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Institute of
Technology
Belgrade

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WEB

Internet VS Web



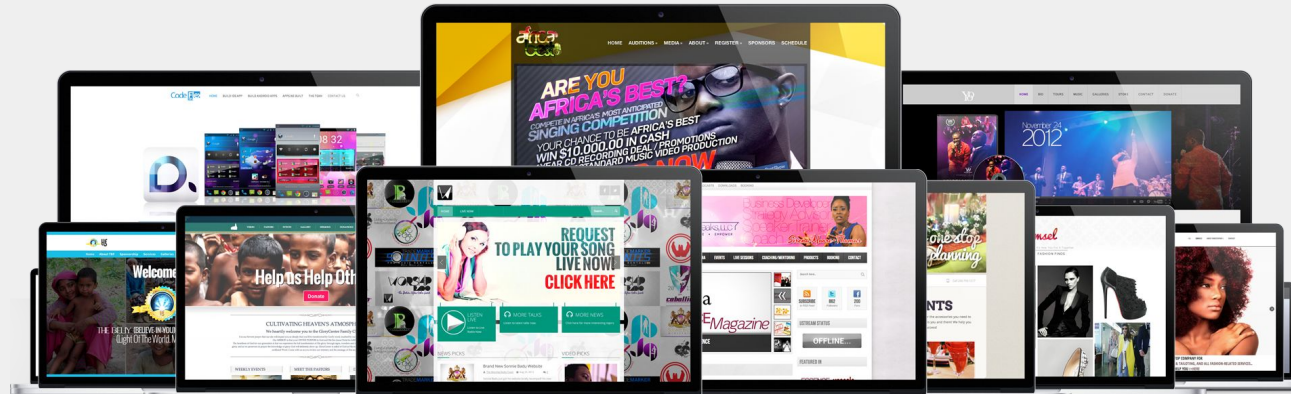
Internet

- Hardware infrastructure
- Global network of devices
- Protocols allow communication
- How internet is born
 - 1960
 - ARPAnet

