2022/2023(1)
IF184504 Web Programming
Lecture #2

Basic Web Programming Language

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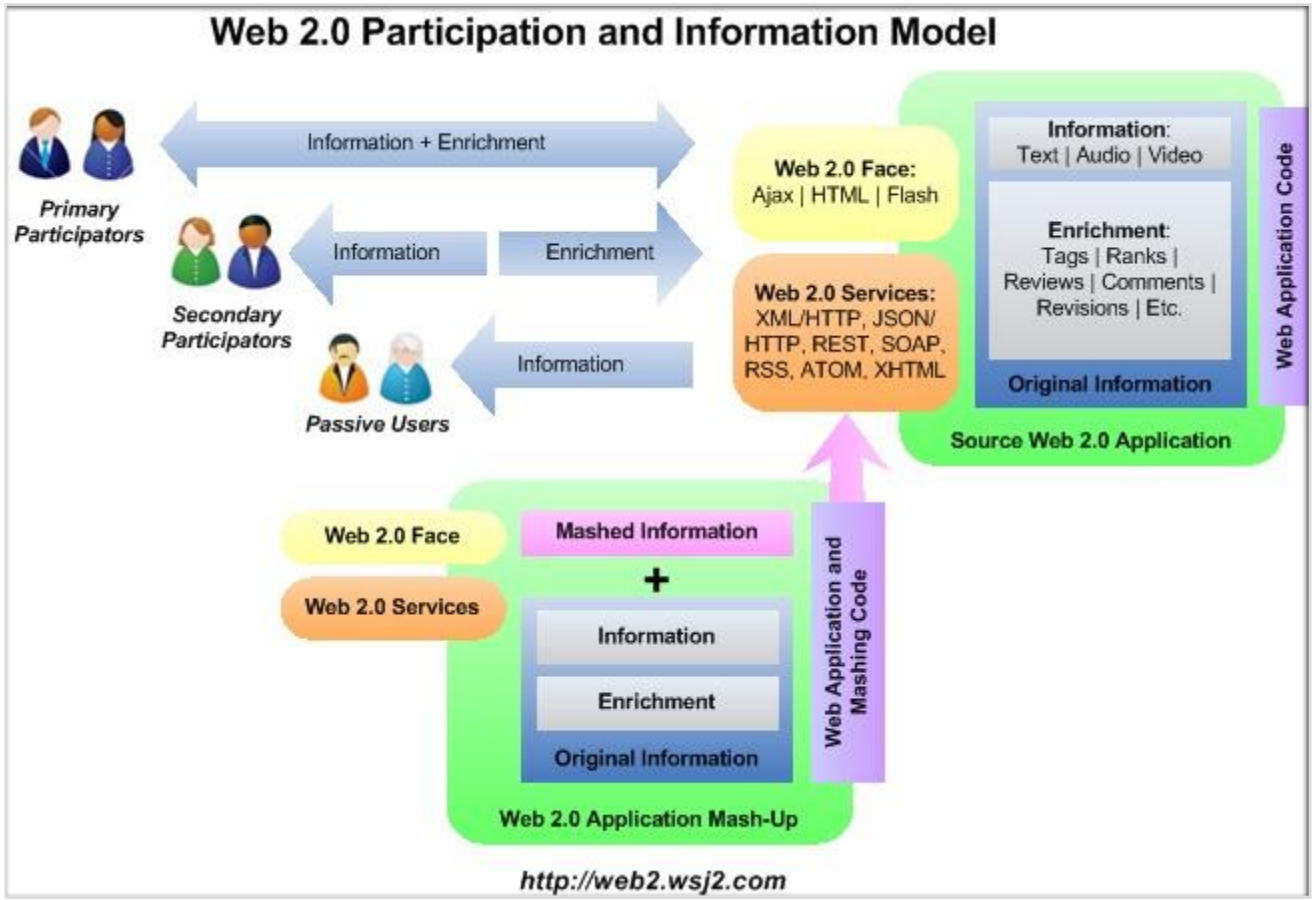
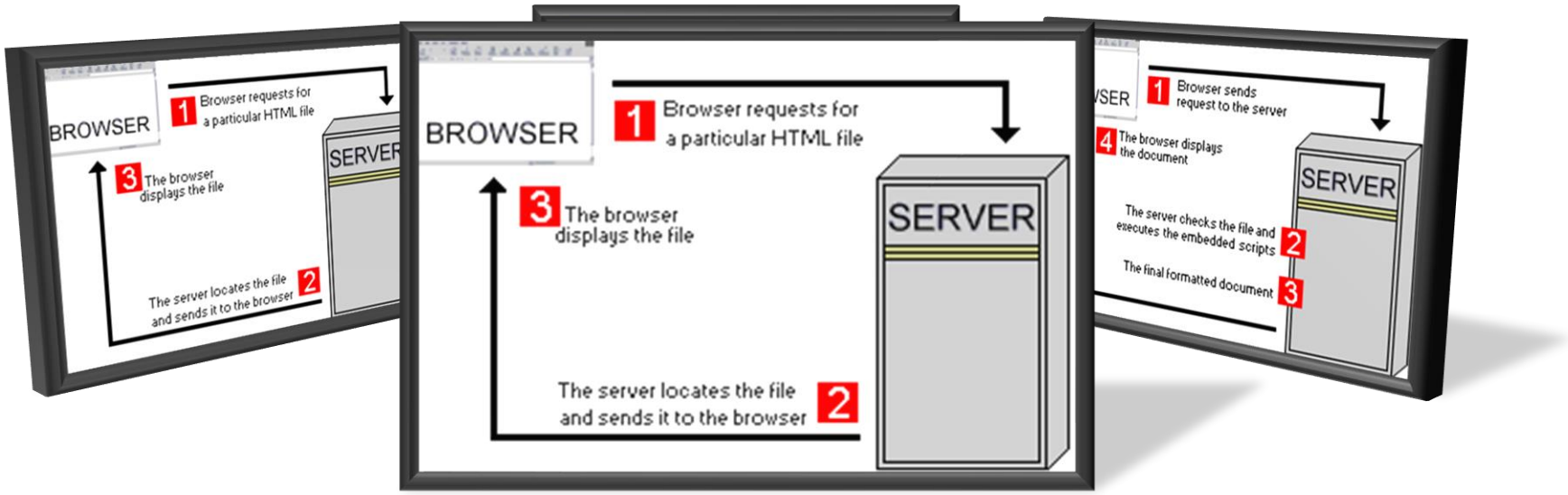
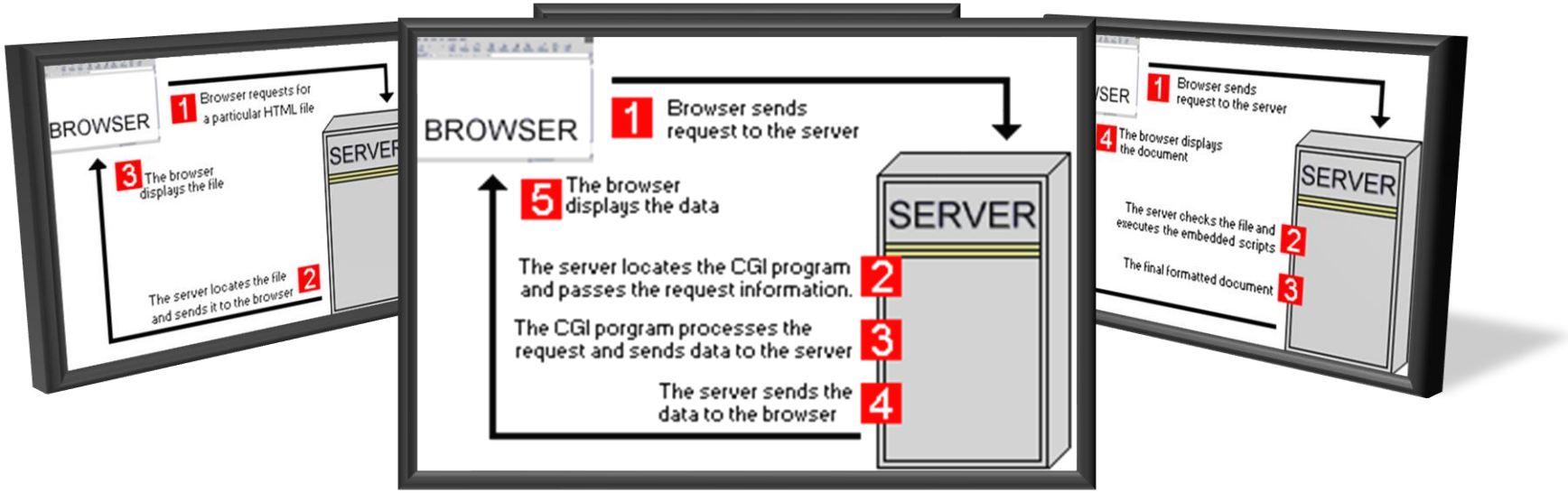
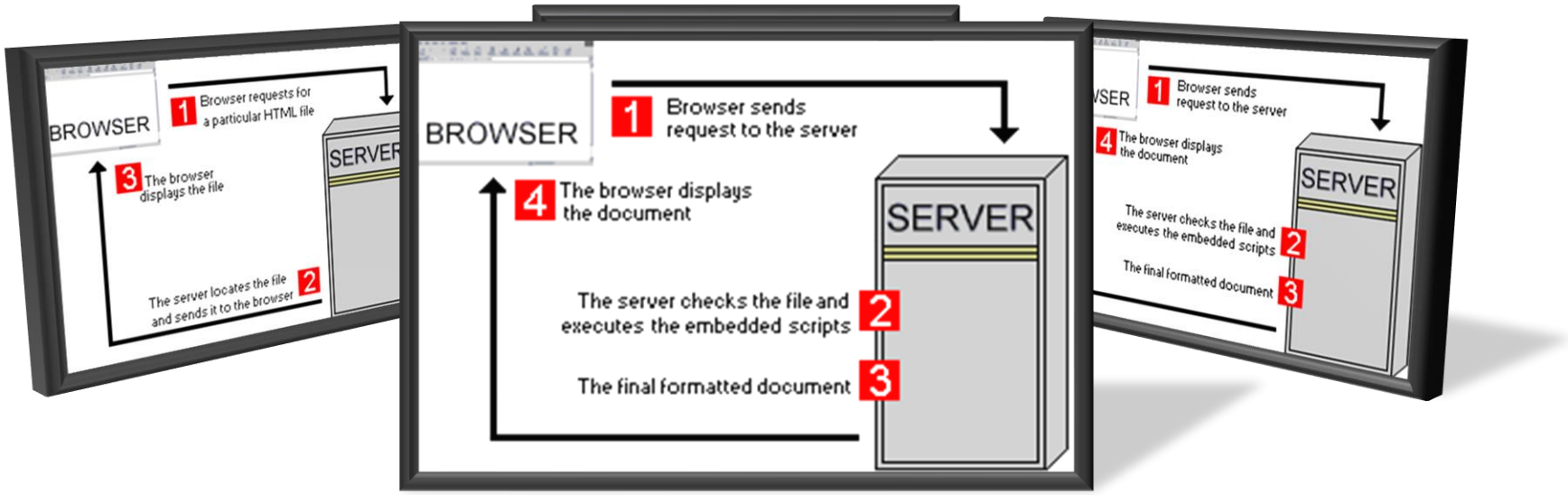
Basic web programming language

