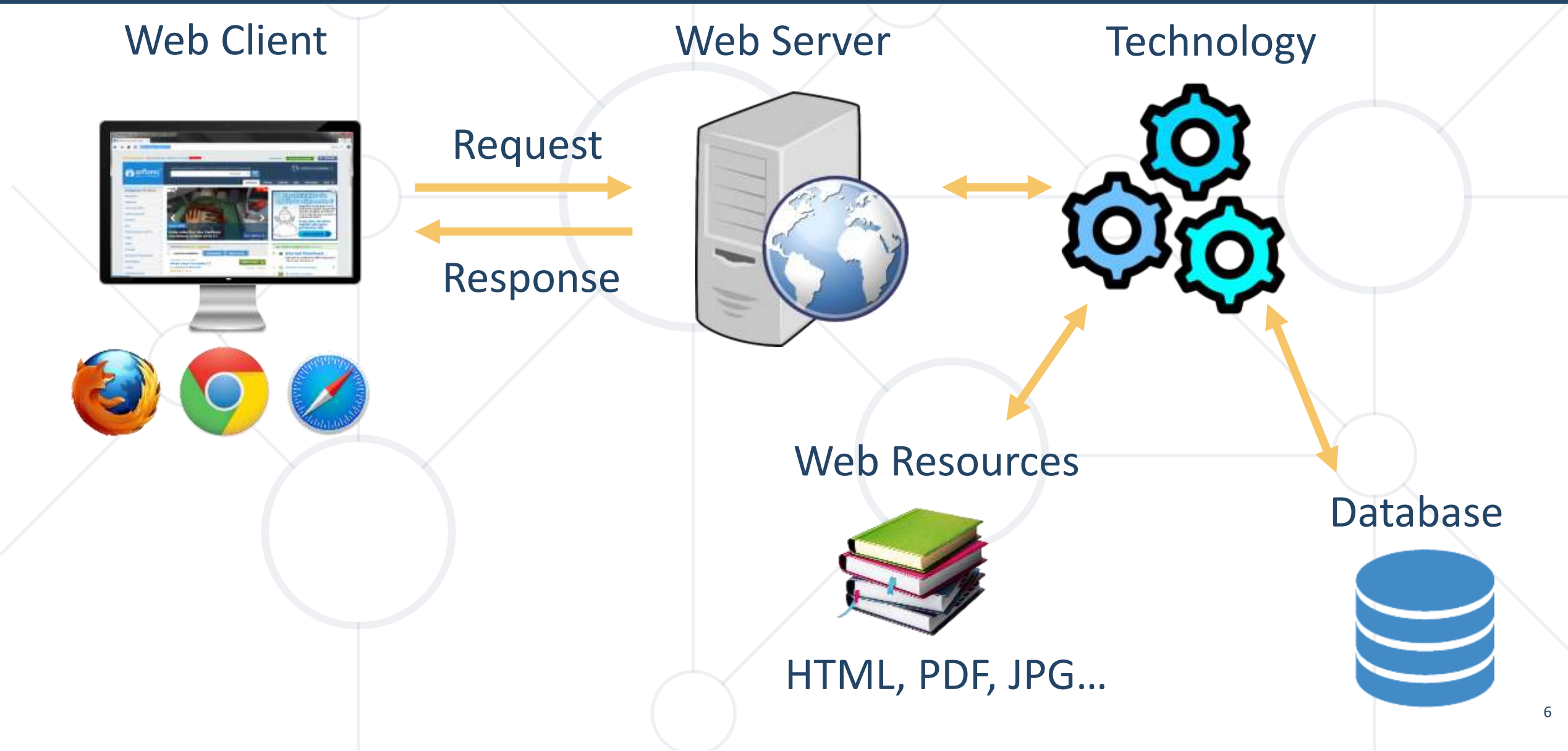Foundation

sli.do

#tech-fund

HTTP Basics

HTTP Basics

- HTTP (**H**yperText **T**ransfer **P**rotocol)

  - Text-based client-server protocol for the Internet

  - For transferring Web resources (HTML files, images, styles, etc.)

