HTTP and HTML

Web Programming and Testing

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Objectives

- The objective of this session is the following:
  - The students are able to distinguish the role of HTTP and HTML.
  - The students are able to elaborate the role of HTML.
  - The students are able to structure information using HTML.

Outlines

1. HTTP Protocol.
2. HTML.

HTTP: A Little Deeper

HTTP

- Hypertext Transfer Protocol (HTTP).
  - It runs on top of TCP/IP's Application Layer.

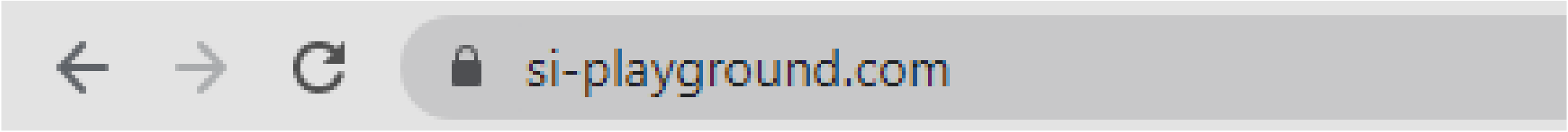
- HTTP/2 compared to HTTP/1.1:
  - It has compression and reuse connection features.
  - HTTP/1.1 is the default protocol.

Hypertext: meaningful text, it may have links to create a chain of information.

HTTP

- HTTP is responsible to handle **data exchange** in the form of hypertext.

- HTTPS is the **secure** version of HTTP.
  - It encrypts the transmitted data with RSA.
  - HTTP uses port number 80, whereas HTTPS uses 443.



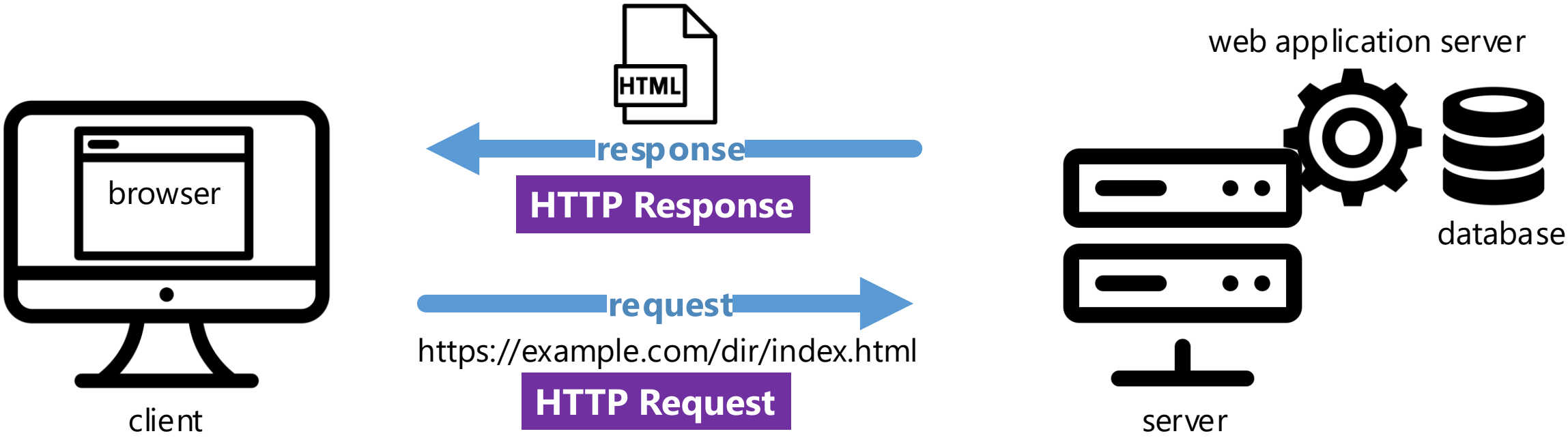
Use the combination of HTTPS and HTTP/2 every time possible.

HTTP Methods

- `GET`: to retrieve a resource.
- `POST`: to store a new resource.
- `PUT`: to replace an existing resource(partially or wholly).
- `PATCH`: to modify an existing resource.
- `DELETE`: to remove an existing resource.
- `HEAD`: to retrieve the head-only response.
- `OPTIONS`: to get the available methods for a specific resource.