- Web’s client server: the concept


Web 2.0 Participation and Information Model
Primary Participators
Information + Enrichment
Secondary Participators
Information
Enrichment
Passive Users
Information
Web 2.0 Face:
Ajax | HTML | Flash
Web 2.0 Services:
XML/HTTP, JSON/
HTTP, REST, SOAP,
RSS, ATOM, XHTML
Information:
Text | Audio | Video
Enrichment:
Tags | Ranks |
Reviews | Comments |
Revisions | Etc.
Original Information
Web Application Code
Source Web 2.0 Application
Web 2.0 Face
Web 2.0 Services
Mashed Information
+
Information
Enrichment
Original Information
Web Application and
Mashing Code
Web 2.0 Application Mash-Up
http://web2.wsj2.com


BROWSER
1 Browser requests for a particular HTML file
SERVER
3 The browser displays the file
The server locates the file and sends it to the browser 2
BROWSER
1 Browser requests for a particular HTML file
SERVER
3 The browser displays the file
The server locates the file and sends it to the browser 2
1 Browser sends request to the server
4 The browser displays the document
SERVER
The server checks the file and executes the embedded scripts 2
The final formatted document 3


BROWSER
1 Browser requests for a particular HTML file
SERVER
3 The browser displays the file
The server locates the file and sends it to the browser 2
BROWSER
1 Browser sends request to the server
5 The browser displays the data
SERVER
The server locates the CGI program and passes the request information. 2
The CGI porgram processes the request and sends data to the server 3
The server sends the data to the browser 4
SER
1 Browser sends request to the server
4 The browser displays the document
SERVER
The server checks the file and executes the embedded scripts 2
The final formatted document 3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HTML

It’s about **tag**!

HyperText Markup Language (HTML)

- A standard of programming language for showing the web's document
  - Control the appearance of web page & its content
  - Make an online form for enrolment, online transaction
  - Add the objects, e.g., image, audio, video & Java applet in the document

HTML Tools

- Browser
  - Client's installed software for translating HTML tags into web pages
  - E.g., Chrome, Internet Explorer, Netscape Navigator, Opera, Mozilla, etc.
- Editor
  - Program for creating HTML document
  - There are many: Notepad, Notepad++, Macromedia DreamWeaver, Microsoft FrontPage, Sublime Text, Vim, Brackets, etc.