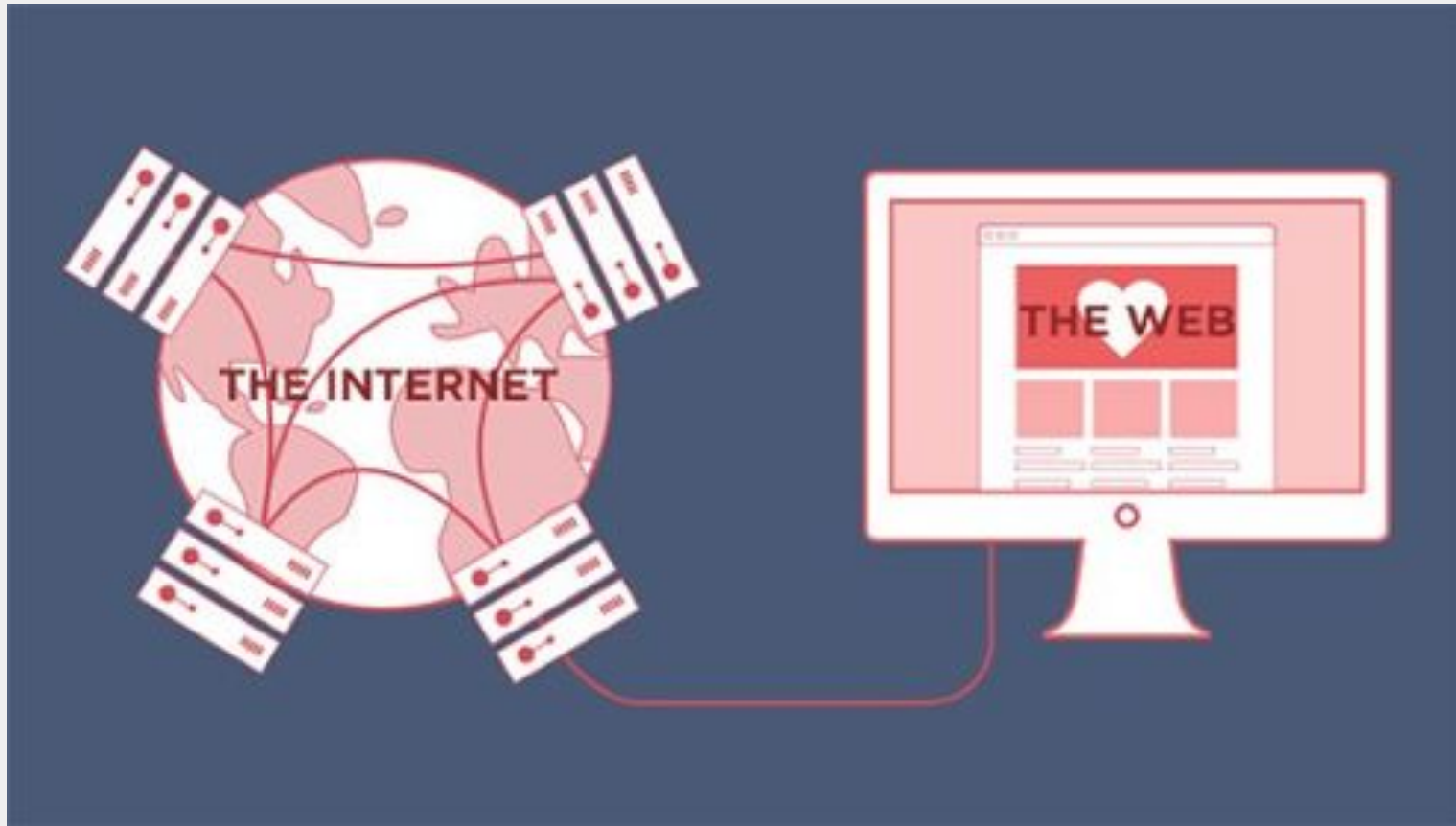


Web (World Wide Web or WWW)

- World Wide Web or just WWW
- Uses Internet
- Provides documents (sites)
- Documents can be located via URL
- Uses HTTP protocol
- Created in 1990 at CERN
 - Tim Berners-Lee
 - Robert Cailliau



Internet **AND** Web

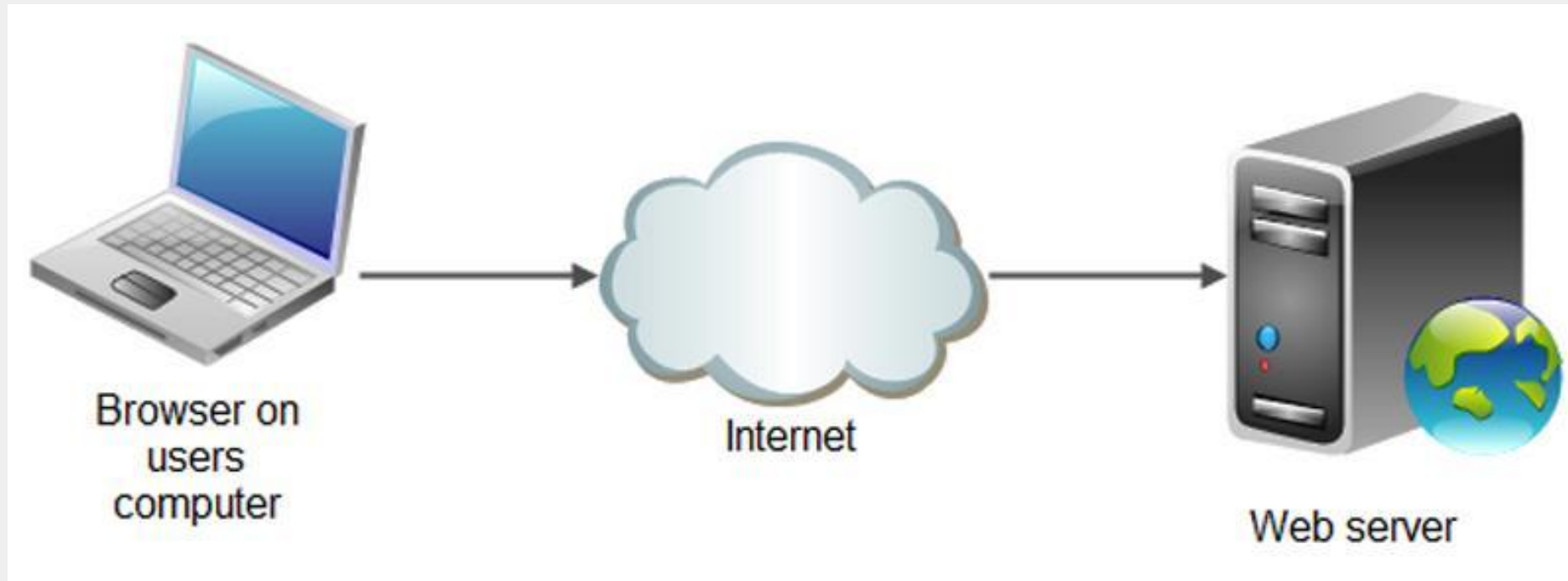


References

- Internet vs Web - <https://goo.gl/YbEVN5>
- Web - <https://goo.gl/u5HvGE>
- History of Web - <https://goo.gl/MXnbxM>

