

WEEK06 – HTML MARKUP LANGUAGE

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OUTLINE

- 1. Introduction to HTML & HTML5**
- 2. HTML Head**
- 3. HTML Layout**
- 4. Attributes of Tags**
5. HTML Heading & Paragraph
6. HTML Word Formatting
7. HTML Hyper Link
8. HTML Quotations & Images

INTRODUCTION TO HTML

HTML – Hypertext Markup Language, developed since 1990s; 1980, Tim Berners-Lee, an Englishman. At CERN, he wrote a program, Enquire, for a "memory substitute".

hypertext – an arrangement of the information in a computer database that allows a user to get information and to go from one document to another by clicking on highlighted words or pictures

1991 – Tim Berners-Lee invented HTML.

1995 – HTML Working Group defined HTML 2.0. **JavaScript** language emerged.

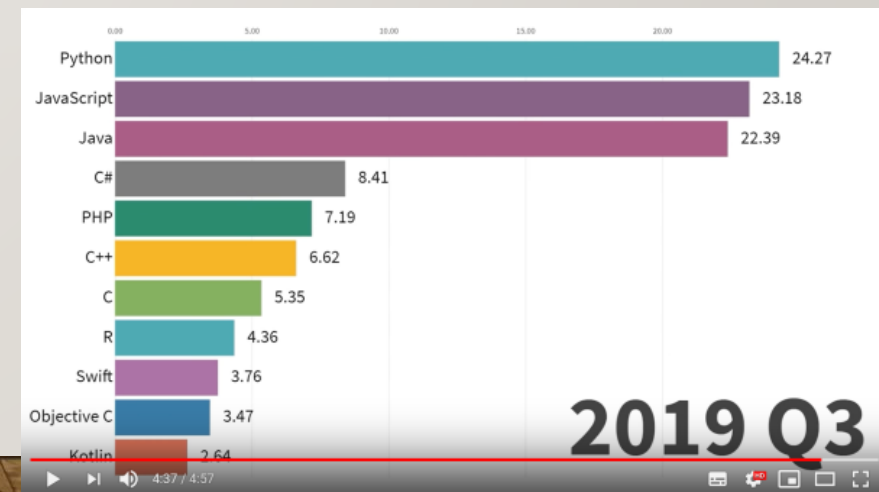
1998 – In early time, there was a browser war between Microsoft Internet Explorer and Netscape Navigator. It ended up with one pledged for antitrust violations and the other vanished.

1999 – W3C recommended HTML 4.01.

2000 – W3C recommended XHTML 1.0.

2014 – W3C recommended HTML 5.

2016 – W3C recommended HTML 5.1 & HTML 5.2 in 2017.



INTRODUCTION TO HTML

HTML is an **interpreted language** which can be executed by web **browsers**.

There are several browsers currently that can process the HTML language, including Internet Explorer, Google Chrome, Safari (iOS), Firefox (Mozilla), Opera (Opera, Norway).

HTML is not only a language of hypertext. It is an object-oriented programming language while it needs assistance from CSS, JavaScript and DOM (Document Object Model).

1995 – JavaScript was developed by Netscape. It is currently used for cross-platform programming. (Scheme, Lisp)

The HTML5 is an object-oriented language while the object-oriented features need to be manipulated using the JavaScript.

INTRODUCTION TO HTML

- Markup language – tag to indicate the organization & content in the document
- Declare the type of the document - `<!DOCTYPE>`
- Start/end of the document - `<html>`
- Start/end of the head, show the title bar in the browser - `<head>`
- Start/end of the main text (body) - `<body>`

IC_W601.html

```
<!DOCTYPE html>
<html>
  <head>
    <title>Title of This Document File</title>
  </head>
  <body>
    <p>
      This is the content of the document file. It is similar to a word
      file with organized structure. Here a new paragraph is introduced
      by the tag - p.
    </p>
    <p>
      The p-tag is used to separate lines of words into two
      paragraphs. The context can be easily distributed by using a server
      and all kinds of browsers can read and show the document. Thus, it
      is very powerful to set up this kind of document for your concept
      broadcasting.
    </p>
    <p>
      Let's start to distribute our ideas worldwide.
    </p>
  </body>
</html>
```

