

# [220 / 319] Web 2

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# Learning Objectives Today

Make your own website!

## Learn HTML Basics

- syntax for tags, attributes, etc
- hyperlinks, tables, images

## Generate HTML

- links
- tables
- multiple pages

# Outline

Hypertext

Tag Syntax

Hyperlinks and Attributes

Images

Tables

Self Learning

# Hypertext

index.html (common home page name)

**Welcome to the home page!**

Please visit the other pages:

- [about](#)
- [contact](#)

Two steps for dealing with Hypertext:

1. how to **retrieve** hypertext
2. how to **display** hypertext

contact.html

**Contact Us**

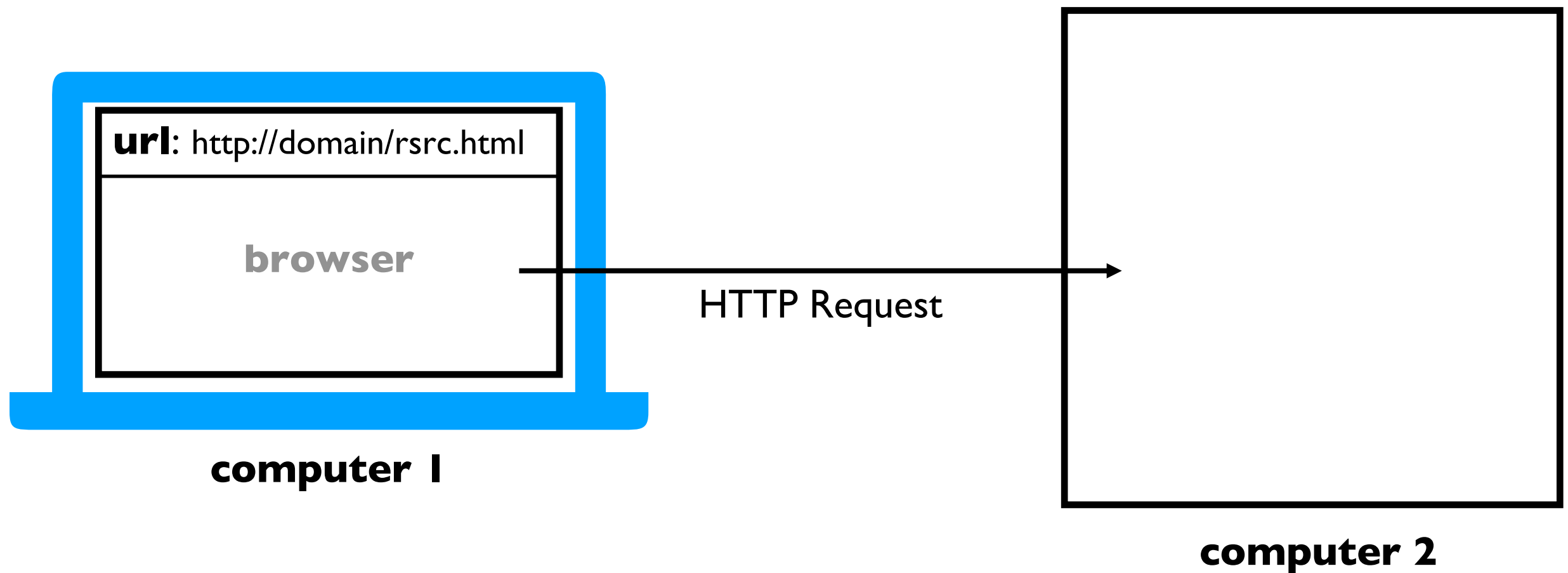
Email: [ms@cs.wisc.edu](mailto:ms@cs.wisc.edu)