In general context, `GET` and `POST` are the most used methods.

Request-Response Cycle



HTTP Request and Response

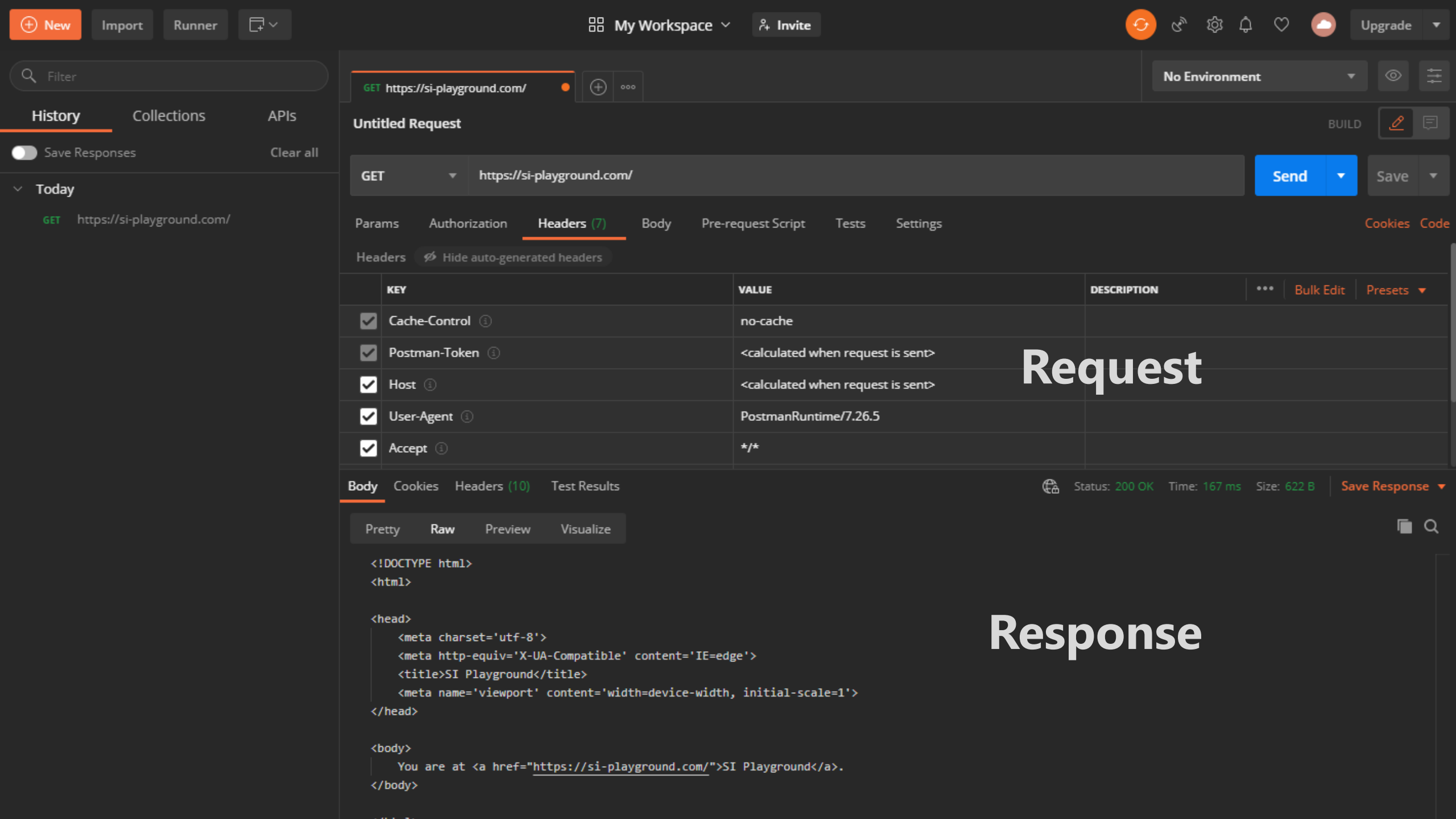
- HTTP Request and HTTP Response are '*mails*', they have:
  - The metadata contains information about both the sender and the targeted recipient (**header**).
  - A payload to store the actual data being transmitted (**body**).