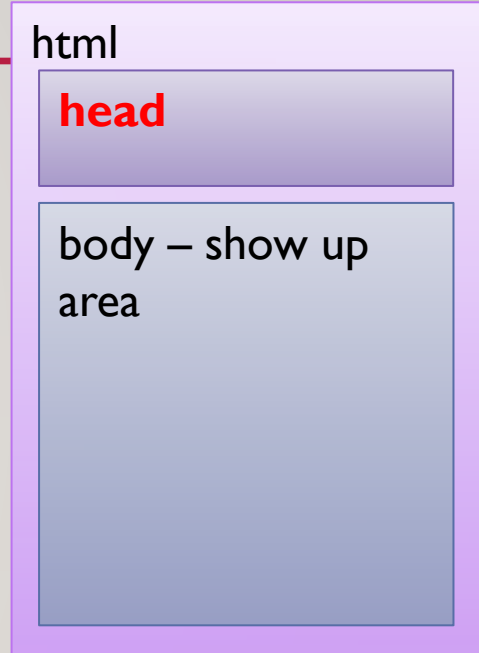
INTRODUCTION TO HTML5



- Simplify the document type & charset declaration
 - `<!DOCTYPE html>`, `<meta charset="UTF-8">`
 - New elements: semantic elements: `<header>`, `<footer>`, `<article>`, `<section>`, `<aside>`, `<nav>`, `<hgroup>`; graphic elements: `<svg>`, `<canvas>`; multimedia elements: `<audio>`, `<video>`
 - New API's (**Application Programming Interfaces**): HTML geolocation, drag and drop, local storage, application cache, web workers, server-sent events
 - Removed elements: `<acronym>`, `<applet>`, `<basefont>`, `<big>`, `<center>`, `<dir>`, ``, `<frame>`, `<frameset>`, `<noframes>`, `<strike>`, `<tt>`
- html { element
style – attribute
commands and code

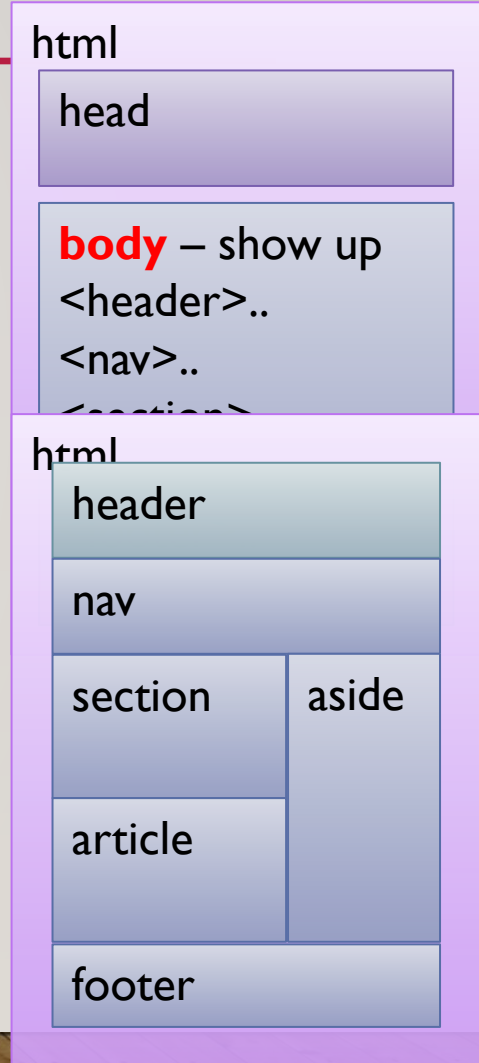
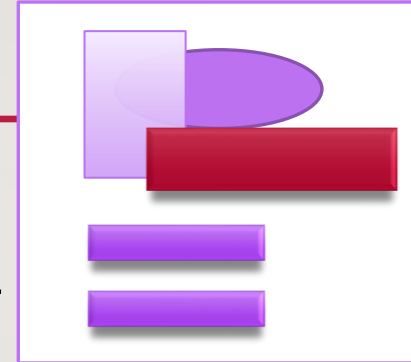
WHAT'S IN THE HTML HEAD?