How People Access The Web

- Client (initiates request)
- Server (serves document)
- Web Browser
- URL



URL

Uniform Resource Locator

http://www.nytimes.com/tech/index.html

application
transfer
protocol

host
name.

domain
name.
top-level
domain

path

file

case sensitive

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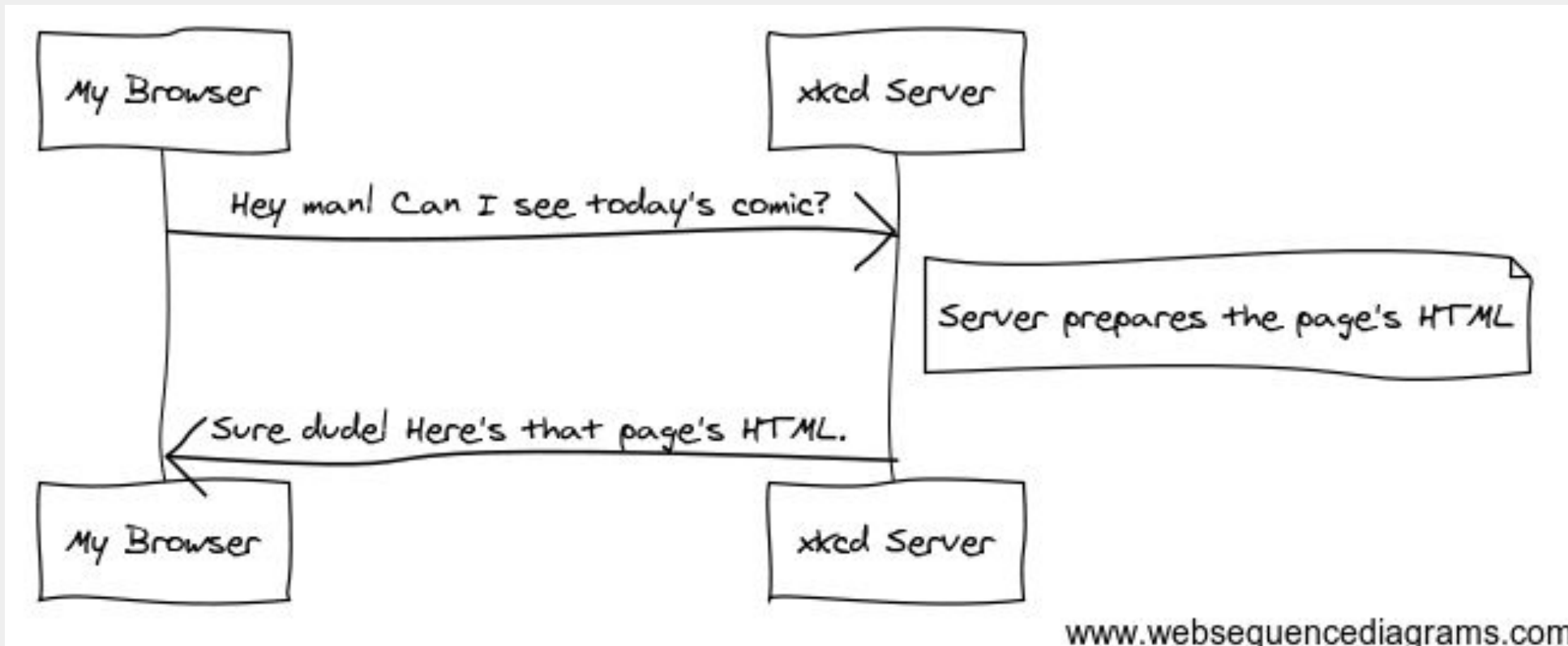
Exercise

