



UTM
UNIVERSITI TEKNOLOGI MALAYSIA



**Online
Learning**

Introduction to Web Programming

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Today's Topics

- Internet
- World Wide Web
- Web Architecture
- Common Gateway Interface
- CGI Programming

Internet

- **A world-wide network of computer networks.**
- **All connections use TCP/IP**
- **TCP/IP hides the differences among devices connected to the Internet**
- **Internet provides several protocols: Telnet, FTP, mailto, HTTP, etc. All with different interfaces. A solution is the World Wide Web**

World Wide Web

- Allows users from anywhere on the internet to retrieve documents from any other computers
- The main protocol is the HTTP - **HyperText Transfer Protocol**
- HTTP provides a standard form of communication between **web browsers** and **web servers**.
- **Web or Internet?**
 - *Internet* is a collection of computers.
 - *Web* is a collection of software and protocols

The Simplified WWW

Web browser wants a page from a **web server**

Pages structured into **HTML** and referenced via **URLs**

HTTP used to structure communication between client and server

This is the World
Wide Web

get bytes (in this case **HTTP packets**) from users program

from one machine to another

route groups of bytes (**IP PACKET**) between networks

(independent of hardware)

The internet
TCP, UDP and
IP

get groups of bytes (**FRAME**) from A to B on a single Network

(hardware dependant)

get bits from A to B on a single network

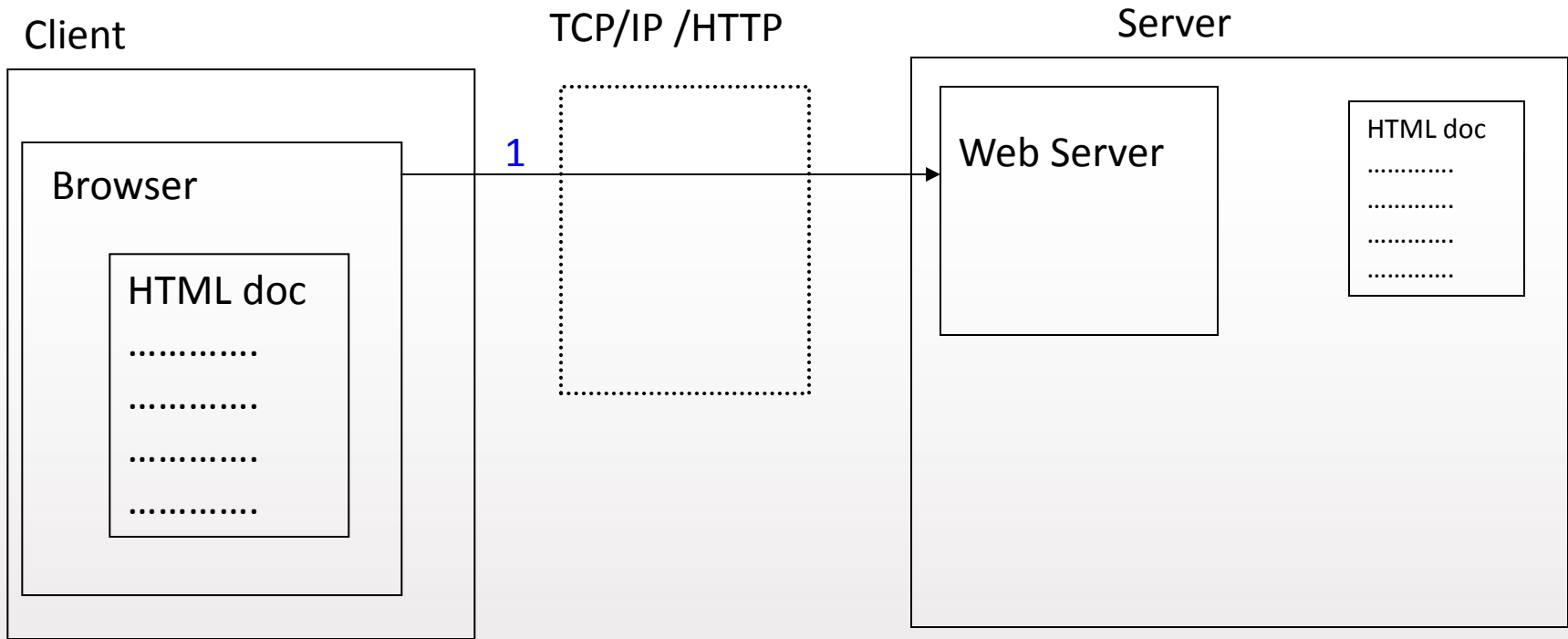
(hardware dependant)

Existing
network
technologies

- **Web browsers**
 - Programs running on client computers
 - Request for documents using URL
 - *eg. MS Internet Explorer, Mozilla Firefox, Google Chrome etc.*
- **Web servers**
 - Programs that provide documents to browsers
 - *eg. Apache, IIS*
- **URL - Uniform Resource Locator**
 - A reference of a document on the web.
 - *eg. <http://comp.fsksm.utm.my/index.html>*
 - *<http://comp.fsksm.utm.my/images/logo.jpg>*