HTML tags

- Programming language → code, HTML → tag
- E.g., <html>, <head>, <title>, <body>, <img>, etc.
- It is NOT case sensitive → <body> is the same as <BODY>

HTML tags (continued)

- General format:

```
<ELEMENT ATTRIBUTE = VALUE>
```

- ELEMENT: tag name
- ATTRIBUTE: tag's attribute
- value: attribute's value
- E.g.:

```
<BODY BGCOLOR=BLUE>
```

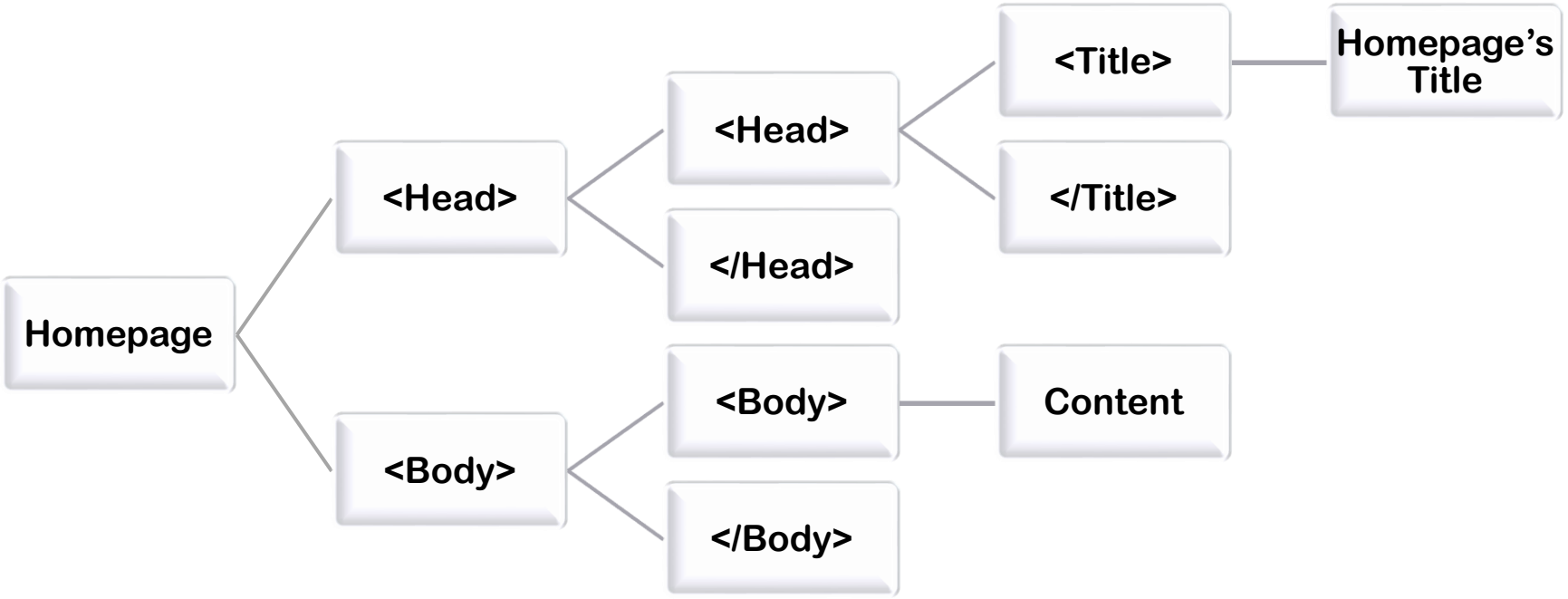
HTML document structure

- HTML document consisting of 3 parts: HTML, HEAD and BODY

```
<HTML>
      <HEAD>
      </HEAD>

      <BODY>
      </BODY>
</HTML>
```

HTML structure



<HTML>

- Each HTML document starts and ends by the HTML tag

```
<HTML> … </HTML>
```

- <HTML> tag tells the browser that anything between these tags is HTML document

<HEAD>

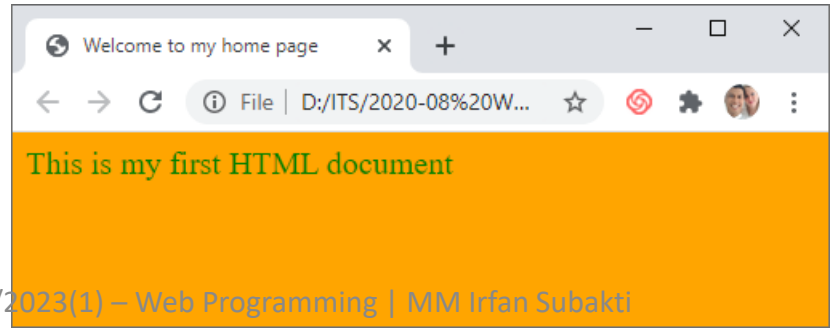
- In this part, usually it has <TITLE> tag for showing the title of web page

```
<HTML>
      <HEAD>
            <TITLE>
            Subakti Family: Russian-Indonesian couple
            </TITLE>
      </HEAD>
</HTML>
```

<BODY>

- <BODY> tag used for showing the text, image link & everything will be shown on web page

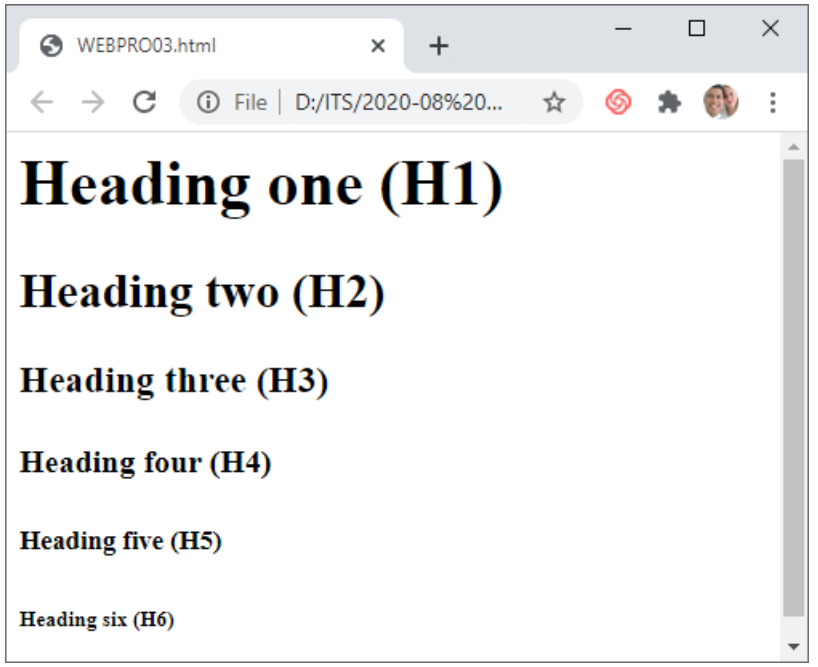
```
<HTML>
      <HEAD>
            <TITLE>Welcome to my home page</TITLE>
      </HEAD>
      <BODY TEXT="GREEN" BGCOLOR="ORANGE">
            <P>This is my first HTML document</P>
      </BODY>
</HTML>
```



Basic element: Block level

- Block level element: 6 levels, i.e., H1 to H6

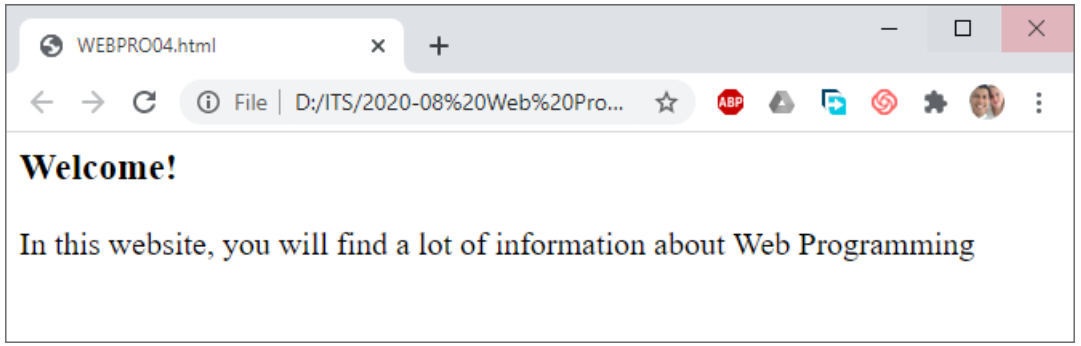
```
<BODY>
      <H1>Heading one (H1)</H1>
      <H2>Heading two (H2)</H2>
      <H3>Heading three (H3)</H3>
      <H4>Heading four (H4)</H4>
      <H5>Heading five (H5)</H5>
      <H6>Heading six (H6)</H6>
</BODY>
```