References

- Web Browser - <https://goo.gl/3iiAhm>
- URL - <https://goo.gl/u5HvGE>

How Web Page Is Served

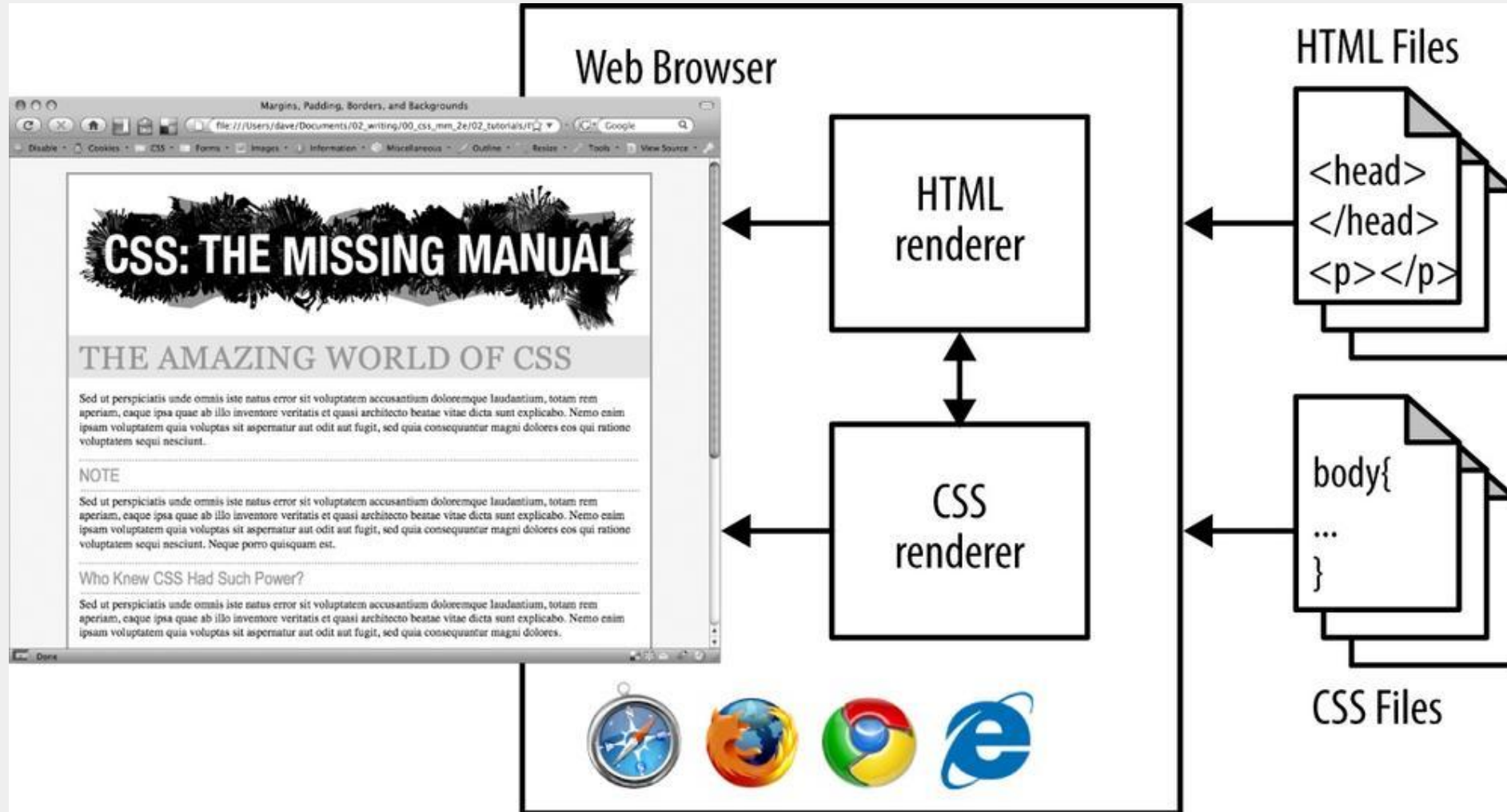
- HTTP (HyperText Transfer Protocol)
- Request - Response



How Web Page Is Constructed |

- Server provides (text) code to the browser
 - HTML
 - CSS
 - JavaScript
- Browser interprets received code and shows the page

How Web Page Is Constructed II



How Web Page Is Constructed III

- How server gets HTML code
 - Native HTML document
 - Dynamically created HTML

Web Page Structure

Every written document has some structure

Newspapers

- Titles
- Subtitles
- Paragraphs

Bank Form

- Sections
- Question with response area

Glavni Naslov

Tekst koji je uvod u temu o kojoj je rač na ovoj stranici. I ako zamislimo da je ovo dosta veliki članak njega bi trebalo podeliti na više sekcija.