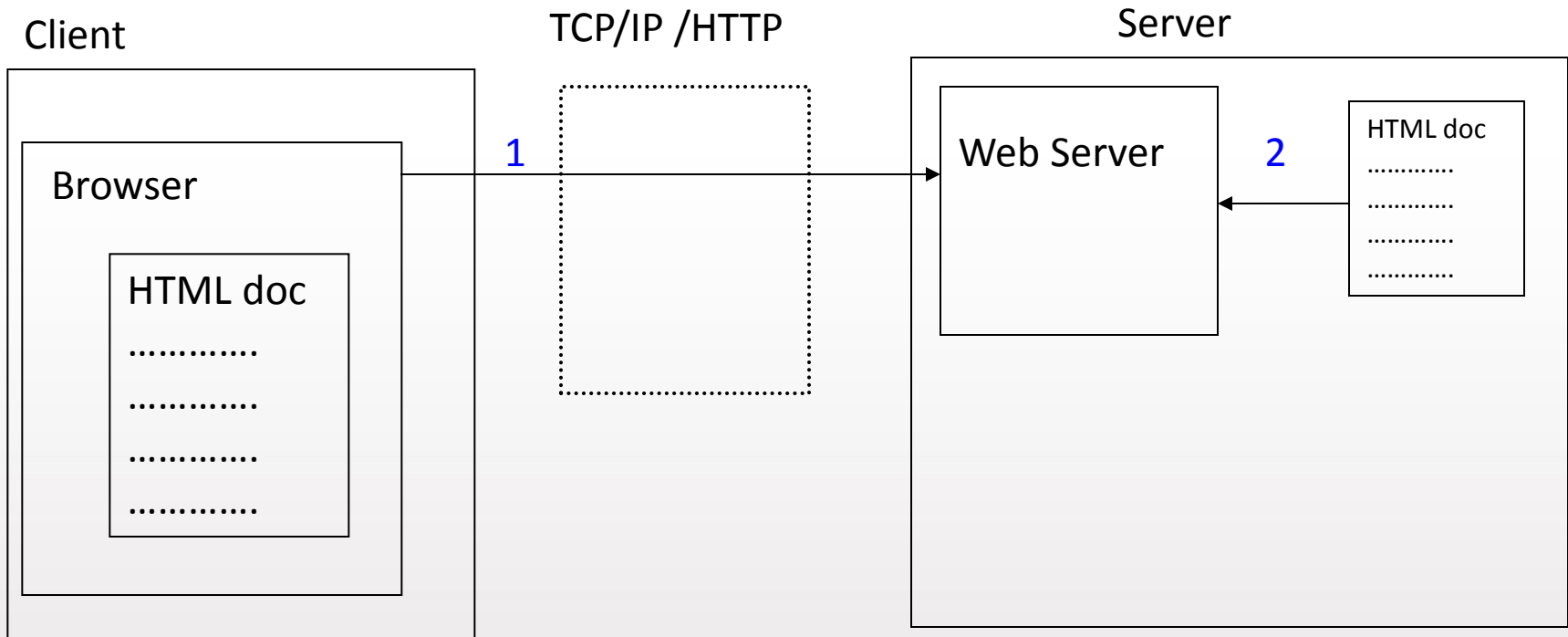
- How web pages are delivered to us?
- 2 approaches:
 - Static content
 - Dynamic content