Basic element: Paragraph (p)

- Showing the text as a paragraph

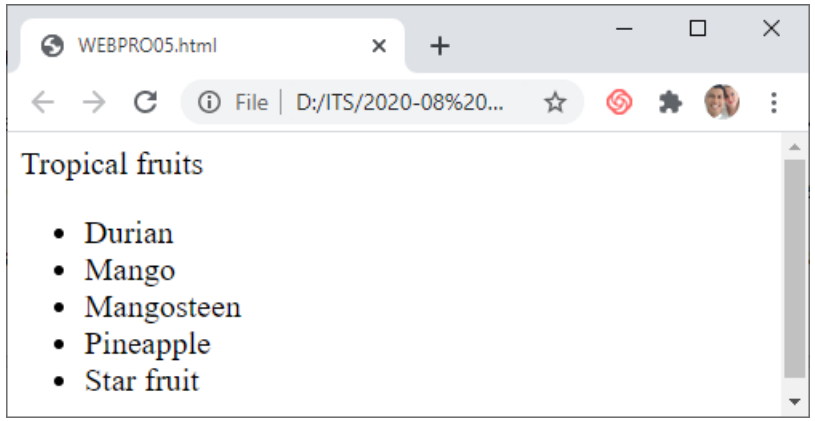
```
<BODY>
      <H3>Welcome!</H3>
      <P>
            In this website, you will find
            a lot of information about Web Programming
      </P>
</BODY>
```



Basic element: List item (`li`)

- Unordered list `<ul>`: there's no order of the list (bullet)

```
<BODY>
      <P>Tropical fruits</P>
      <UL>
            <LI>Durian</LI>
            <LI>Mango</LI>
            <LI>Mangosteen</LI>
            <LI>Pineapple</LI>
            <LI>Star fruit</LI>
      </UL>
</BODY>
```



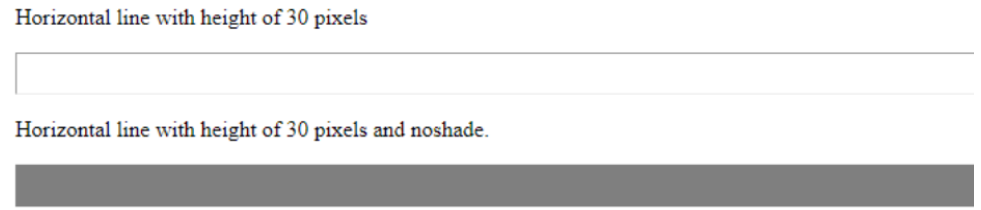
List item (`li`) - continued

- Ordered list `<ol>`: there's an order of the list

```
<BODY>
      <P>Bumilangit Cinematic Universe</P>
      <OL start="1" type="1">
            <LI>Gundala</LI>
            <LI>Sri Asih</LI>
            <LI>Godam</LI>
            <LI>Mandala</LI>
            <LI>Patriot</LI>
      </OL>
</BODY>
```

Basic element: Horizontal rule (hr)

- Horizontal rule tag used to draw the horizontal line in HTML document
- The attributes of <HR>:
  - ALIGN → the location of the horizontal rule, values: CENTER | RIGHT | LEFT
  - WIDTH → the length of the horizontal rule, default value: 100%
  - SIZE → the thickness of the horizontal rule in pixel
  - NOSHADE → the shadowing effect




```
<HR ALIGN="CENTER" WIDTH=90% SIZE=3 NOSHADE>
```

Page formatting

- BREAK: starting a new line →
- FONT: font format appearance

```
<FONT COLOR="#112255" SIZE=5>Web
Programming</FONT>
```

- COLOR: the attribute whose 3 colour's categories (RGB)

#RRGGBB → #00FF00 is Green

Page formatting (continued)

- Alignment: object alignment → `LEFT | RIGHT | CENTER | JUSTIFY`

```
<P ALIGN="CENTER"> Web Programming</P>
```

- Text format:
  - Physical format
  - Logical format
  - Preformatted text: shows the text as it is

```
<PRE>Web prog: HTML, it’s fun, isn’t it? </PRE>
```

Physic & Logic

Physical format

Tag	Description
<B> … </B>	Bold text
<I> … </I>	Italic text
<U> … </U>	Underline text
<BIG> … </BIG>	Bigger than a normal size
<SMALL> … </SMALL>	Smaller than a normal size
<STRIKE> … </STRIKE>	Strikethrough text
[…]	Superscript text
_…	Subscript
<CENTER> … </CENTER>	Center-align text

Logical format

Tag	Description
<EM> … </EM>	Emphasized text → displayed in italic <I>
<STRONG> … </STRONG>	Strong importance → displayed in bold <B>
<DEL> … </DEL>	Been deleted → strike a line through deleted text <STRIKE>
<INS> … </INS>	Been inserted → underline inserted text <U>

Basic element: Hyperlink (a)

- Create a link to other document

```
<A HREF=contact.html>Contact us</A>
<A HREF="https://subakti.com">Subakti Family: Russian-Indonesian couple</A>
```

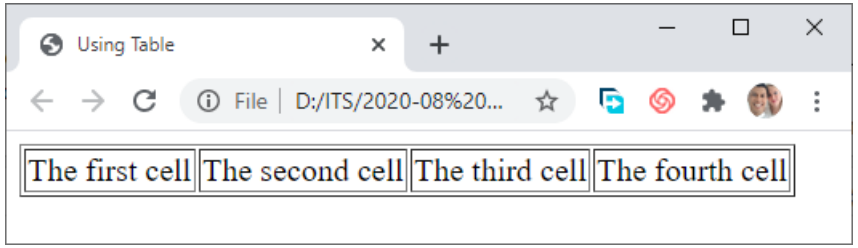
- Create a link to the particular part/section in a document

```
<A NAME="coursetopic">Course topic</A>
<A HREF="#coursetopic">See the course topic</A>
```

Creating table

- Tag for the table: <TABLE> … </TABLE>
- Tag for the cell: <TD> … </TD>
- E.g.

```
<HTML>
        <HEAD>
                <TITLE>Creating Table</TITLE>
        </HEAD>
        <BODY>
                <TABLE BORDER="1">
                        <TD>The first cell</TD>
                        <TD>The second cell</TD>
                        <TD>The third cell</TD>
                        <TD>The fourth cell</TD>
                </TABLE>
        </BODY>
</HTML>
```



Creating table (continued)

- Tag for the cell's row: <TR> … </TR>
- Tag for the table's title: <CAPTION> … </CAPTION>
- E.g.

```
<HTML>
        <BODY>
                <TABLE BORDER="1">
                        <CAPTION>Creating Table</CAPTION>
                        <TR>
                                <TD>Row 1 Col 1</TD>
                                <TD>Row 1 Col 2</TD>
                        </TR>
                        <TR>
                                <TD>Row 2 Col 1</TD>
                                <TD>Row 2 Col 2</TD>
                        </TR>
                </TABLE>
        </BODY>
</HTML>
```