Phone: 123-456-7890

Hypertext is text with clickable  
links to other pages

# Hypertext

**Step 1:** use HTTP (Hypertext Transfer Protocol) to **transfer** page

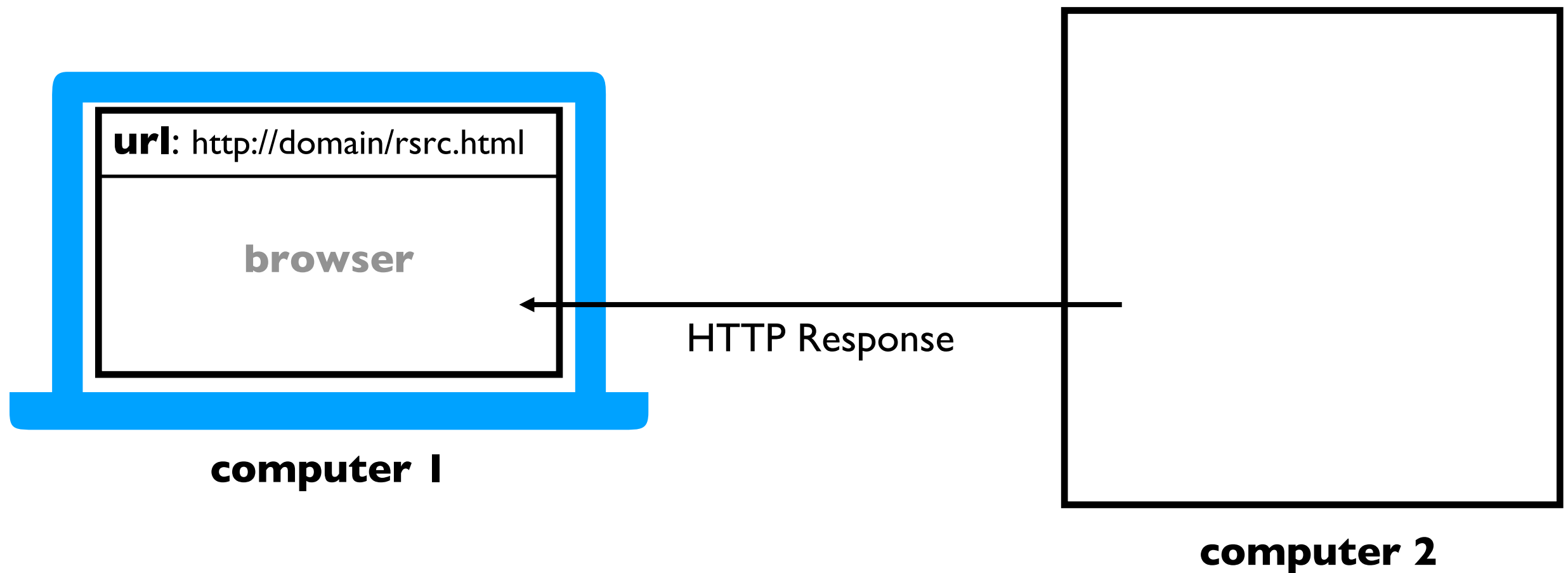


**HTTP Request:**

```
GET /rsrc.html HTTP/1.1
Host: example.com
User-Agent: ...
Accept: */*
```

# Hypertext

**Step 1:** use HTTP (Hypertext Transfer Protocol) to **transfer** page



**HTTP Response:**

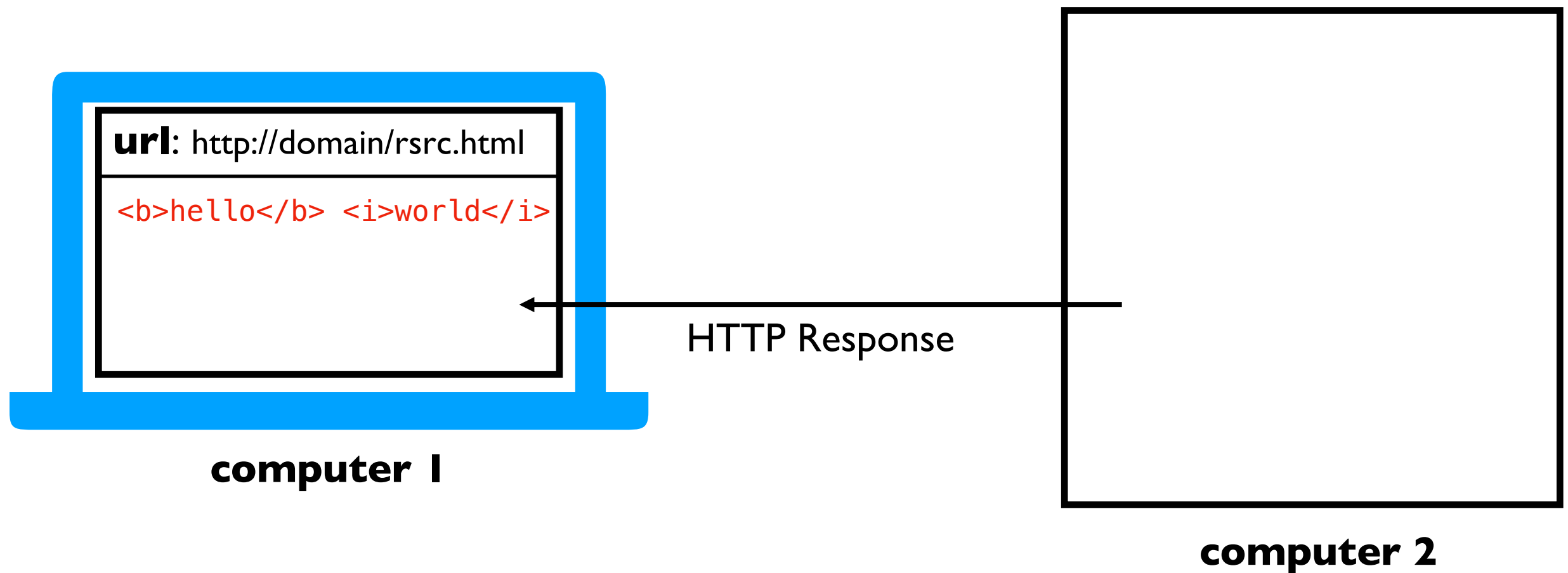
```
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 74

<b>hello</b> <i>world</i>
```