The body can be empty sometimes. When?

Is it possible to send an HTTP Request without any header?

HTTP Response Codes

- We will discuss about the HTTP Response Codes a little bit later.
  - For those who are impatient, please see:
  - https://developer.mozilla.org/en-US/docs/Web/HTTP/Status


New
Import
Runner
My Workspace
Invite
Upgrade
Filter
History
Collections
APIs
Save Responses
Clear all
Today
GET https://si-playground.com/
GET https://si-playground.com/
No Environment
Untitled Request
BUILD
GET
https://si-playground.com/
Send
Save
Params
Authorization
Headers (7)
Body
Pre-request Script
Tests
Settings
Cookies
Code
Headers
Hide auto-generated headers
KEY
VALUE
DESCRIPTION
Bulk Edit
Presets
Cache-Control
no-cache
Postman-Token
<calculated when request is sent>
Host
<calculated when request is sent>
User-Agent
PostmanRuntime/7.26.5
Accept
/
Request
Body
Cookies
Headers (10)
Test Results
Status: 200 OK
Time: 167 ms
Size: 622 B
Save Response
Pretty
Raw
Preview
Visualize
<!DOCTYPE html>
<html>
<head>
<meta charset='utf-8'>
<meta http-equiv='X-UA-Compatible' content='IE=edge'>
<title>SI Playground</title>
<meta name='viewport' content='width=device-width, initial-scale=1'>
</head>
<body>
You are at SI Playground.
</body>
Response

SoapUI 5.5.0

File Project Suite Case Step Tools Desktop Help

Empty SOAP REST Import Save All Forum Trial Preferences Proxy | Endpoint Explorer | Search Forum Online Help

Navigator

Projects
- SimpleBank
- si-playground
  - https://si-playground.com
    - si-playground []
      - get-homepage
        - Request 1
  - TestSuite 1

Request 1

Method: GET
Endpoint: https://si-playground.com
Resource:
Parameters:

Request | Raw

```
GET https://si-playground.com/ HTTP/1.1
Accept-Encoding: gzip,deflate
Host: si-playground.com
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.1.1 (java 1.5)
```

XML | JSON | HTML | Raw

```
HTTP/1.1 200 OK
Server: nginx
Date: Mon, 14 Sep 2020 10:04:01 GMT
Content-Type: text/html
Content-Length: 339
Connection: keep-alive
X-Accel-Version: 0.01
Last-Modified: Mon, 14 Sep 2020 07:18:32 GMT
ETag: "153-5af40d7851392"
Accept-Ranges: bytes
X-Powered-By: PleskLin

<!DOCTYPE html>
<html>

<head>
  <meta charset='utf-8'>
  <meta http-equiv='X-UA-Compatible' content='IE=edge'>
  <title>SI Playground</title>
  <meta name='viewport' content='width=device-width, initial-scale=1'>
</head>

<body>
  You are at <a href="https://si-playground.com/">SI Playground</a>.
</body>

</html>
```

SSL Info (2 certs)

Request Properties | Request Params

Property	Value
Name	Request 1
Description	
Encoding	
Endpoint	https://si-playgrou...