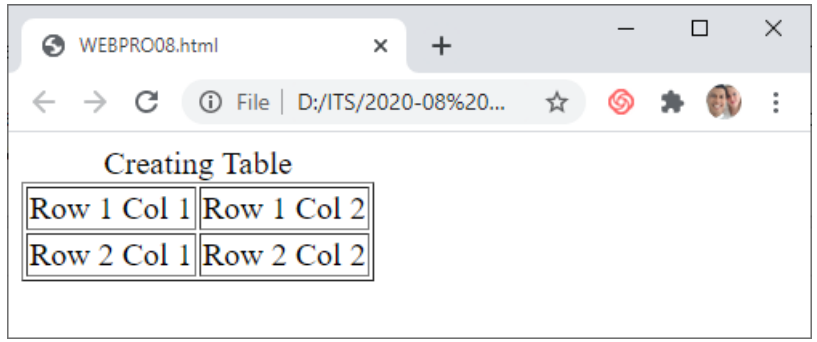
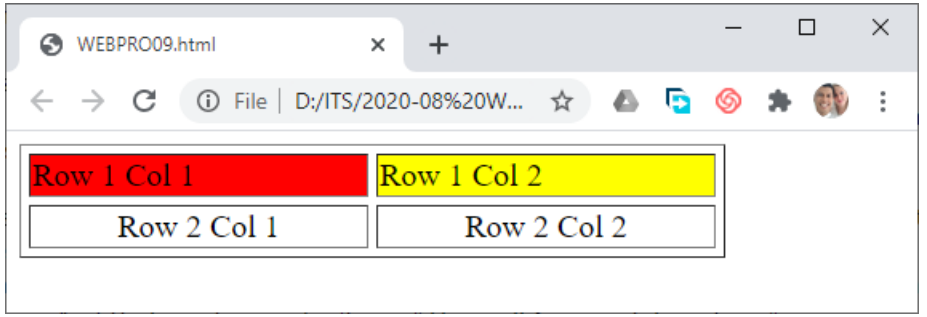


Table formatting

- Table alignment
  - Align (`CENTER`, `JUSTIFY`, `LEFT`, `RIGHT`) → horizontal alignment
  - VAlign (`BASELINE`, `TOP`, `MIDDLE`, `BOTTOM`) → vertical alignment
- Table width: `WIDTH="25%"`
- Cell colour: `BGCOLOR="RED"`
- Table space
  - `CELLSPACING` → space between the cells
  - `CELLPADDING` → space from the border to the text in the cell

Table formatting (continued)

```
<HTML>
	<BODY>
		<TABLE BORDER="1" CELLSPACING=5 CELLPADING=10>
			<TR ALIGN="LEFT" VALIGN="TOP">
				<TD WIDTH="25%" BGCOLOR=RED>Row 1 Col 1</TD>
				<TD WIDTH="25%" BGCOLOR=YELLOW>Row 1 Col 2</TD>
			</TR>
			<TR ALIGN="CENTER" VALIGN="BASELINE">
				<TD>Row 2 Col 1</TD>
				<TD>Row 2 Col 2</TD>
			</TR>
		</TABLE>
	</BODY>
</HTML>
```



CSS

Cascading Style Sheet

CSS: About

- CSS: Cascading Style Sheet
- Function: defining the text’s style of font, size and colour
- Creating methods
  - Style Sheet Inline
  - Style Sheet Internal
  - Style Sheet External

Style Sheet Inline

- Can be typed directly in HTML tag as an attribute

```
<BODY>
     <B STYLE="COLOR:BLUE">
          The bold and blue colour text!
     </B>
</BODY>
```

Style Sheet Internal

- By using the tag `STYLE` inside the tag `HEAD`

```
<HEAD>
     <STYLE TYPE="TEXT/CSS">
          …
          Style definitions here
          …
     </STYLE>
</HEAD>
```

Style definitions

- Style definitions are the definitions or the intended style
- The format as in the following

```
SELECTOR {PROPERTY1: VALUE1;
     PROPERTY2: VALUE2; …
     PROPERTYN: VALUEN; }
```

- Selector → the tag used by web browser
- Property → value is the style's effect designated for selector

Style definitions: the example

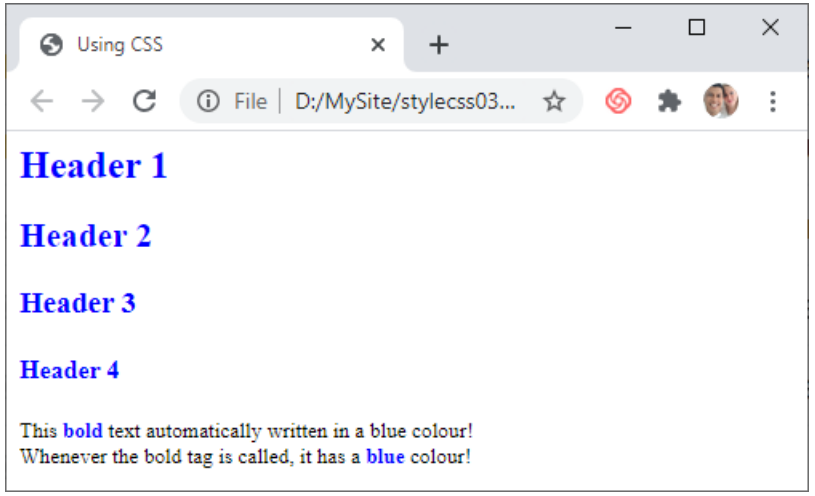
```
<!-- D:\MySite\stylecss01.html -->
<HTML>
        <HEAD>
                <TITLE>Using CSS</TITLE>
                <STYLE TYPE="TEXT/CSS">
                        B {COLOR: BLUE}
                </STYLE>
        </HEAD>
        <BODY>
                <P>This <B>bold</B> text automatically written in a blue colour!<BR>
                Whenever the bold tag is called, it has a <B>blue</B> colour!
                </P>
        </BODY>
</HTML>
```

Style Sheet External

- Save the style's information to a file whose extension/type is .CSS
- Calling the CSS file in HTML by using tag LINK placed in tag HEAD
- By using the tag STYLE inside the tag HEAD

```
<HEAD>
      <LINK REL="STYLESHEET" TYPE="TEXT/CSS"
       HREF="Filename.CSS"/>
       …
       …
</HEAD>
```