# Hypertext

**Step 1:** use HTTP (Hypertext Transfer Protocol) to **transfer** page

**Step 2:** parse HTML (Hypertext Markup Language) to **render** page



**HTTP Response:**

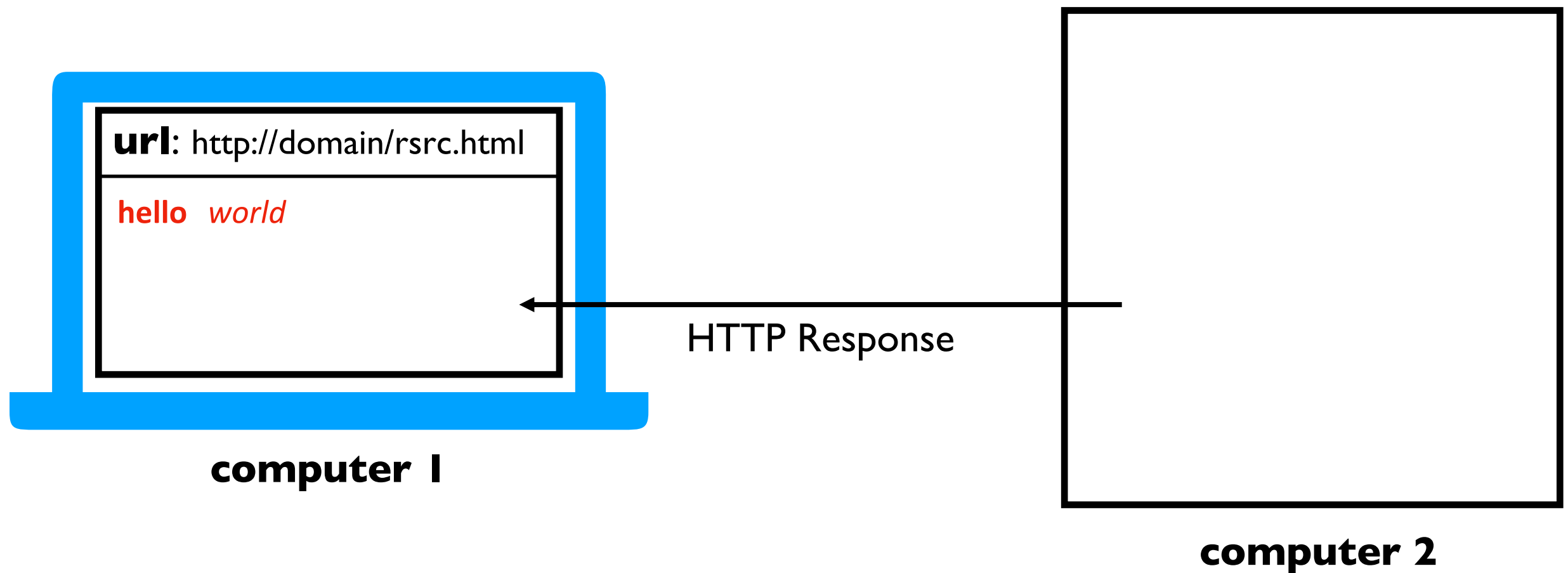
```
HTTP/1.0 200 OK  
Content-Type: text/html; charset=utf-8  
Content-Length: 74
```

```
<b>hello</b> <i>world</i>
```