Web Architecture: Static content



1. Client browser send a request for HTML document to web server

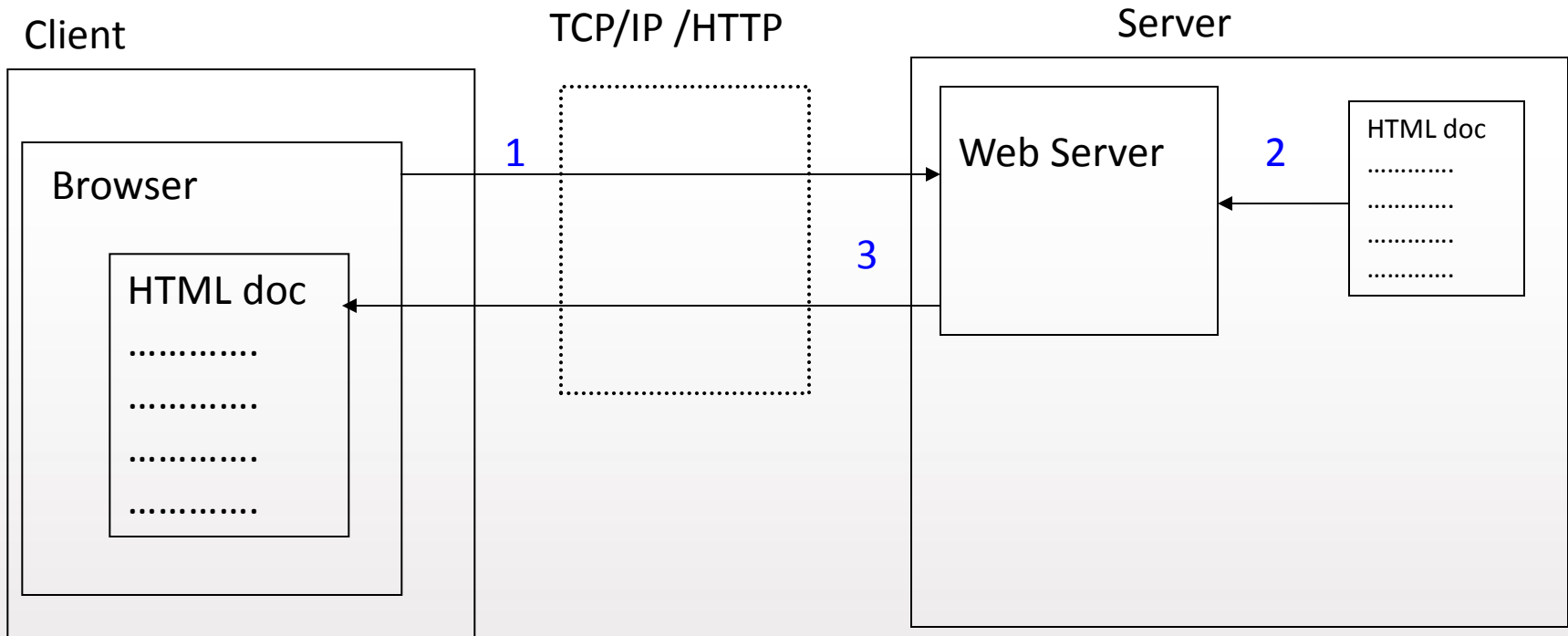
Web Architecture: Static content



2. Web server try to find and read the document at server directory

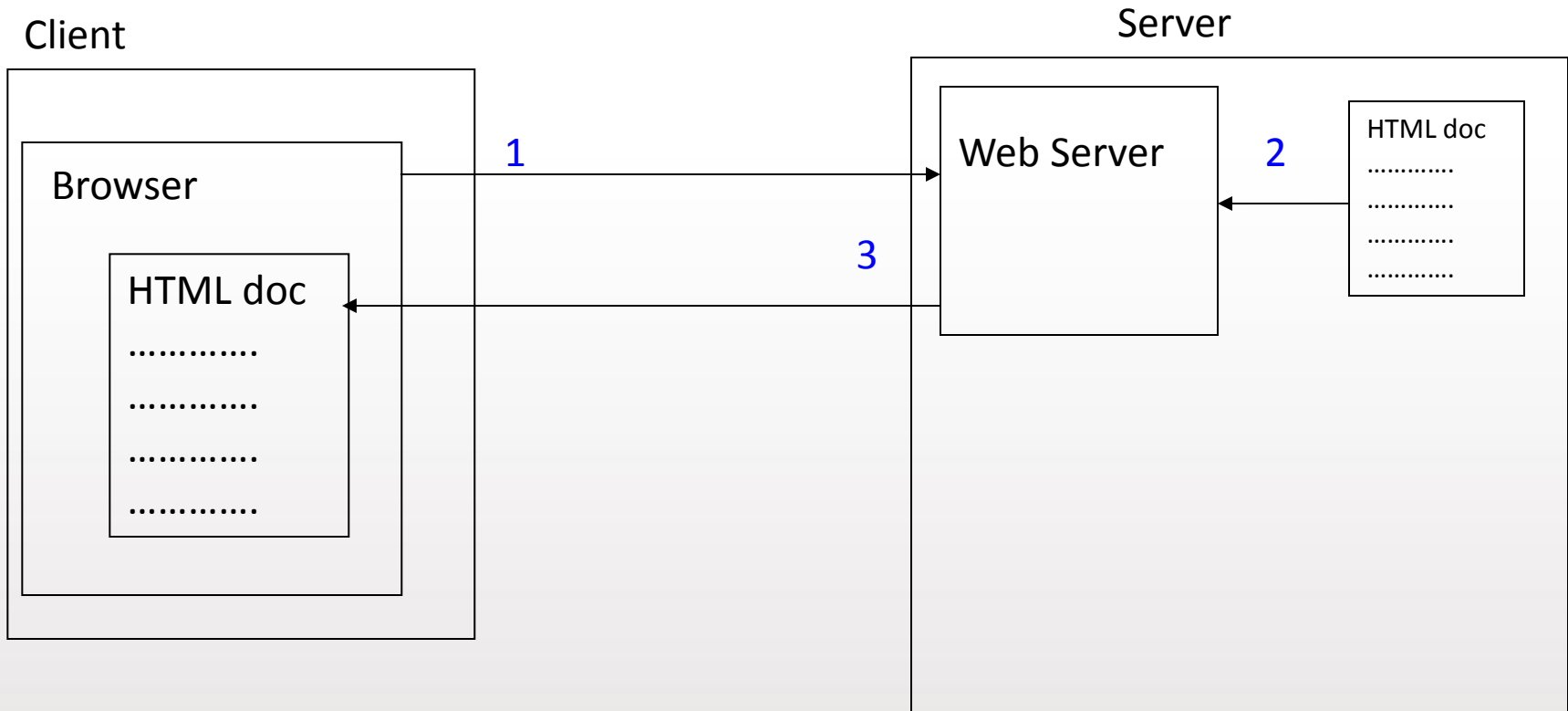
Web Architecture:

Static content



3. Web server send the HTML document to the client browser

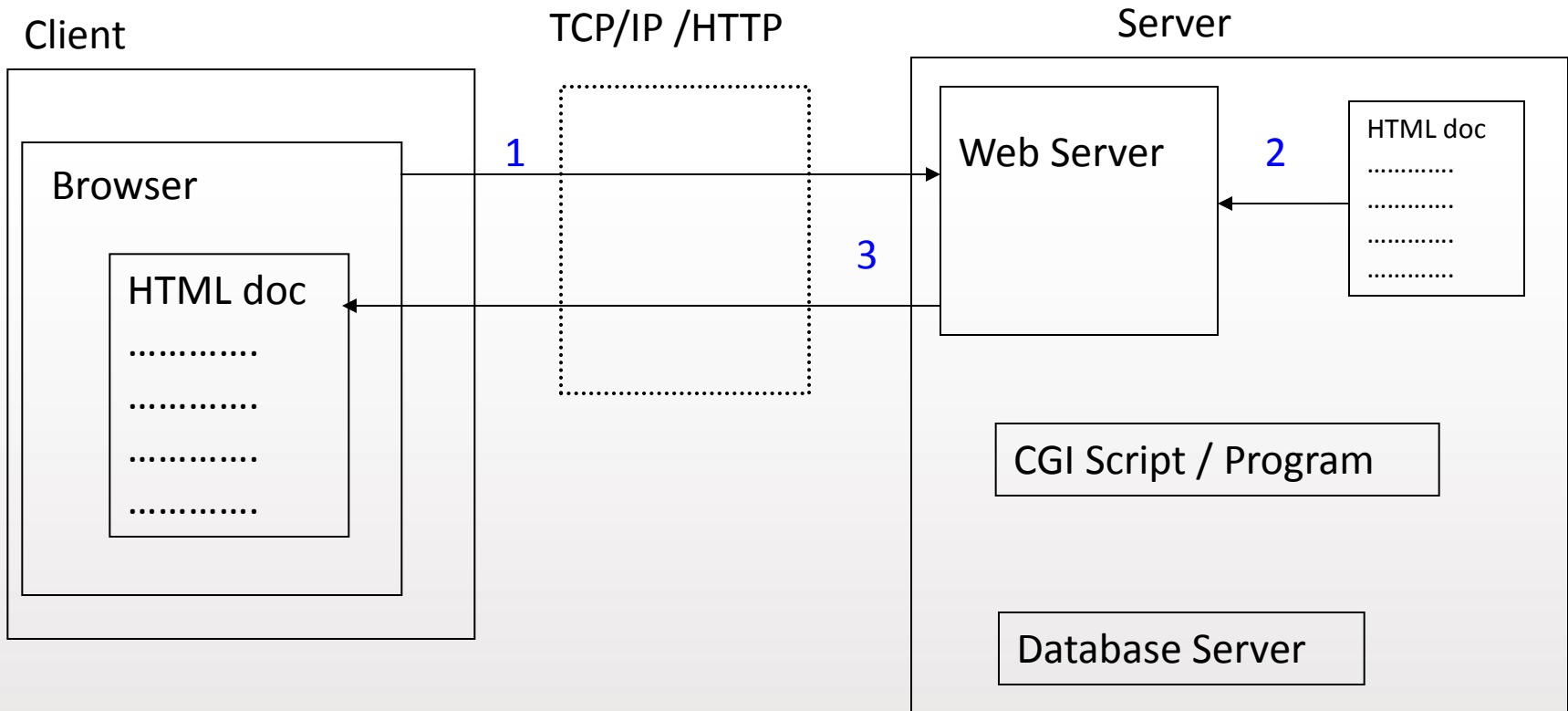
How the Web works for static contents (basic architecture)