Ovo je podnaslov

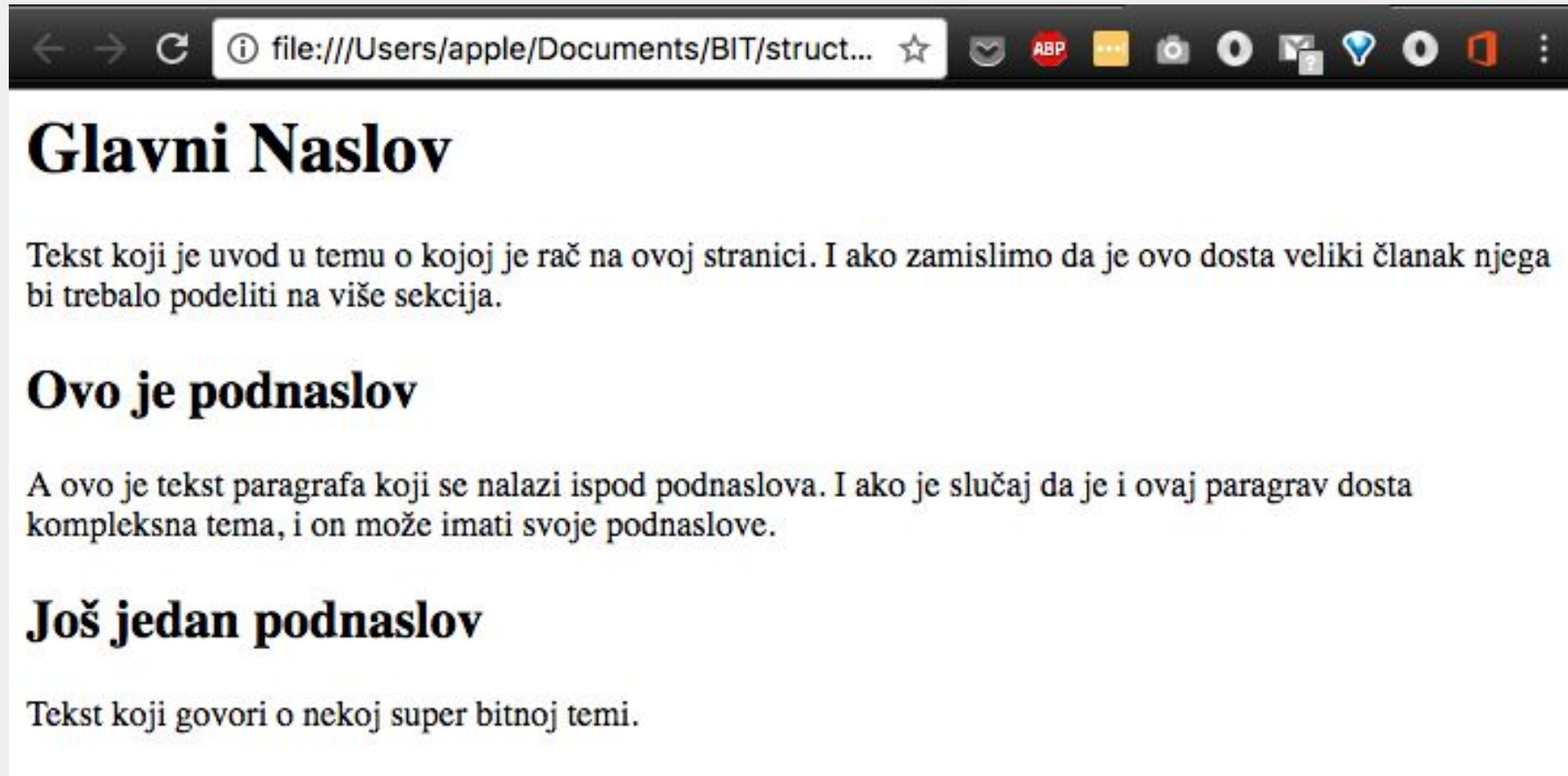
A ovo je tekst paragrafa koji se nalazi ispod podnaslova. I ako je slučaj da je i ovaj paragraf dosta kompleksna tema, i on može imati svoje podnaslove.

Još jedan podnaslov

Tekst koji govori o nekoj super bitnoj temi.

What is HTML used for

HTML is used for specifying **page structure**



Basic HTML page

```
<html>
  <body>
    <h1>Glavni Naslov</h1>
    <p> Tekst koji je uvod u temu o kojoj je rač na ovoj stranici.
      I ako zamislimo da je ovo dosta veliki članak njega bi
      trebalo podeliti na više sekcija.</p>
    <h2>Ovo je podnaslov</h2>
    <p>A ovo je tekst paragrafa koji se nalazi ispod podnaslova.
      I ako je slučaj da je i ovaj paragraf dosta kompleksna tema,
      i on može imati svoje podnaslove.</p>
    <h2>Još jedan podnaslov</h2>
    <p>Tekst koji govori o nekoj super bitnoj temi.</p>
  </body>
</html>
```

Page structure

- Element
 - Opening tag **<tag>**
 - Closing tag **</tag>**
 - Attributes
- **<html>** - HTML page (root)
- **<body>** - content
- **<h1>** - title
- **<p>** - paragraph

```
<html>  
  <body>  
    <h1>This a heading</h1>  
    <p>This is a paragraph.</p>  
    <p>This is another paragraph.</p>  
  </body>  
</html>
```

Element attributes

- Part of an opening tag
- They consist of a name/value pair



Diagram illustrating an HTML opening tag with an attribute:

ATTRIBUTE NAME

<p lang="en-us">Paragraph in English</p>

ATTRIBUTE VALUE

The diagram shows the opening tag <p lang="en-us">. A bracket above the tag points to 'lang' and is labeled 'ATTRIBUTE NAME'. Another bracket below the tag points to '"en-us"' and is labeled 'ATTRIBUTE VALUE'.