# Hypertext

**Step 1:** use HTTP (Hypertext Transfer Protocol) to **transfer** page

**Step 2:** parse HTML (Hypertext Markup Language) to **render** page



**HTTP Response:**

```
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 74
```

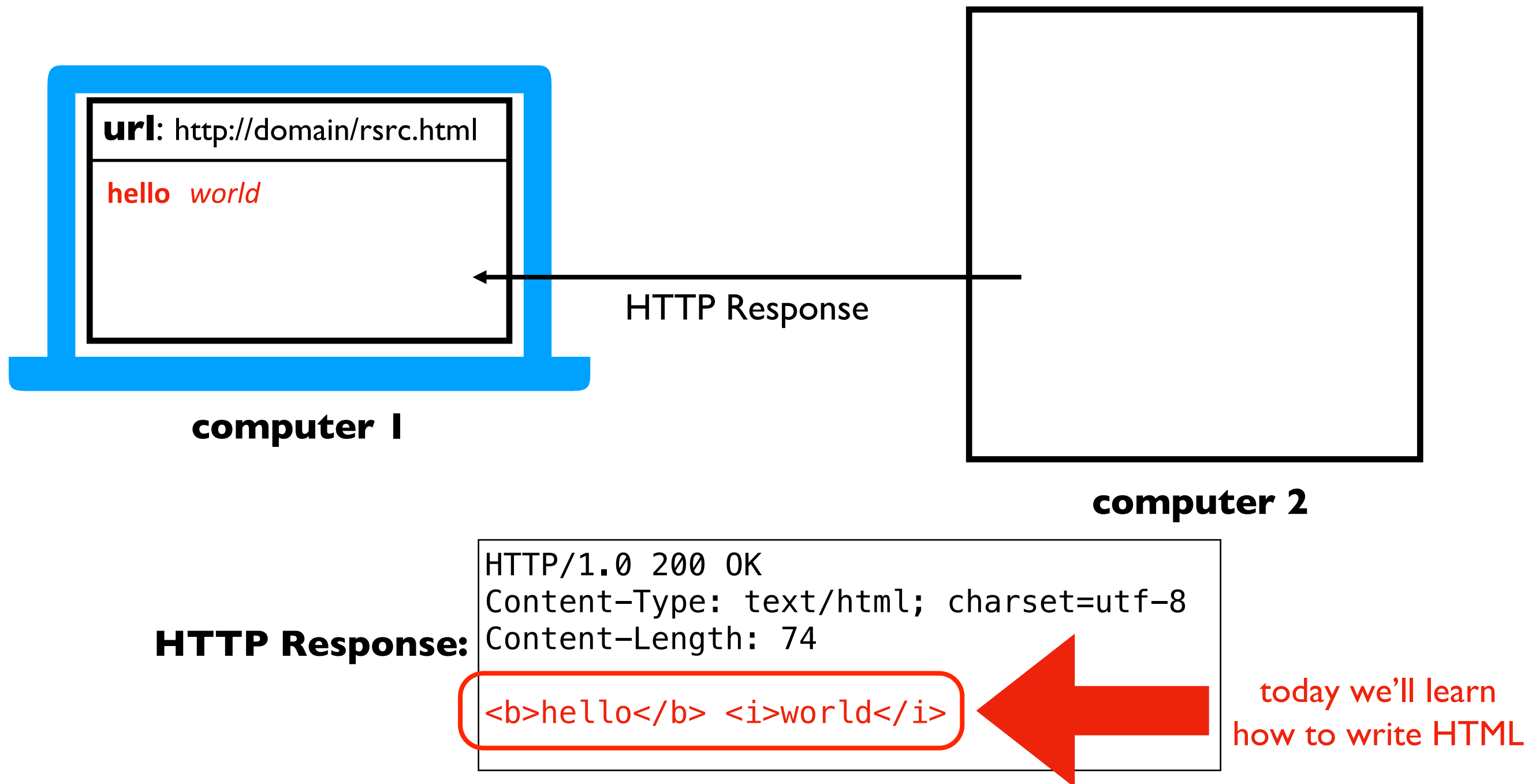
**<b>hello</b> <i>world</i>**



# Hypertext

**Step 1:** use HTTP (Hypertext Transfer Protocol) to **transfer** page

**Step 2:** parse HTML (Hypertext Markup Language) to **render** page



# Text files vs HTML files

## Compare:

<https://www.msyamkumar.com/hello.txt>

<https://www.msyamkumar.com/hello.html>

## Inspecting:

- dev tools
- view source
- download page source (open locally)

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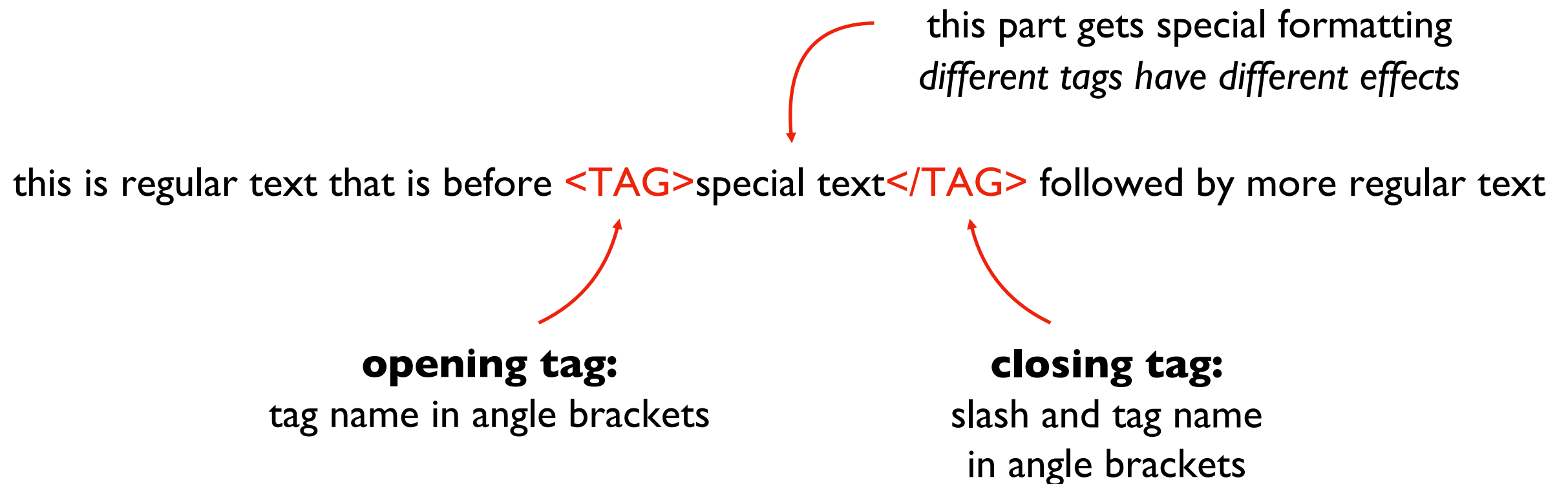
Tables