  - Request-response based

HTTP request

HTTP response

Web Client

Web Server

Web Server Work Model

Web Client

Web Server

Technology

Request

Response

Web Resources

HTML, PDF, JPG...

Database

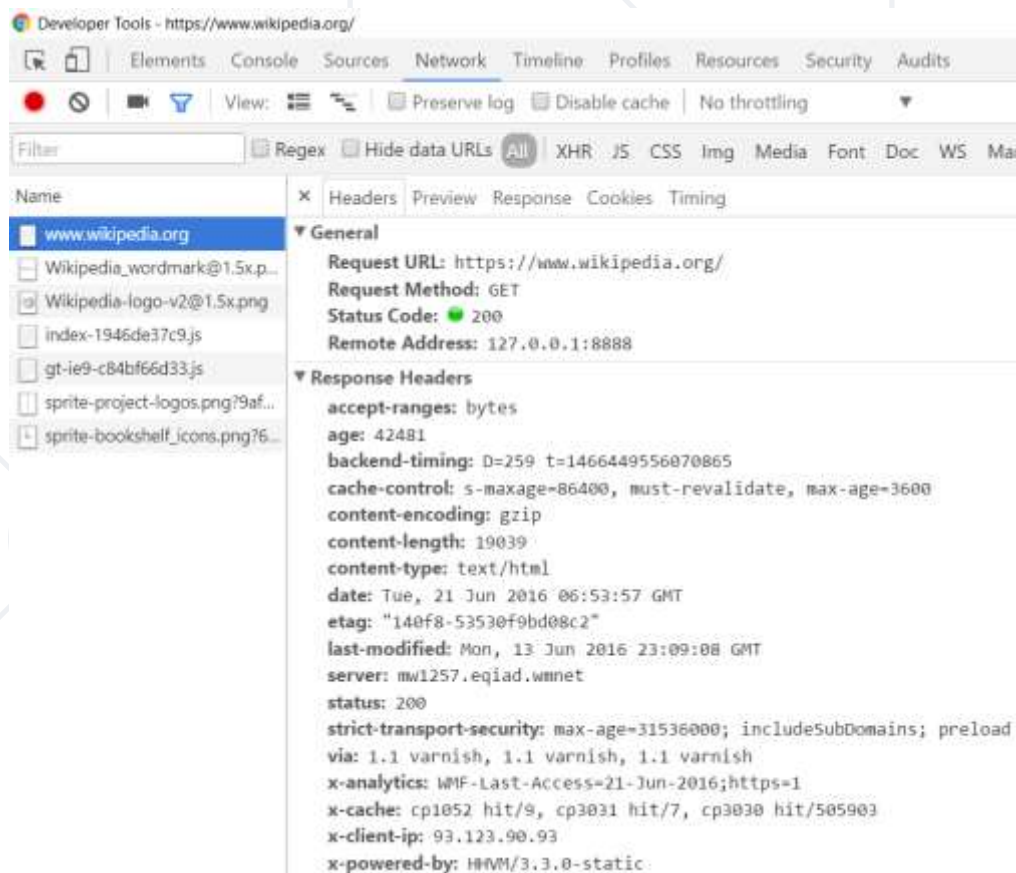# Dev Tools
Tools for Developers

HTTP Developer Tools

Developer Tools

Postman

HTTP Request
What is a HTTP Request?

HTTP Request Methods

- **HTTP** defines **methods** to indicate the desired action to be performed on the identified resource

Method		Description
GET		Retrieve / load a resource
POST		Create / store a resource
PUT		Update a resource
DELETE		Delete (remove) a resource
PATCH		Update resource partially
HEAD		Retrieve the resource's headers

HTTP GET Request – Example

```
GET /users/SoftUni-Tech-Module/repos HTTP/1.1
Host: api.github.com
Accept: */*
Accept-Language: en
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64)
  AppleWebKit/537.36 (KHTML, like Gecko)
  Chrome/54.0.2840.71 Safari/537.36
Connection: Keep-Alive
Cache-Control: no-cache

<CRLF>
```