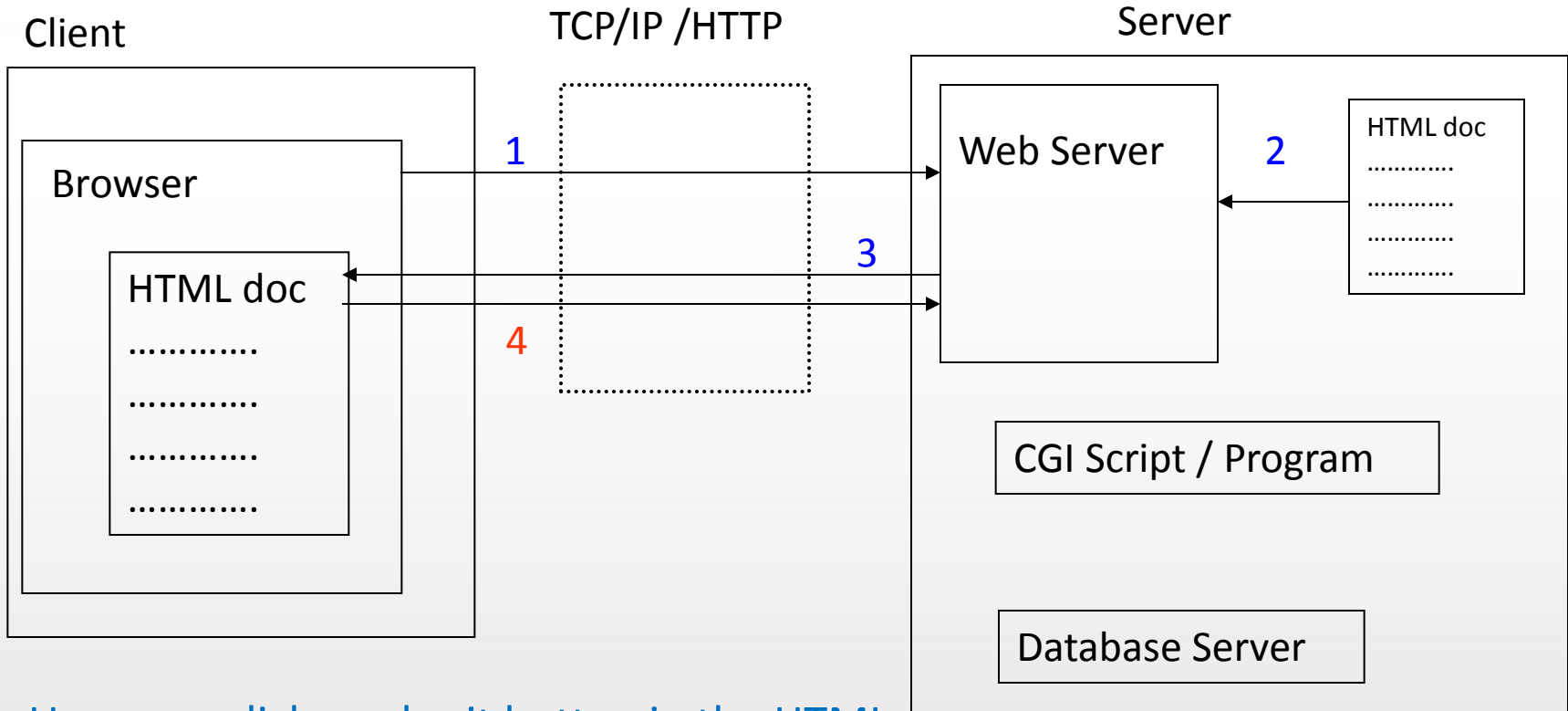


- **Dynamic content**
 - CGI
 - Server pages

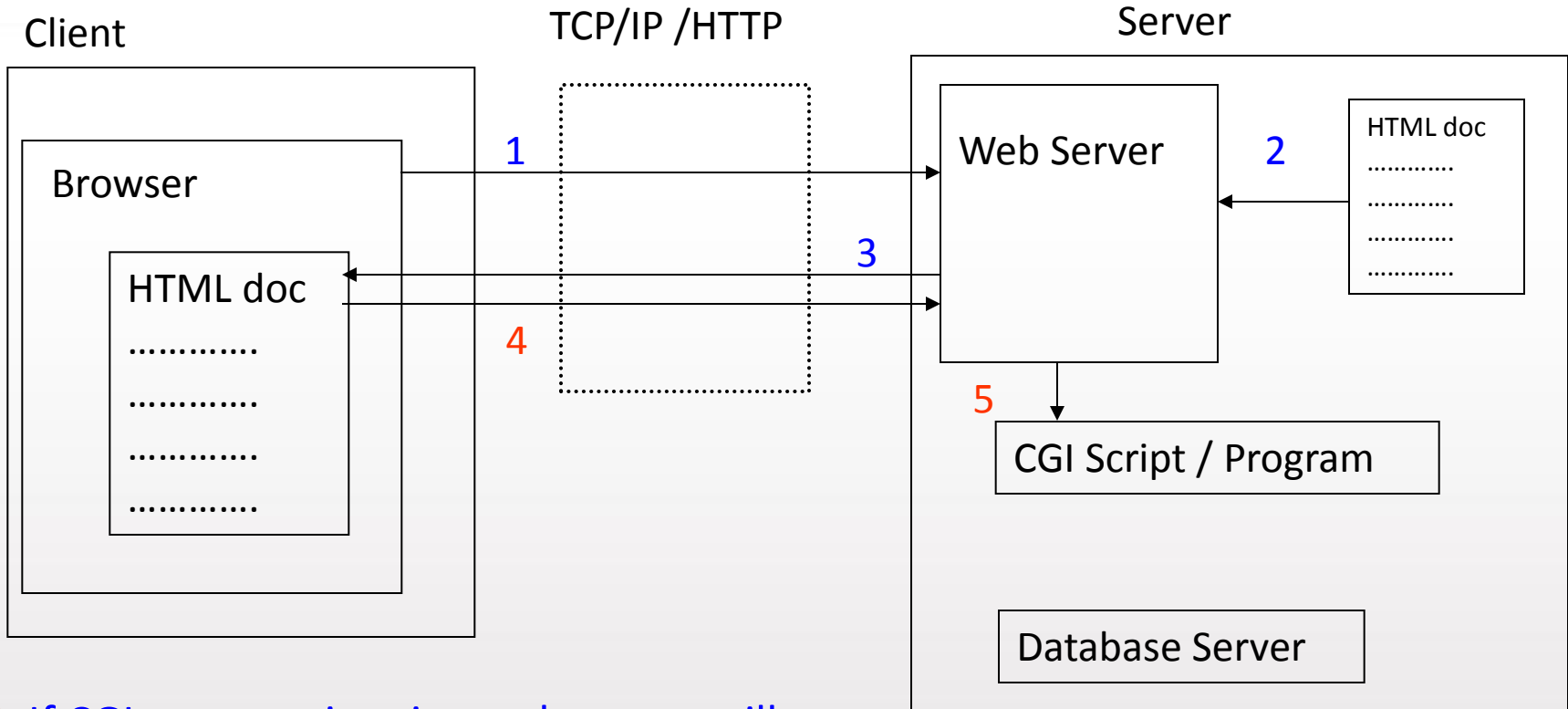
- A CGI program is a program that follows the CGI specifications.
- The main role of CGI programs is producing documents in HTML format - ie. the only language that the web browsers can understand.
- Eg. getting data from a database,
 - A CGI program submits SQL queries to the database server.
 - After getting the result, the program formats it into HTML, then give it to the web server.
 - The web servers then passes the HTML document to web browsers.

How it works ???