Self Learning

# HTML Tags

We can enclose text in “tags” to change how it is displayed

- often tags come in pairs (to indicate range of text to format)



# Simple Tags

**test.html**

**This is a test page**

This is a test page

# Simple Tags

b: bold

**test.html**

**This is a `<b>test</b>` page**

This is a **test** page

# Simple Tags

b: bold

**test.html**

**This is a `<b>`test page`</b>`**

This is a **test page**

# Simple Tags

i: italic

**test.html**

**This is a `<i>`test page`</i>`**

This is a *test page*



# Simple Tags

i: italic

test.html

```
<i>This</i> is a <i>test page</i>
```

*This is a test page*

# Simple Tags

i: italic

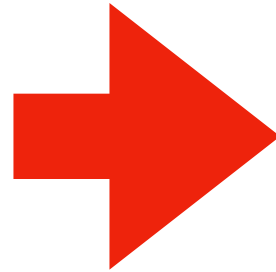
test.html

```
<i><b>This</b></i> is a <i>test  
page</i>
```

***This*** is a test page

# Vertical Space

whitespace in  
html is ignored



**test.html**

**This is a test page.**

**It is awesome.**

This is a test page. It is awesome.

# Vertical Space

p: paragraph

**test.html**

**<p>This is a test page.</p>**

**<p>It is awesome.</p>**

This is a test page.

It is awesome.

# Vertical Space

br: line break

**test.html**

**This is a test page.**

**<br>**

**It is awesome.**

This is a test page.  
It is awesome.

# Vertical Space

br: line break

**test.html**

**This is a test page.**  
**<br><br><br><br>**  
**It is awesome.**

note there is no closing tag  
(these are known as void elements)

This is a test page.

It is awesome.

# Vertical Space

br: line break

**test.html**

**This is a test page.**

**<br /><br /><br /><br />**

**It is awesome.**

sometimes you'll encounter it like this

This is a test page.

It is awesome.

# Headers

h1: big header

h2: smaller header

hN: etc

test.html

```
<h1>Welcome</h1>
```

```
<h2>This is a test page.</h2>
```

```
<p>It is awesome.</p>
```



# Welcome

## This is a test page.

It is awesome.



# Lists

ul: unordered list

li: list item

**test.html**

**Items:**

```
<ul>  
  <li>Item X</li>  
  <li>Item Y</li>  
  <li>Item Z</li>  
</ul>
```

Items:

- Item X
- Item Y
- Item Z

# Lists

ul: unordered list

li: list item

**test.html**

**Items:**

**<ul>**

**<li>Item X**

**<li>Item Y**

**<li>Item Z**

**</ul>**

closing tags  
are optional  
for list items

Items:

- Item X
- Item Y
- Item Z

# Demo I: List Visualization

Goal: convert Python list to bulleted list in HTML

## Input:

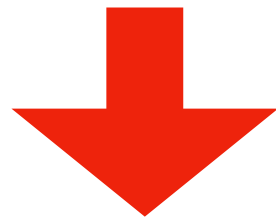
- arguments on command line

## Output:

- HTML file with bulleted list

## Example:

```
python bullets.py apple broccoli cabbage
```



Items:

- apple
- broccoli
- cabbage

# Complete Web Page

**test.html**

**This is a <b>test</b> page**

whole page is usually  
in html and body tags

This is a **test** page

# Complete Web Page

**test.html**

```
<html>  
  <body>  
    This is a <b>test</b> page  
  </body>  
</html>
```

whole page is usually  
in html and body tags



This is a **test** page

# Complete Web Page

you can also have  
a **head** tag with  
various metadata  
(e.g., title, keywords)