Style Sheet External (continued)



stylecss02.css - Notepad

File Edit Format View Help

```
/* D:\mysite\stylecss02.css */
H1, H2, H3, H4 {COLOR : BLUE;}
H1 {FONT-SIZE : 18pt;}
H2 {FONT-SIZE : 16pt;}
H3 {FONT-SIZE : 14pt;}
H4 {FONT-SIZE : 12pt;}
P {FONT-SIZE : 10pt;}
```

stylecss03.html - Notepad

File Edit Format View Help

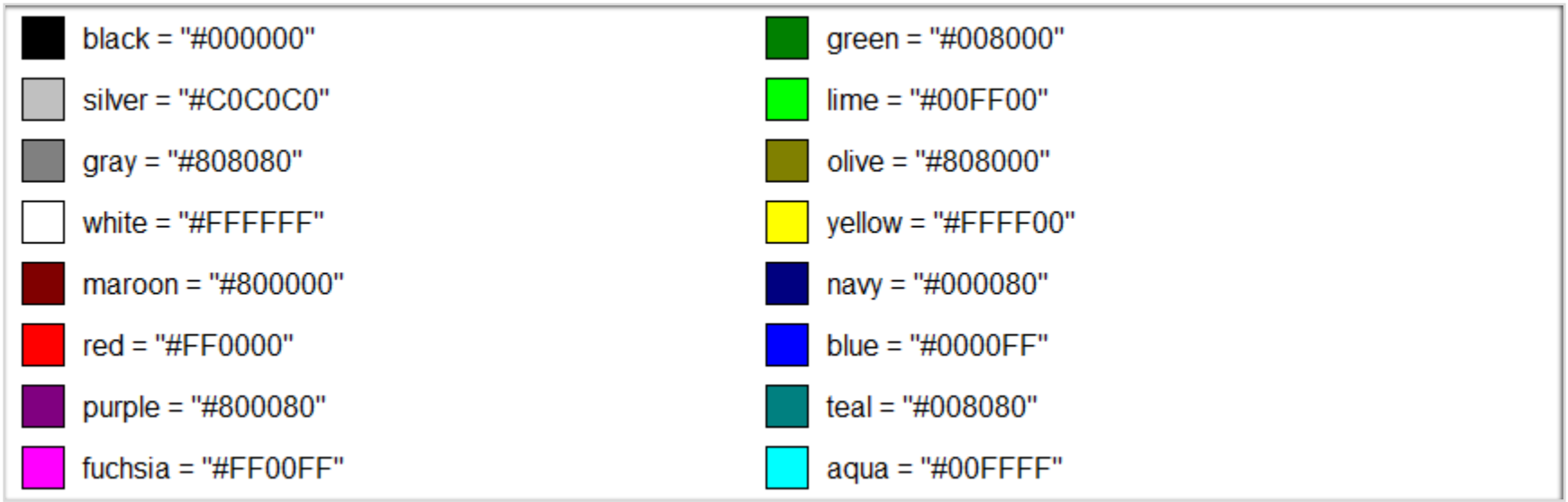
```
<!-- D:\MySite\stylecss03.html -->
<HTML>
        <HEAD>
                <LINK REL = "STYLESHEET" TYPE = "TEXT/CSS"
                        HREF = "stylecss02.css"/>
                <STYLE TYPE="TEXT/CSS">
                        B {COLOR: BLUE}
                </STYLE>
                <TITLE>Using CSS</TITLE>
        </HEAD>
        <BODY>
                <H1>Header 1</H1>
                <H2>Header 2</H2>
                <H3>Header 3</H3>
                <H4>Header 4</H4>
                <P>This <B>bold</B> text automatically written in a blue colour!<BR>
                Whenever the bold tag is called, it has a <B>blue</B> colour!
                </P>
        </BODY>
</HTML>
```

Style Sheet External (continued)

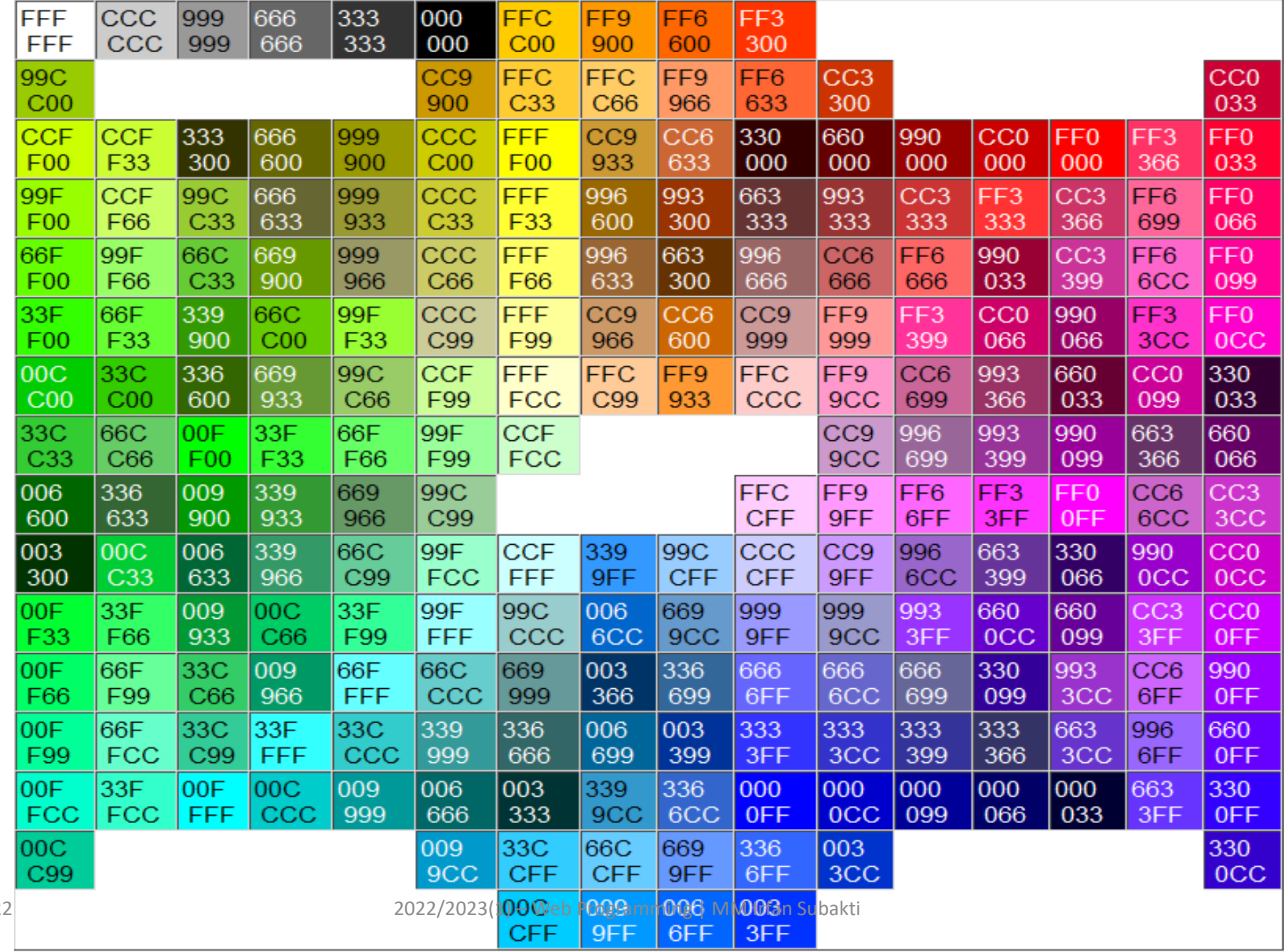
```
<STYLE TYPE = "TEXT/CSS">
    HR {COLOR:RED; HEIGHT:5PX; WIDTH:50%;}
</STYLE>
```

- Description
  - Tag → STYLE
  - Attribute → TYPE = "TEXT/CSS"
  - Selector → HR
  - Property → COLOR, HEIGHT, WIDTH
  - Value → RED, 5PX, 50%