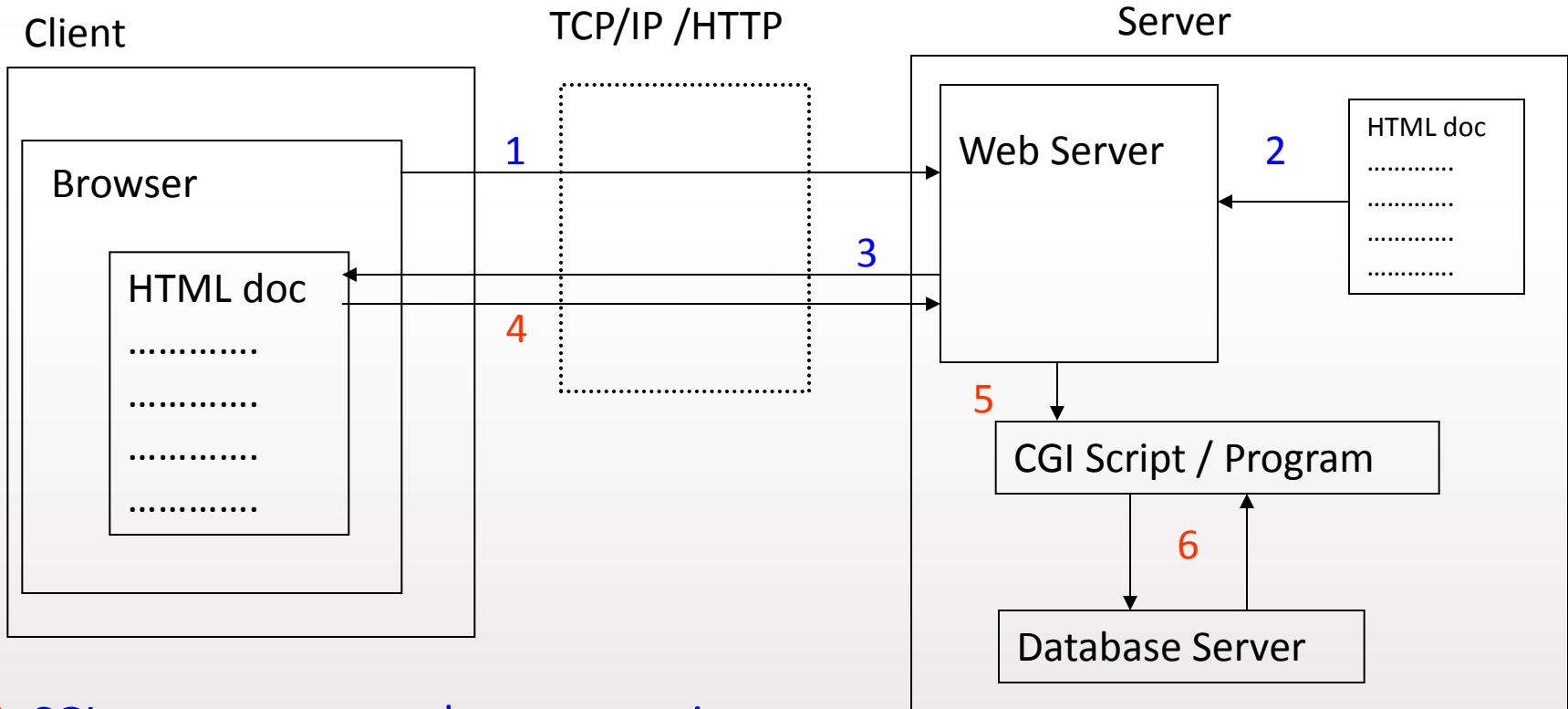




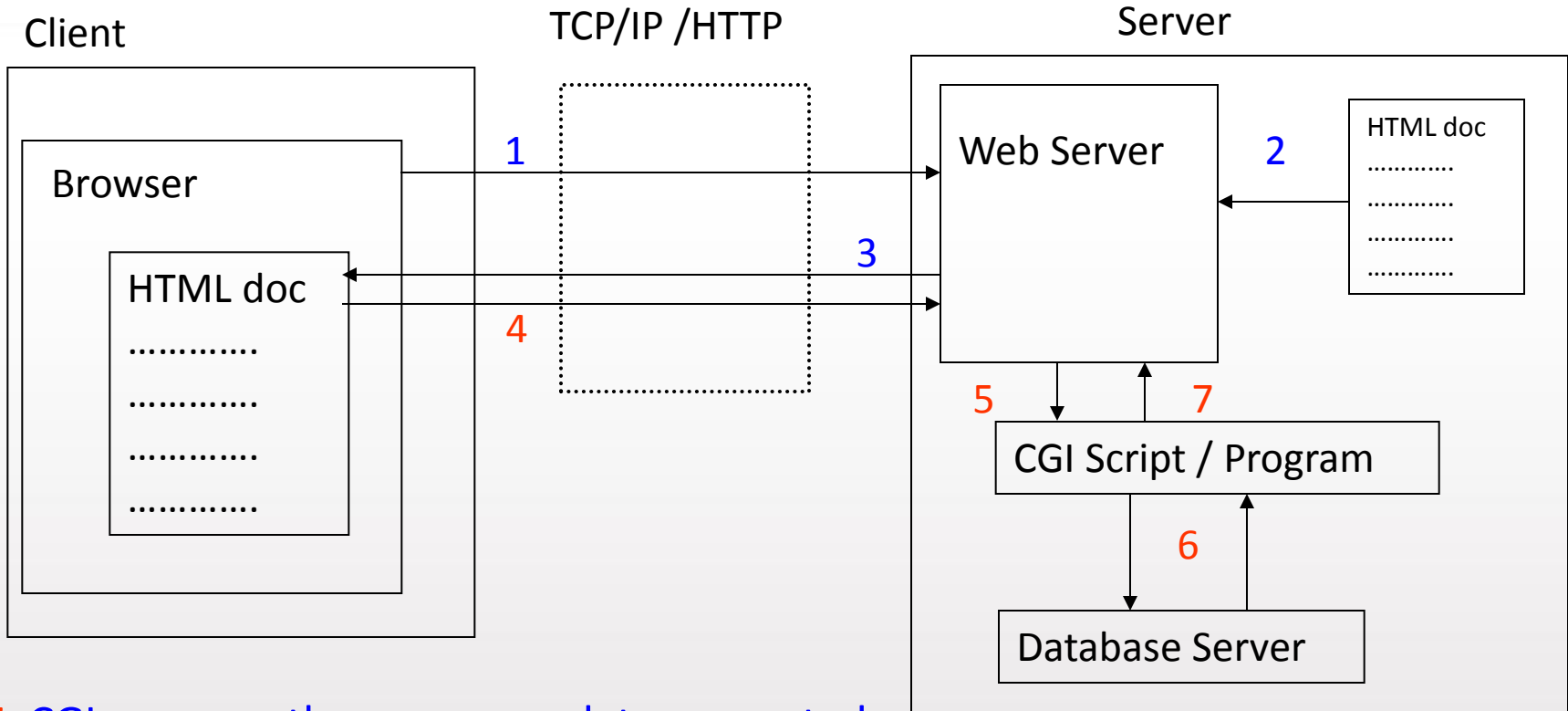
4. User may click a submit button in the HTML form that make a call to web