**test.html**

```
<html>
  <head>

  </head>
  <body>
    This is a <b>test</b> page
  </body>
</html>
```



This is a **test** page

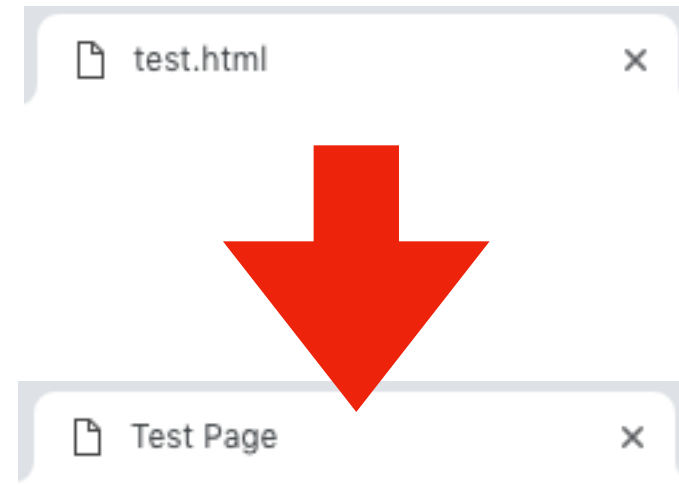
# Complete Web Page

you can also have  
a **head** tag with  
various metadata  
(e.g., title, keywords)

**test.html**

```
<html>
  <head>
    <title>Test Page</title>
  </head>
  <body>
    This is a <b>test</b> page
  </body>
</html>
```

This is a **test** page



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# Hyperlinks

**we want this to be clickable**

- use `<a>` tag

## A.html

Welcome!<br>

Please visit `<a>`page B`</a>`

**where does it go to?**

## B.html

You're on page B.

Welcome!

Please visit page B

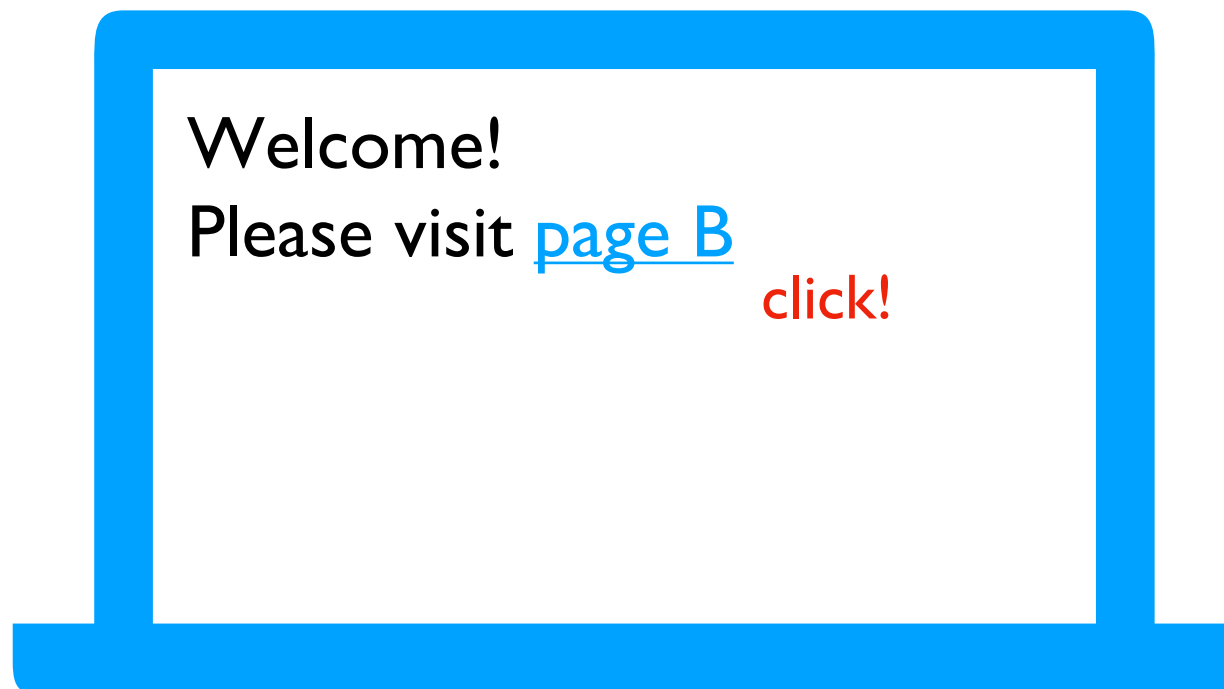
# Hyperlinks

## we want this to be clickable

- use `<a>` tag
- use href attribute

inside an opening tag, we often set parameters by using this:

`attribute-name="attribute-value"`



## A.html

Welcome!<br>

Please visit

`<a href="B.html">`page B`</a>`

## B.html

You're on page B.

# Hyperlinks

## **we want this to be clickable**

- use `<a>` tag
- use href attribute

inside an opening tag, we often set parameters by using this:

`attribute-name="attribute-value"`



You're on page B.

## **A.html**

Welcome!<br>

Please visit

`<a href="B.html">`page B`</a>`

## **B.html**

You're on page B.