Diagram illustrating an HTML opening tag with an attribute:

ATTRIBUTE NAME

<p lang="fr">Paragraphe en Français</p>

ATTRIBUTE VALUE

The diagram shows the opening tag <p lang="fr">. A bracket above the tag points to 'lang' and is labeled 'ATTRIBUTE NAME'. Another bracket below the tag points to '"fr"' and is labeled 'ATTRIBUTE VALUE'.

Head and Title elements

`<head>`

- Before the `<body>` element
- Content is not visible to the user
- Contains web page information

`<title>`

- Defines title of the window
- Part of the `<head>` element

Head and Title example

```
<html>
  <head>
    <title>This is the Title of the Page</title>
  </head>
  <body>
    <h1>This is the Body of the Page</h1>
    <p>Anything within the body of a web page is
      displayed in the main browser window.</p>
  </body>
</html>
```

This is the Body of the Page

Anything within the body of a web page is displayed in the main browser window.

Creating Web Page

- HTML is a **text document**
- Open some text editor (Notepad)
- Create some HTML
- Save file with **.html** extension
- Find and open saved file

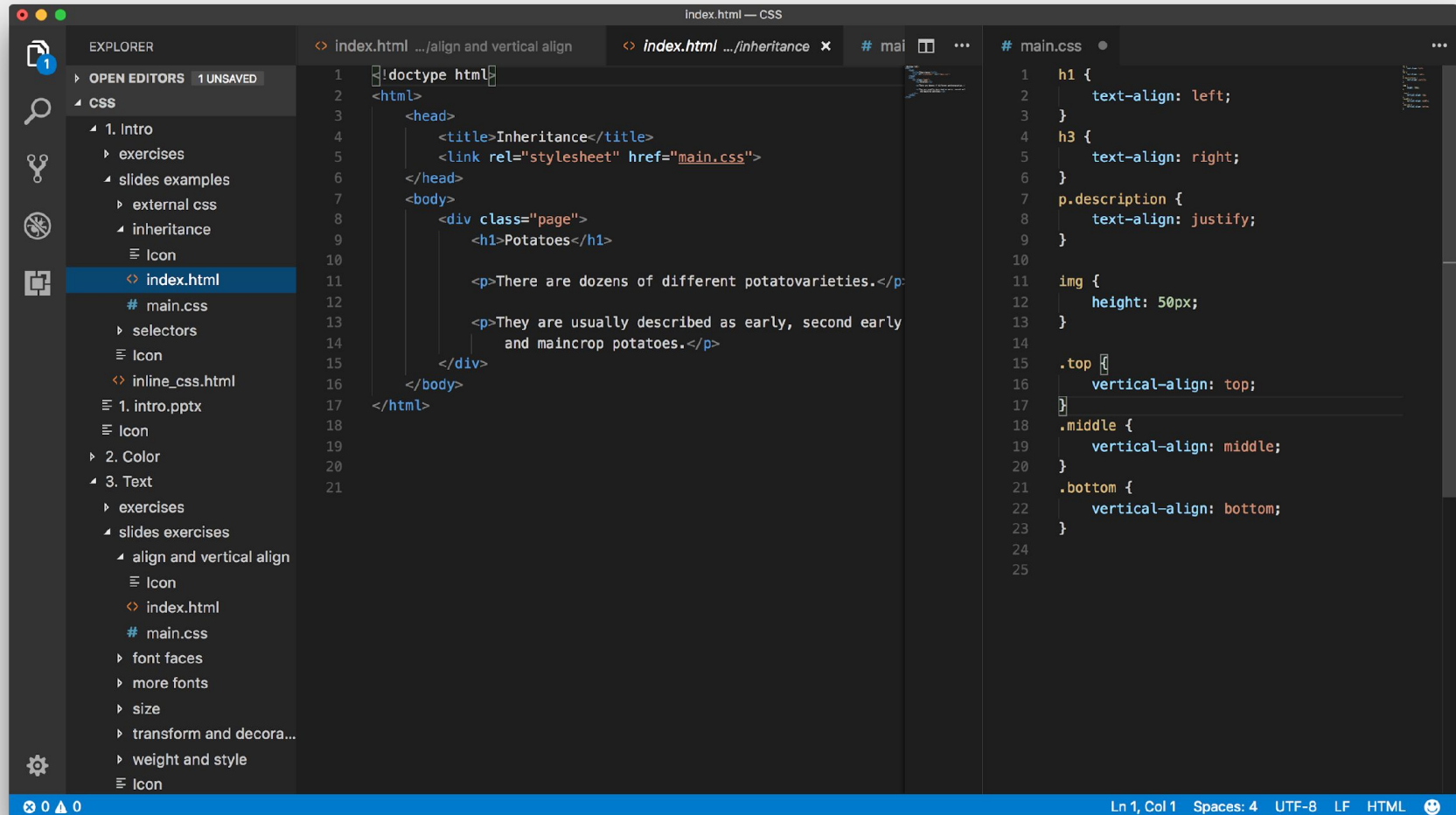
```
<html>
  <head>
    <title>Hello World Page Title</title>
  </head>
  <body>
    <h1>Hello World</h1>
  </body>
</html>
```