Colour list


black = "#000000"
silver = "#C0C0C0"
gray = "#808080"
white = "#FFFFFF"
maroon = "#800000"
red = "#FF0000"
purple = "#800080"
fuchsia = "#FF00FF"
green = "#008000"
lime = "#00FF00"
olive = "#808000"
yellow = "#FFFF00"
navy = "#000080"
blue = "#0000FF"
teal = "#008080"
aqua = "#00FFFF"

FFF FFF	CCC CCC	999 999	666 666	333 333	000 000	FFC C00	FF9 900	FF6 600	FF3 300						
99C C00					CC9 900	FFC C33	FFC C66	FF9 966	FF6 633	CC3 300					CC0 033
CCF F00	CCF F33	333 300	666 600	999 900	CCC C00	FFF F00	CC9 933	CC6 633	330 000	660 000	990 000	CC0 000	FF0 000	FF3 366	FF0 033
99F F00	CCF F66	99C C33	666 633	999 933	CCC C33	FFF F33	996 600	993 300	663 333	993 333	CC3 333	FF3 333	CC3 366	FF6 699	FF0 066
66F F00	99F F66	66C C33	669 900	999 966	CCC C66	FFF F66	996 633	663 300	996 666	CC6 666	FF6 666	990 033	CC3 399	FF6 6CC	FF0 099
33F F00	66F F33	339 900	66C C00	99F F33	CCC C99	FFF F99	CC9 966	CC6 600	CC9 999	FF9 999	FF3 399	CC0 066	990 066	FF3 3CC	FF0 0CC
00C C00	33C C00	336 600	669 933	99C C66	CCF F99	FFF FCC	FFC C99	FF9 933	FFC CCC	FF9 9CC	CC6 699	993 366	660 033	CC0 099	330 033
33C C33	66C C66	00F F00	33F F33	66F F66	99F F99	CCF FCC				CC9 9CC	996 699	993 399	990 099	663 366	660 066
006 600	336 633	009 900	339 933	669 966	99C C99				FFC CFF	FF9 9FF	FF6 6FF	FF3 3FF	FF0 0FF	CC6 6CC	CC3 3CC
003 300	00C C33	006 633	339 966	66C C99	99F FCC	CCF FFF	339 9FF	99C CFF	CCC CFF	CC9 9FF	996 6CC	663 399	330 066	990 0CC	CC0 0CC
00F F33	33F F66	009 933	00C C66	33F F99	99F FFF	99C CCC	006 6CC	669 9CC	999 9FF	999 9CC	993 3FF	660 0CC	660 099	CC3 3FF	CC0 0FF
00F F66	66F F99	33C C66	009 966	66F FFF	66C CCC	669 999	003 366	336 699	666 6FF	666 6CC	666 699	330 099	993 3CC	CC6 6FF	990 0FF
00F F99	66F FCC	33C C99	33F FFF	33C CCC	339 999	336 666	006 699	003 399	333 3FF	333 3CC	333 399	333 366	663 3CC	996 6FF	660 0FF
00F FCC	33F FCC	00F FFF	00C CCC	009 999	006 666	003 333	339 9CC	336 6CC	000 0FF	000 0CC	000 099	000 066	000 033	663 3FF	330 0FF
00C C99					009 9CC	33C CFF	66C CFF	669 9FF	336 6FF	003 3CC					330 0CC
						00C CFF	009 9FF	006 6FF	003 3FF						



`ID Selector` and `CLASS`

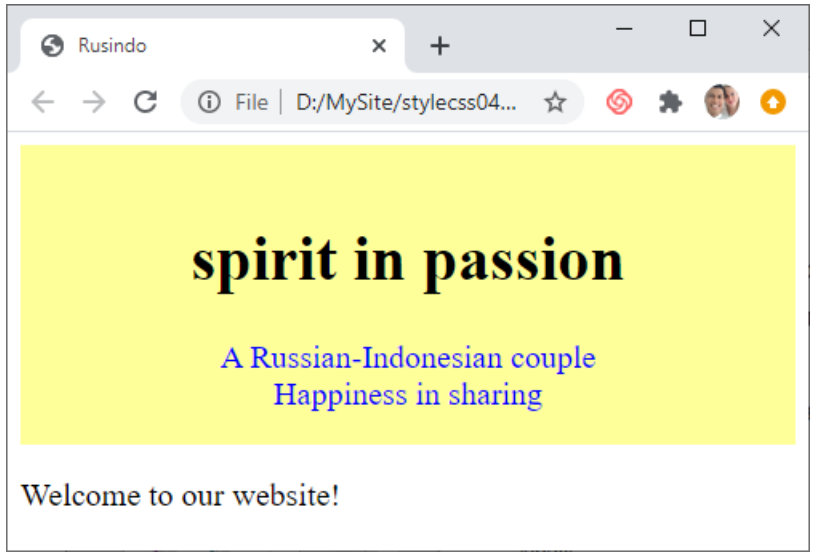
- `ID Selector` can be defined by ourselves
  - Started by the symbol **#** (octothorpe)

- `CLASS` is started by the symbol **.** (period)

stylecss04.html - Notepad

File Edit Format View Help

```
<!-- D:\mysite\stylecss04.html -->
<HTML>
        <HEAD>
                <TITLE>Rusindo</TITLE>
                <STYLE TYPE = "TEXT/CSS">
                        #TOP {
                          BACKGROUND-COLOR : #FF9;
                          PADDING : 1em;
                          TEXT-ALIGN: CENTER;
                        }
                        .MyLine {
                          COLOR: BLUE;
                          FRONT-WEIGHT: BOLD;
                          MARGIN: 0;
                          PADDING: 0;
                        }
                </STYLE>
        </HEAD>
        <BODY>
                <DIV ID = "TOP">
                        <H1>spirit in passion</H1>
                        <P CLASS = "MyLine">A Russian-Indonesian couple</P>
                        <P CLASS = "MyLine">Happiness in sharing</P>
                </DIV>
                <P>Welcome to our website!</P>
        </BODY>
</HTML>
```



JavaScript

Building the webpage, interactively

JavaScript: Introduction

- A script-based language which can be run on HTML document
- 4 December 1995, during a collaboration between Netscape and Sun Microsystems (Java developer) → Netscape gave a name to this language: JavaScript
- On the other hand, Microsoft had been trying to adapt this technology into its own browser, Internet Explorer 3 → they called it: JScript

Comparison

Java Script

- Client-side programming
- Compilator: browser
- Developer: Netscape
- The code can be seen in HTML document
- Integrated within HTML document

Java

- Server & client programming
- Compilator: JVM
- Developer: Sun Microsystems
- The code (Applet) cannot be seen in HTML document
- Separated from HTML document

JavaScript: the ability

- Response to events
- Read and write HTML elements
- Validate the data
- Detect the browser’s visitor
- Create the cookies