# Demo 2: Dictionary Visualization

Goal: generate HTML page for every dictionary value and have a keys.html page that links to each of them

## Input:

- a string containing a JSON dictionary

## Output:

- a keys.html file and an HTML file for each value

## Example:

```
python dict-vis.py '{"A": "val 1", "B": "val 2"}'
```



**keys.html**

Keys:

- [A](#)
- [B](#)

**A.html**

val 1

**B.html**

val 2

# Outline

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# Images

img: image

**test.html**

```

```



# Images

img: image

**test.html**

```
W  
  
E
```

W  python™ E

# Images

img: image

**test.html**

```
N<br>
W

E<br>
S
```

N

W

S



python™

E



# Images

img: image

## test.html

```
N<br>
W

E<br>
S
```



# Images

img: image

## test.html

```
N<br>
W

E<br>
S
```



# Images

img: image

## test.html

```
N<br>
W

E<br>
S
```



# Outline

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Self Learning

# Tables

**table:** a table

**tr:** table row

**td:** table data (cell)

## test.html

```
<table>
  <tr>
    <td>A</td>
    <td>B</td>
  </tr>
  <tr>
    <td>C</td>
    <td>D</td>
  </tr>
</table>
```

A	B
C	D

# Tables

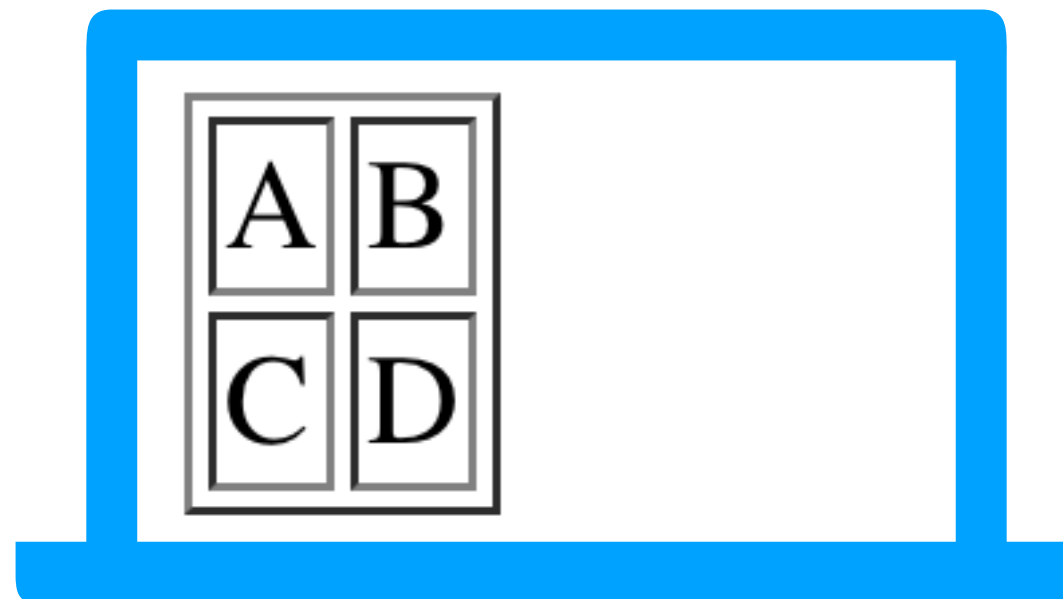
**table:** a table

**tr:** table row

**td:** table data (cell)

## test.html

```
<table border="1">  
  <tr>  
    <td>A</td>  
    <td>B</td>  
  </tr>  
  <tr>  
    <td>C</td>  
    <td>D</td>  
  </tr>  
</table>
```