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Exercise

Visual Studio Code IDE

- **IDE** - Integrated Development Environment
- Frontend IDE's
 - VS Code
 - Sublime Text
 - Atom
 - WebStorm
 - ...



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DEMO

What is DOCTYPE

- There were multiple versions of HTML
 - HTML 4
 - XHTML
 - HTML 5
- Browser can interpret code incorrectly
- Information to the browser about the used HTML version
- Placed in the first line of an HTML document

Doctype examples

- HTML 4.01

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

- XHTML

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"  
|  
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">  
<html xmlns="http://www.w3.org/1999/xhtml">  
|  
    ...  
</html>
```

- HTML 5

```
<!doctype html>  
<html>  
|  
    ...  
</html>
```

Comments

- Explanation for developer
- Ignored by browser
- Starts with `<!--`
- Ends with `-->`

```
<html>
  <!-- This is commented text/code -->
  <h1>Some Title</h1>

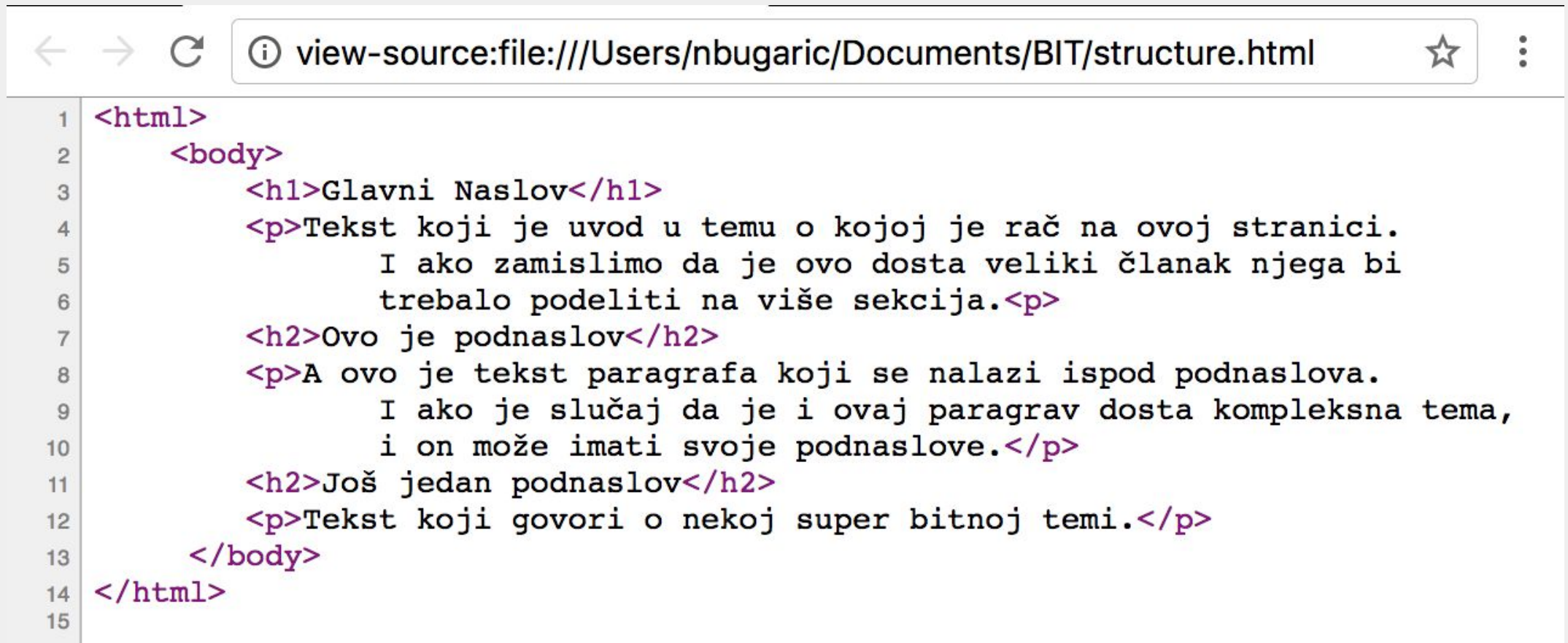
  <!-- Everything inside comment
       tags is comment. And it can be
       also across multiple lines -->
</html>
```

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Exercise

How To Check Page Source

Ctrl + U

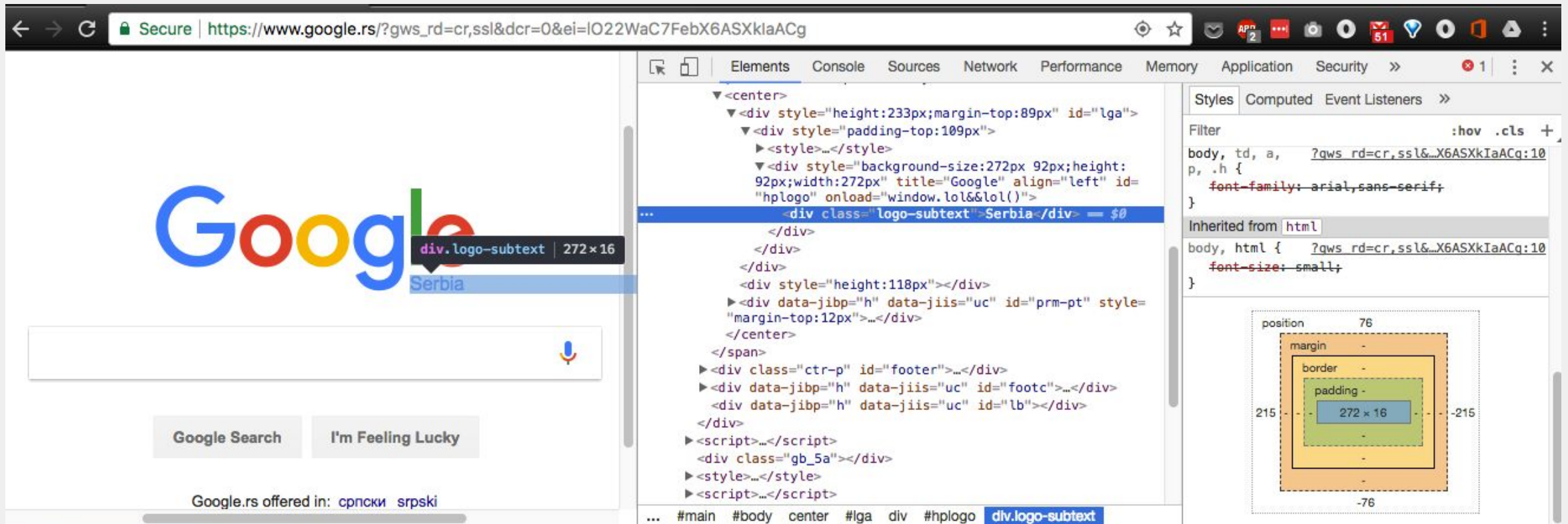