HTTP **request line**

HTTP **headers**

The request **body** is empty

HTTP POST Request – Example

```
POST /repos/Tech-Module-Jan-2018/test-repo/issues HTTP/1.1

Host: api.github.com
Accept: */*
Accept-Language: en
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible;MSIE 6.0; Windows NT 5.0)
Connection: Keep-Alive
Cache-Control: no-cache
<CRLF>

{"title":"Found a bug",
 "body":"I'm having a problem with this.",
 "labels":["bug","minor"]}

<CRLF>
```

HTTP **headers**

HTTP **request line**

The request **body** holds the submitted data

HTTP Response
What is a HTTP Response?

```
HTTP/1.1 200 OK
```

HTTP response **status line**

```
Date: Fri, 11 Nov 2016 16:09:18 GMT+2
Server: Apache/2.2.14 (Linux)
Accept-Ranges: bytes
Content-Length: 84
Content-Type: text/html
<CRLF>
```

HTTP response **headers**

```
<html>
  <head><title>Test</title></head>
  <body>Test HTML page.</body>
</html>
```

HTTP response **body**

HTTP Response Status Codes

Status Code	Action	Description
200	OK	Successfully retrieved resource
201	Created	A new resource was created
204	No Content	Request has nothing to return
301 / 302	Moved	Moved to another location (redirect)
400	Bad Request	Invalid request / syntax error
401 / 403	Unauthorized	Authentication failed / Access denied
404	Not Found	Invalid resource
409	Conflict	Conflict was detected, e.g. duplicated email
500 / 503	Server Error	Internal server error / Service unavailable

Content-Type and Disposition

- The **Content-Type** / **Content-Disposition** headers specify how the HTTP request / response body should be processed
- Examples:

> JSON-encoded data

```
Content-Type: application/json
```

> UTF-8 encoded HTML page. Will be shown in the browser

```
Content-Type: text/html; charset=utf-8
```

```
Content-Type: application/pdf
Content-Disposition: attachment; filename="Financial-Report-April-2016.pdf"
```

> This will download a PDF file named **Financial-Report-April-2016.pdf**

HTTP Conversation: Example

- HTTP request:

```
GET /trainings/courses HTTP/1.1
Host: www.softuni.bg
User-Agent: Mozilla/5.0
<CRLF>
```

> The empty line denotes the end of the request header

- HTTP response:

```
HTTP/1.1 200 OK
Date: Tue, 16 Jan 2018 15:13:41 GMT
Server: Microsoft-HTTPAPI/2.0
Last-Modified: Tue, 16 Jan 2018 15:13:42 GMT
Content-Length: 18586
<CRLF>
<html><title>Курсовете от…
</title>
```

> The empty line denotes the end of the response header

URL
Uniform Resource Locator

Uniform Resource Locator (URL)

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```
http://mysite.com:8080/demo/index.php?id=27&lang=en#lectures
```

Protocol   **Host**   **Port**   **Path**   **Query String**   **Fragment**

- **Protocol** for communicating (**http**, **ftp**, **https**…) – HTTP in most cases
- **Host** or IP address (**www.softuni.bg**, **gmail.com**, **127.0.0.1**, **web**)
- **Port** (the default port is **80**) – a number in range [0…65535]
- **Path** (**/forum**, **/path/index.php**)
- **Query string** (**?id=27&lang=en**)
- **Fragment** (**#lectures**) – used on the client to navigate to some section

Summary

- HTTP works with message pairs
  HTTP request and **HTTP response**

```
GET /trainings/courses HTTP/1.1
Host: www.softuni.bg
User-Agent: Mozilla/5.0
<CRLF>
```

```
HTTP/1.1 200 OK
…
<CRLF>
<html><title>…
```

- The **URL** parts define:
  protocol, **host**, **port**, **path**, **query string**, and **fragment**

Questions?

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  - softuni.bg

- Software University Foundation

  - http://softuni.foundation/

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- Software University Forums

  - forum.softuni.bg

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