server to run CGI program at server directory



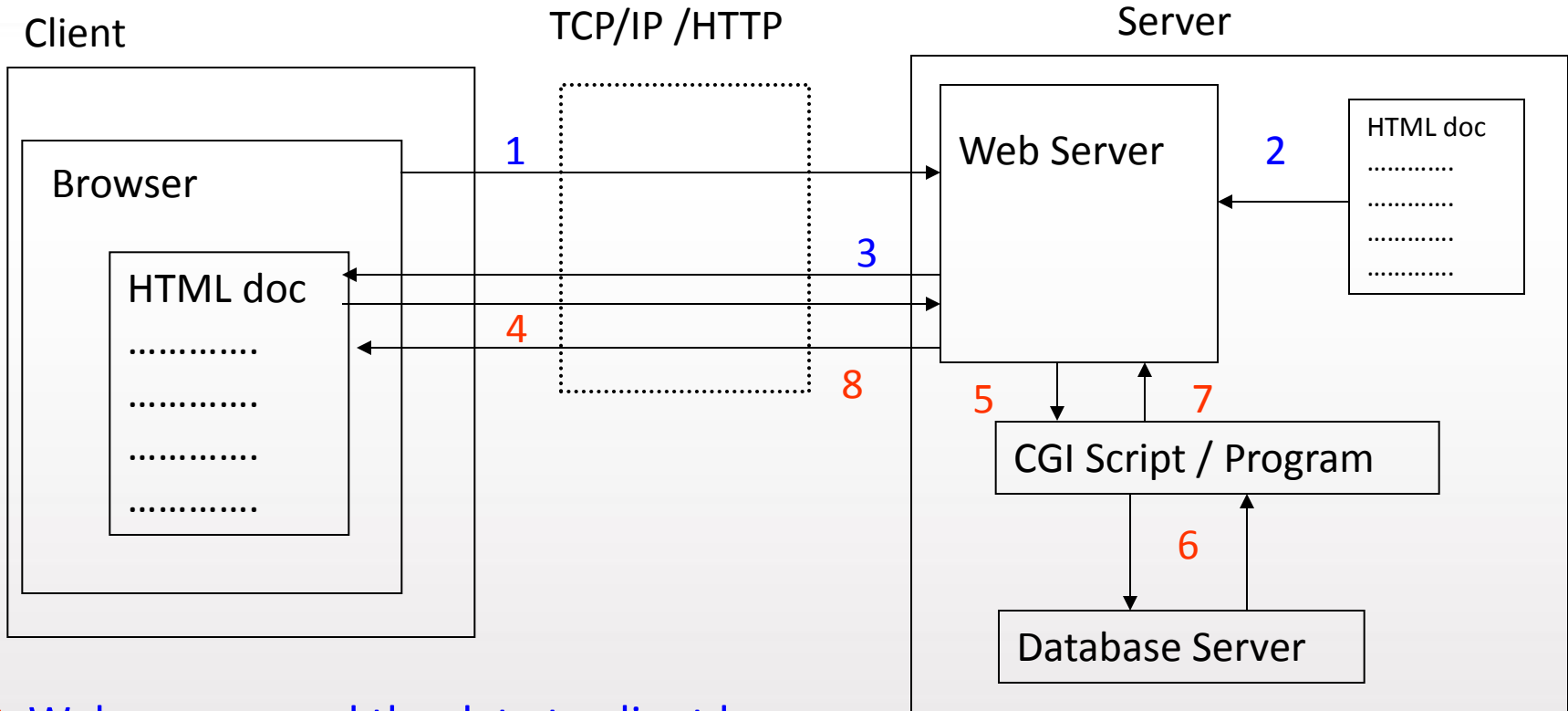
5. If CGI program is exist, web server will try to invoke the OS to run it