- Head – document head (abstractive), not content head
- In the content between the opening tag, `<element_name>`, and the closing tag `</element_name>`
- `<title> </title>` - enclose the words shown on the title bar of the browser window
- `<style> </style>` - define the global styles of the document
- `<link>` - link to external style file, filename.css
- `<meta>` - specify the character set, a description of the page, keywords, author, refresh time, viewport
- `<script>` - globally used JavaScript codes
- `<base>` - define the base URL for all relative URLs used in this page, use it as #



THE HTML LAYOUTS

- Concept of container – object-oriented style
- `<div> </div>` grouping
- `<header> </header>` - a header or title of the document
- `<section> </section>` - a section
- `<article> </article>` - independent self-contained article
- `<footer> </footer>` - a footer in the document
- `<details> </details>` - defines additional details such as authors' contact information
 - `<summary> </summary>` - the heading in the detail section
- The layout can be implemented using CSS floats & CSS3 flexbox.



THE ATTRIBUTES OF THE HTML TAGS

- Each tag has several attributes that can be indicated.
 - The attribute of **href** – a link address
 - The attribute of **src** – the file name of the image source
 - The attribute of **width, height** – the width and the height of the image
 - The attribute of **alt** – an alternative text
 - The attribute of **style (developed to Cascading Style Sheets, css)** – used to specify the style of an element (tag), inside it there are many style parameters including color, font, size, ...
 - The attribute of **title** – displayed as tooltip
 - The attribute of **type, lang, dir, accesskey, tabindex, spellcheck, hidden, contenteditable, cite ... (id, class)**
 - The format to denote the attribute – use double (single) quotes to assign values, e.g. `<footer title="The Author's Copyright Declaration">`
- html { element { void, empty elements, like `< br >`
non – void elements, like `< p >`, `</p >`
style – attribute
commands and code

THE APPEARANCE OF THE HTML DOCUMENT

IC_W602.html



The screenshot shows a web browser window with the following elements:

- Browser Title Bar:** 內能與等體積比熱
- Address Bar:** file:///C:/Users/wbjia/Documents/Lecture%20Notes/2018%20(9-12)%20Introduction%20to%20Comp
- Page Header:** 內能與等體積比熱
- Main Content Area (Yellow background):**
 - 熱力學的內能是氣體分子所有可能的動能加總，包括移動、轉動與振動動能。
 - 有同學來信問到為何內能的變化量是系統氣體分子的莫耳數乘上等體積莫爾比熱，再乘上溫度變化量？
 - 先談一下熱能有兩種形式表現，一種是運動的幅度，像是振動幅度或是移動速度等，另一種則是熵值即狀態數的增加，運動幅度增加的熱能會改變溫度，熵值增加則可以在溫度不變時增加熱能，熱機是利用熵值增加與減少來吸熱放熱並對外作功。
 - 等體積莫耳比熱是指在等體積條件下，每單位溫度每莫耳氣體分子的熱容量，等體積條件下氣體與外界沒有作功的交換，外界提供系統的熱能完全轉換成內能而提高系統溫度。另一種比熱是等壓力比熱，此時系統與外界保持固定壓力但可以有作功的能量交換，當外界提供給系統熱能時，系統的內能增加且溫度上升，同時系統會對外作功，因此等壓力變溫能造成更多的熱能變化。
 - 汽油引擎與柴油引擎的運作中有一段熱力學過程不同，在那段熱力學過程中汽油引擎是等體積吸熱能，而柴油引擎是等壓力吸熱能。柴油引擎比汽油引擎扭力大，且柴油引擎能源轉換效能較高較省油(但排放廢氣汙染程度較嚴重)。
- Right Side Panel (Blue background):**
 - 內能-internal energy
 - 比熱-specific heat
- Page Footer (Dark Blue background):**

The author, Wen-Bin Jian, received his bachelor degree in Physics from National Taiwan University. He has teaching experiences in physics for more than ten fifteen years. This document is maintained by Mr. Wen-Bin Jian. For all details of the content, you could contact Mr. Jian directly.