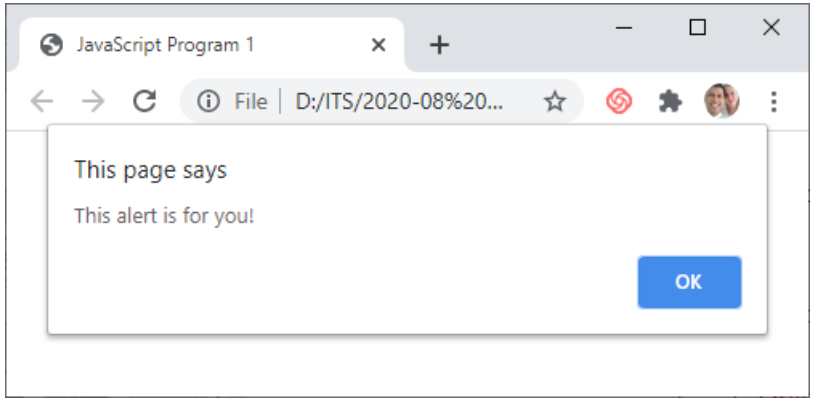
JavaScript: HTML document inside

- `<SCRIPT>` tag
  - Usually `<SCRIPT>` inserted between `<HEAD>` and `</HEAD>`
  - Calling the JavaScript function (it calls **event**) inserted between `<BODY>` and `</BODY>`
- External file

```
<SCRIPT LANGUAGE = "JavaScript" SRC = "url/file.js"
</SCRIPT>
```

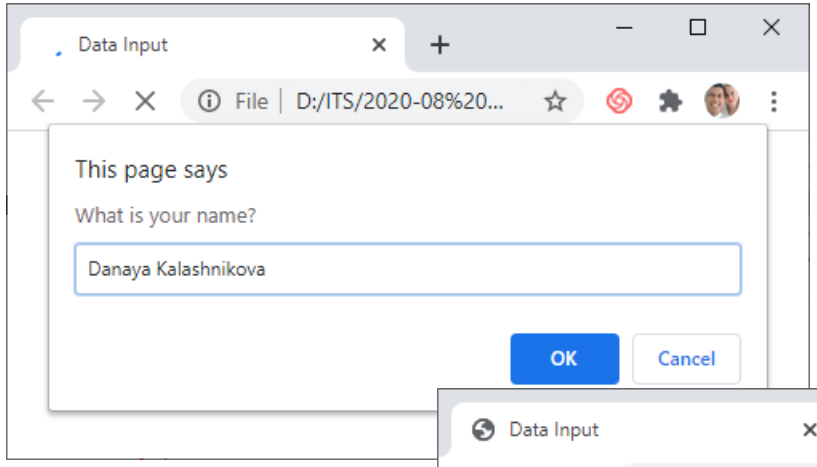
- Event
  - Event is an action done by user → click a mouse
  - `<tag eventHandler = "JavaScript code will be inserted ">`

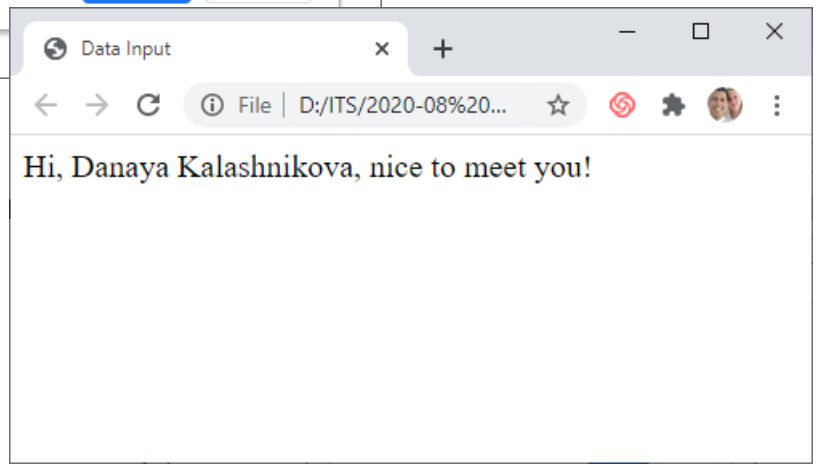
Alert: the example



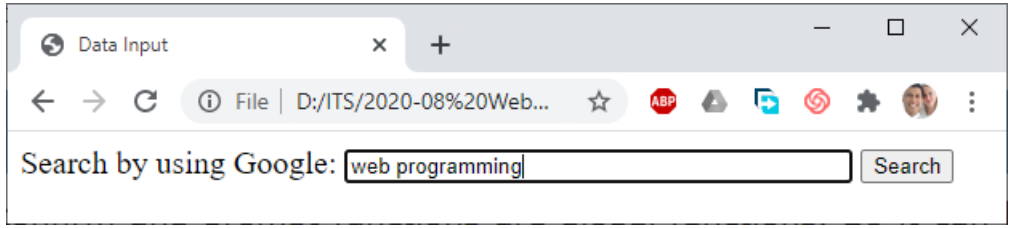
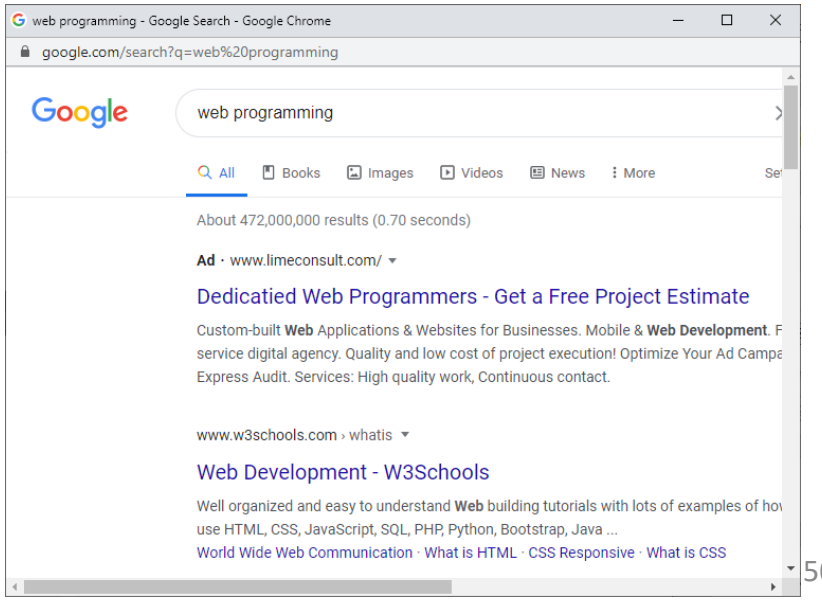

```
<HTML>
      <HEAD>
            <TITLE>JavaScript Program 1</TITLE>
      </HEAD>
      <BODY>
            <SCRIPT LANGUAGE = "JavaScript">
            <!--
                  alert("This alert is for you!");
            // -->
            </SCRIPT>
      </BODY>
</HTML>
```

Prompt: the example






```
<HTML>
	<HEAD>
		<TITLE>Data Input</TITLE>
	</HEAD>
	<BODY>
		<SCRIPT LANGUAGE = "JavaScript">
		<!--
			var name = prompt("What is your name?");
			document.write("Hi, " + name + ", nice to meet you!");
		// -->
		</SCRIPT>
	</BODY>
</HTML>
```

Interactive form: the example

```
<SCRIPT LANGUAGE = "JavaScript">
        function mySearch() {
                var key = document.fSearch.keyword.value;
                var result = https://www.google.com/search?q= + key;
                        window.open(
                                result, 'google', config =
                                'height=500, width=750, scrollbars=yes location=yes'
                        )
        }
</SCRIPT>
<FORM NAME="fSearch" onSubmit="mySearch()">
        Search by using Google:
        <INPUT NAME="keyword" SIZE="40" TYPE="text">
        <INPUT TYPE="submit" VALUE="Search">
</FORM>
```