6. CGI program may make a connection to database application to retrieve data

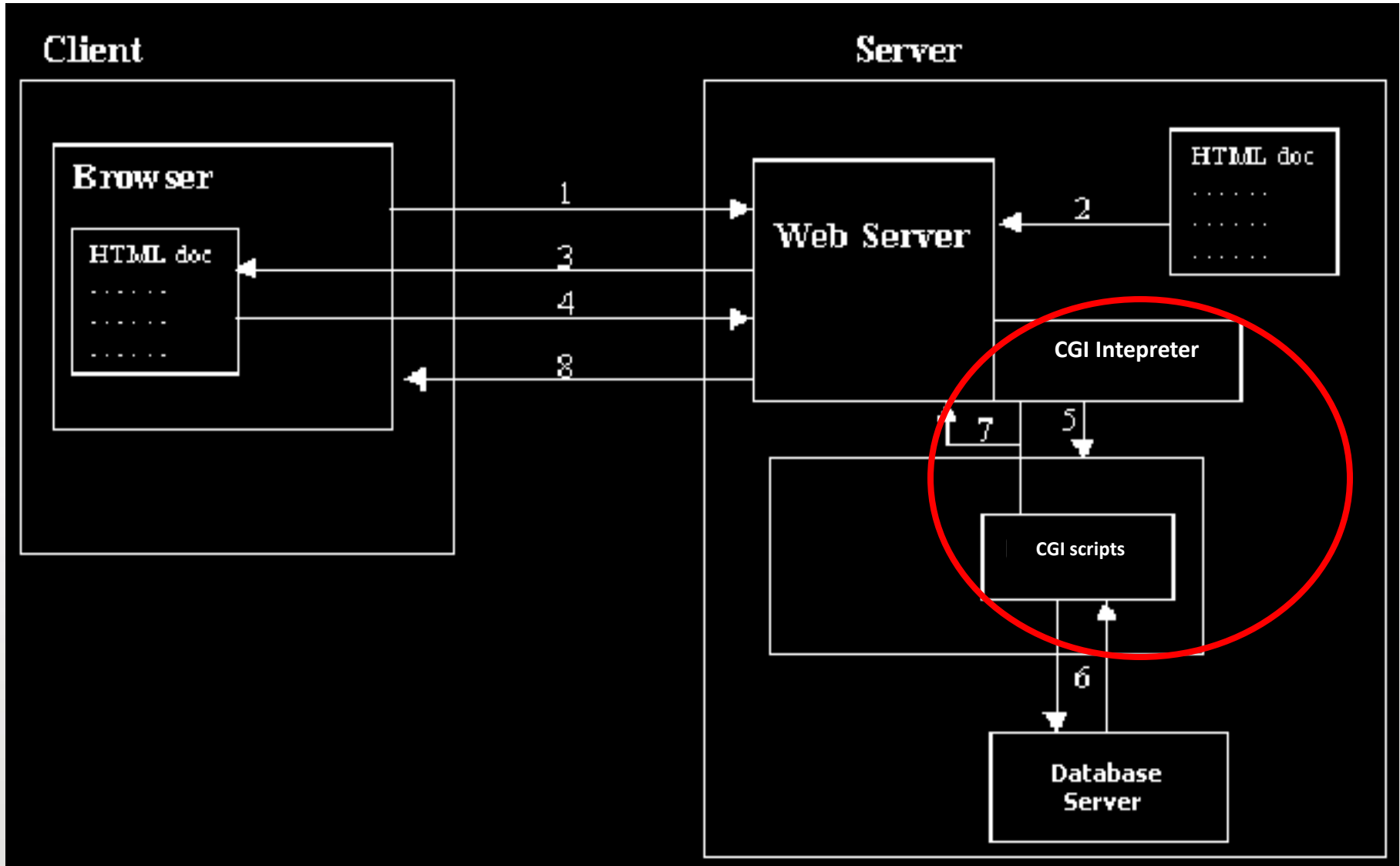


7. CGI program then pass any data requested by user to the Web server



8. Web server send the data to client browser

How the Web works for dynamic contents



- CGI programs can be written using any programming language
- The languages can be categorized into two types: **Server-Pages** and **Conventional CGI**
- Server-pages languages:
 - The CGI codes are embedded into HTML
 - *eg. PHP, JSP and ASP*
- Conventional CGI:
 - using common programming languages
 - *eg. C, Pascal, Perl, Python, etc.*

- **HTML and CGI**

Accessing cgi program through a form

```
<form method="POST" name="form1" action="login.php">
    .....
    .....
</form>
```