The screenshot shows a web browser window with the address bar displaying 'view-source:file:///Users/nbugaric/Documents/BIT/structure.html'. The browser interface includes back, forward, and refresh buttons. The main content area displays the HTML source code of a file, with line numbers 1 through 15 on the left. The code is color-coded: tags are in purple, text is in black, and closing tags are in pink. The HTML structure includes a main heading, a paragraph of text, and two subheadings with their respective paragraphs.

```
1 <html>
2   <body>
3     <h1>Glavni Naslov</h1>
4     <p>Tekst koji je uvod u temu o kojoj je rač na ovoj stranici.
5       I ako zamislimo da je ovo dosta veliki članak njega bi
6       trebalo podeliti na više sekcija.</p>
7     <h2>Ovo je podnaslov</h2>
8     <p>A ovo je tekst paragrafa koji se nalazi ispod podnaslova.
9       I ako je slučaj da je i ovaj paragraf dosta kompleksna tema,
10      i on može imati svoje podnaslove.</p>
11    <h2>Još jedan podnaslov</h2>
12    <p>Tekst koji govori o nekoj super bitnoj temi.</p>
13  </body>
14 </html>
15
```


Inspect Web Page

- Inspecting page (**Ctrl + Shift + I**)
- Mobile view



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Exercise

References

- Request/Response - <https://goo.gl/gXMZJV>
- How browser displays page - <https://goo.gl/txgWDa>
- Structure: <https://goo.gl/k3YAsx>
- HTML history: <https://goo.gl/XDh7xi>
- Doctype: <https://goo.gl/Q8WmVb>
- Comments: <https://goo.gl/JwxSNh>
- Page source: <https://goo.gl/GVUiZh>
- Developer tools: <https://goo.gl/69asdc>

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