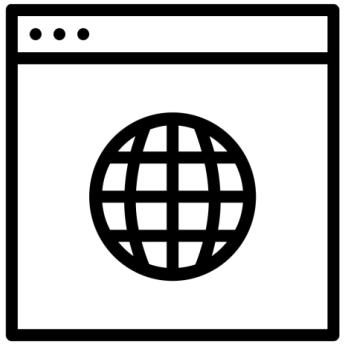
response time: 682ms (339 bytes) 1 : 1

Inspector

HTML

HTML

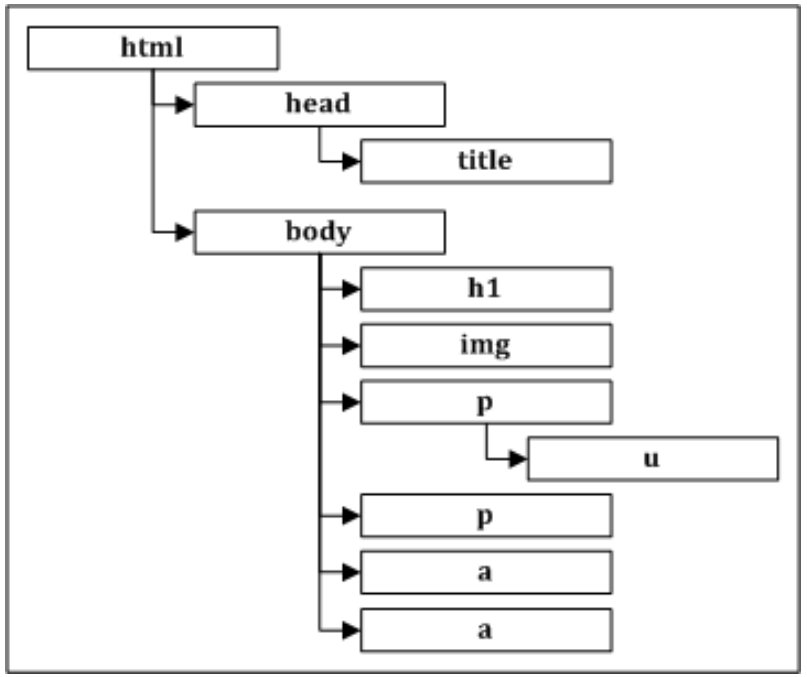
- Hypertext Markup Language (HTML)
  - Is a language to structure information.
  - It marks up (styles) the look and feel.
  - The today's version is called HTML5.



The language is very similar to XML (eXtensible Markup Language)

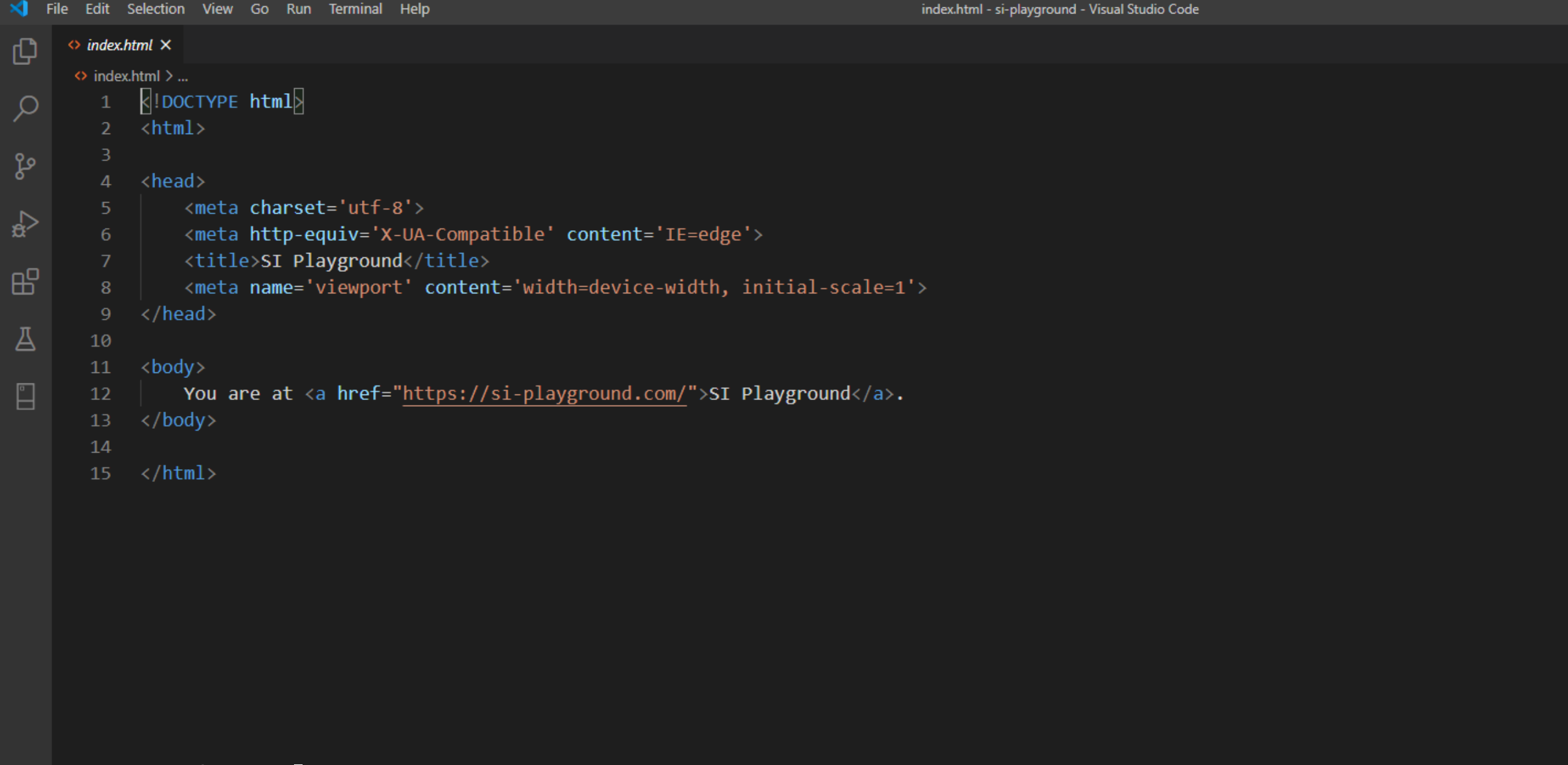
Unlike XML, HTML tags are predefined.