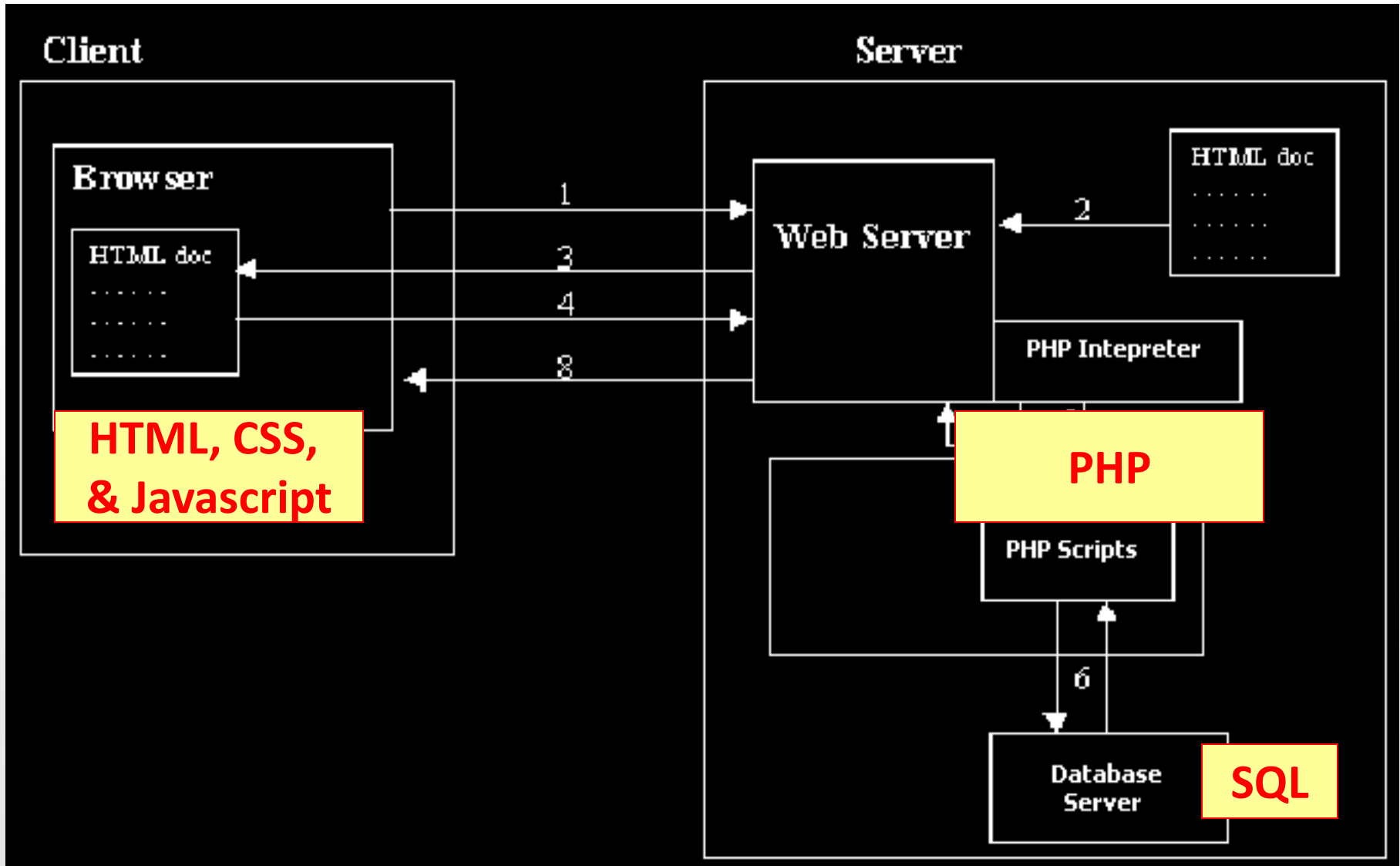
Accessing cgi program through an URL

eg. *[http://comp.fsksm.utm.my/view.php? id=1235&order=ASC](http://comp.fsksm.utm.my/view.php?id=1235&order=ASC)*

HTML vs. Javascript vs. CGI

- HTML
 - is the **main language** for delivering document over the web.
 - is the **only language** that web browsers can understand.
- Javascript
 - Documents that are created by HTML are static.
 - HTML does not support logical features.
 - Javascript is used to make the **document dynamic**.
 - Eg. before we can perform any delete operation, the browser should ask the user first for confirmation. This cannot be done by the HTML. Javascript can.
- CGI
 - Javascript is executed at client computers - ie. in web browsers. It is called **client-side scripting** language.
 - Databases or other resources are located at the server computer. We need another programs to access them - ie. CGI programs.
 - CGI languages such as PHP, JSP, Perl, etc are called **server-side scripting** languages, because they are executed at the server.

Our objectives ...



- **We will learn in this class how to:**
 - present our content for web viewing in its most simple way through (HTML code)
 - systematically managing the formatting and arrangement of content in HTML through CSS
 - managing event, interaction and manipulating web content (html doc) through Javascript
 - management of user and application data through server-pages scripting (server code encoded in html doc)

YouTube Video

- <http://www.youtube.com/watch?v=gY5hCB8f7wk&feature=related>
- <http://www.youtube.com/watch?v=jJoodliuy5I&feature=fvwrel>

Individual Assignment (1)

Learning Portfolio (10 marks)

- Create your own website that includes your profile or CV and learning portfolio for this subject and other subject according to your semester system.
- Use an existing template such as from:
 - <http://www.oswd.org/>
 - <http://www.webs.com/>
- Refer to these existing learning portfolio sites to get an idea for your website:
 - <http://faculty.washington.edu/krumme/students/portfolio.html>
 - http://www.uwstout.edu/soe/profdev/resources/upload/LearningPortfolio_000.pdf
 - <http://sites.google.com/site/learningportfoliosample/>
- Upload your website to any free web hosting:
 - http://www.freehostsfinder.com/top_10_user_rating.php?pages=1

Individual Assignment (1)

Learning Portfolio (10 marks)

EVALUATION SCHEME:

Details	Possible	Actual
Part A: CV or profile	10	
Part B: Learning portfolio	15	
Content delivery (structure, diagram and tidy work) and creativity	5	
	Total	/30 x 10

THANK YOU