A	B
C	D

# Tables

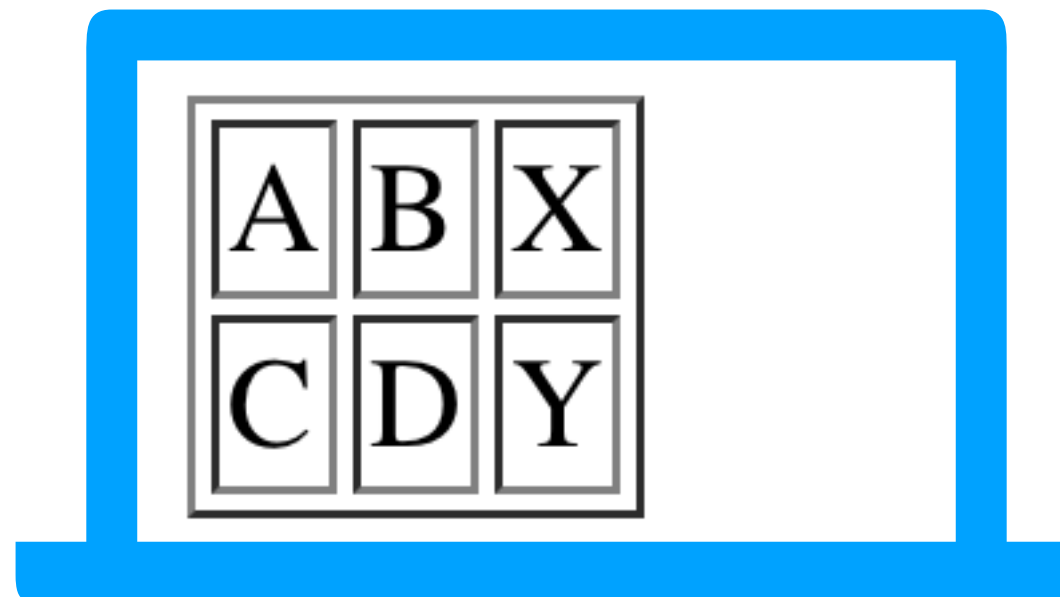
**table:** a table

**tr:** table row

**td:** table data (cell)

## test.html

```
<table border="1">  
  <tr>  
    <td>A</td>  
    <td>B</td>  
    <td>X</td>  
  </tr>  
  <tr>  
    <td>C</td>  
    <td>D</td>  
    <td>Y</td>  
  </tr>  
</table>
```



A	B	X
C	D	Y

# Tables

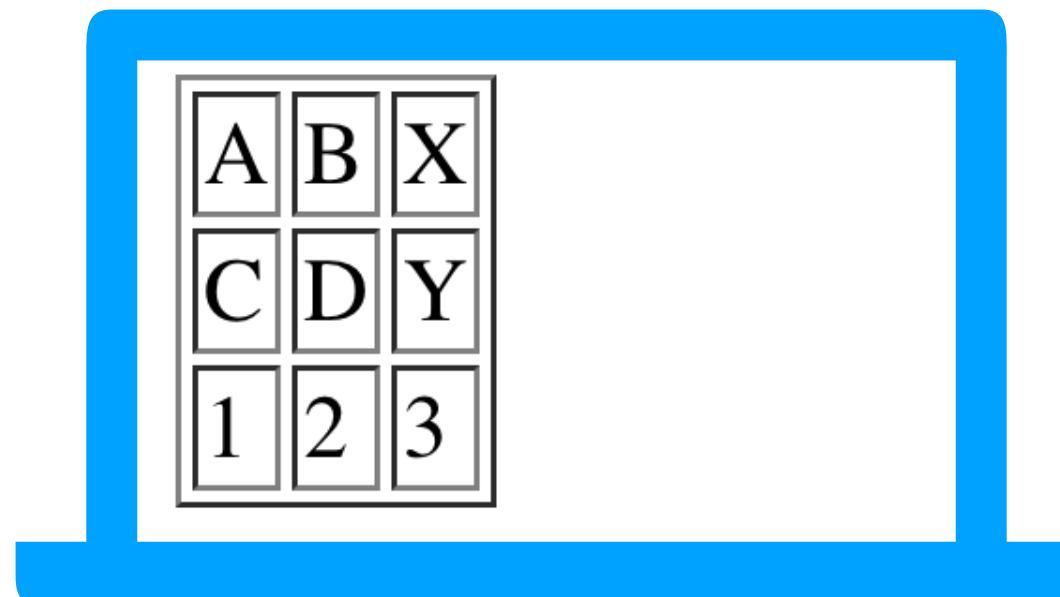
**table:** a table

**tr:** table row

**td:** table data (cell)

## test.html

```
<table border="1">  
  <tr>  
    <td>A</td>  
    <td>B</td>  
    <td>X</td>  
  </tr>  
  <tr>  
    <td>C</td>  
    <td>D</td>  
    <td>Y</td>  
  </tr>  
  <tr><td>1</td><td>2</td><td>3</td></tr>  
</table>
```



A	B	X
C	D	Y
1	2	3



# Challenge Demo 3: DataFrame to HTML Table

Goal: convert a DataFrame to an HTML Table  
(note, you can do this more simply, but it's good practice)

## **Input:**

- a Pandas DataFrame

## **Output:**

- an HTML file

# Other Challenge Demos

## **Demo 4:** Table Diff

- convert two similar DataFrames to HTML tables, highlighting the differing cells with bold text

## **Demo 5:** Search Highlighting

- Download page and convert certain words (search terms) to bold text

## **Demo 6:** Flash Cards

- Show questions, and reveal answers when user clicks an answer hyperlink

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# Resources for Self Learning

There are many free online resources (e.g., w3schools) if you want to learn more about web development

## More **HTML**

- <https://www.w3schools.com/html/default.asp>
- More of what we learned today

## **CSS** (Cascading Style Sheets)

- <https://www.w3schools.com/html/default.asp>
- Control the aesthetics of your HTML with the CSS language

## **JavaScript**

- <https://www.w3schools.com/html/default.asp>
- Full programming language (like Python) for running code in a user's web browser