HTML Element



- Information are structured in elements.
  - An element may have one or more child elements.
  - The structure may looks like a tree.
  - An element is written in a tag.
  - A tag may have one or more attributes.

```
<tag attribute="attributevalue">elementvalue</tag>
```



A Simple HTML Document

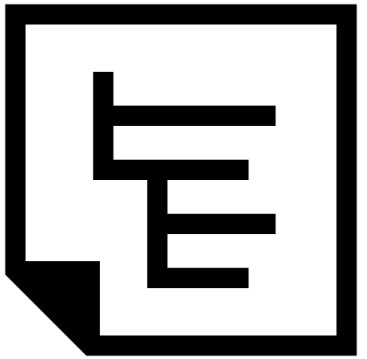
External Resources

- An HTML document may refers to one or more external resources.
  - CSS styling, JS, or a set of images.

- What would happen if the external resources are unavailable?
  - The page will still be loaded, but:
    - Doesn't look pretty.
    - Doesn't have a fancy features.

HTML Document Object Model

- When an HTML document is loaded by a browser, it creates an abstract model that structures the page.
  - This abstract model is called as **Document Object Model**.
  - or simply DOM.

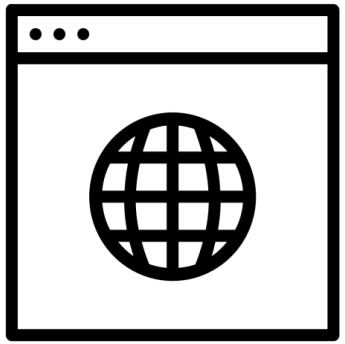


- When there is a dynamic manipulation, the browser manipulates the DOM.

HTTP vs HTML

HTTP vs. HTML

- HTTP is about the data transmission between hosts.
- HTML is about structuring and formatting information.

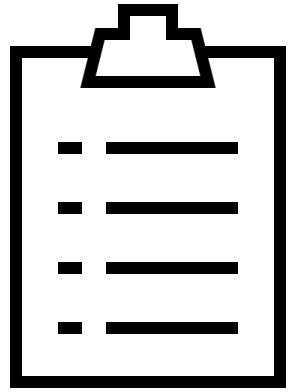


HTTP is the mailing ecosystem

HTML is the mail being sent

To-dos

1. Understand the role of:
   - HTTP and HTML in a web application.
   - Element value and attribute.
2. Find out the feature that:
   - The HTTP/2 has but HTTP/1.1 doesn't.
   - The HTML5 has but HTML4 doesn't.
3. Try some basic tags by building a simple page.



References

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HTML5 Differences from HTML4. https://www.w3.org/TR/html5-diff/

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Thank you