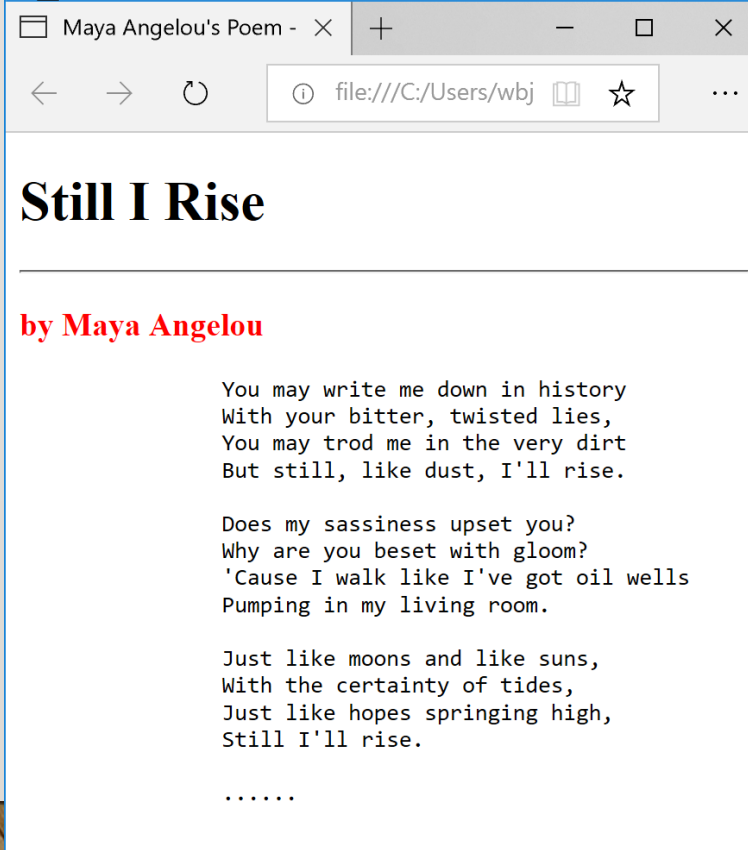
OUTLINE

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HTML HEADINGS & PARAGRAPHS

- Document headings: `<h1> </h1>`, `<h2> </h2>`, ... `<h6> </h6>`
- `<hr>` - draw a horizontal line to separate the content
- Empty elements do not have closing tags. One example is `<hr>`.
- Document paragraphs: `<p> </p>`
- `
` - force a line break
- `<pre> </pre>` - preformatted text

IC_WV603.html



The screenshot shows a web browser window with the title 'IC_WV603.html'. The address bar shows the file path 'file:///C:/Users/wbj'. The page content includes the title 'Still I Rise' in a large, bold, black serif font, followed by a horizontal line. Below the line, the author's name 'by Maya Angelou' is written in a smaller, bold, red sans-serif font. The poem's text is displayed in a black monospace font, with three stanzas of text and a line of six dots at the end.

Maya Angelou's Poem - X + - □ ×

← → ↻ ⓘ file:///C:/Users/wbj 📖 ☆ ...

Still I Rise

by Maya Angelou

You may write me down in history
With your bitter, twisted lies,
You may trod me in the very dirt
But still, like dust, I'll rise.

Does my sassiness upset you?
Why are you beset with gloom?
'Cause I walk like I've got oil wells
Pumping in my living room.

Just like moons and like suns,
With the certainty of tides,
Just like hopes springing high,
Still I'll rise.

.....

HTML FORMATTING OF WORDS

- - bold text, - important text
- <i> - Italic text, - emphasized text
- <mark> - marked text
- <small> - small text
- <u> - underlined text
- <abbr title="non-abbreviated"> - abbreviation
- - deleted text
- <ins> - inserted text
- <s> - to strike through text
- <sub> - subscript text
- <sup> - superscript text

IC_W604.html

Formatting Text

file:///C:/Users/wbjia/Documents/Lecture%20Notes/2018%

Formatting of Text

by **Wen-Bin Jian**

Can you tell the difference between **the bold text** and **the important text**? Most of times, we are not able to clarify the subtle difference. You may try to check it when the two types of text are put together. On the other hand, you may feel the same difficulty to separate *the emphasized text* and *the Italic text*.

Here we give an example of a mathematical expression. We have two variables x and y following the expression:

$$x^2+y^2=1$$

It is easy to see that the expression gives a circle when the two variables, x and y , are used as coordinates of a two-dimensional space.

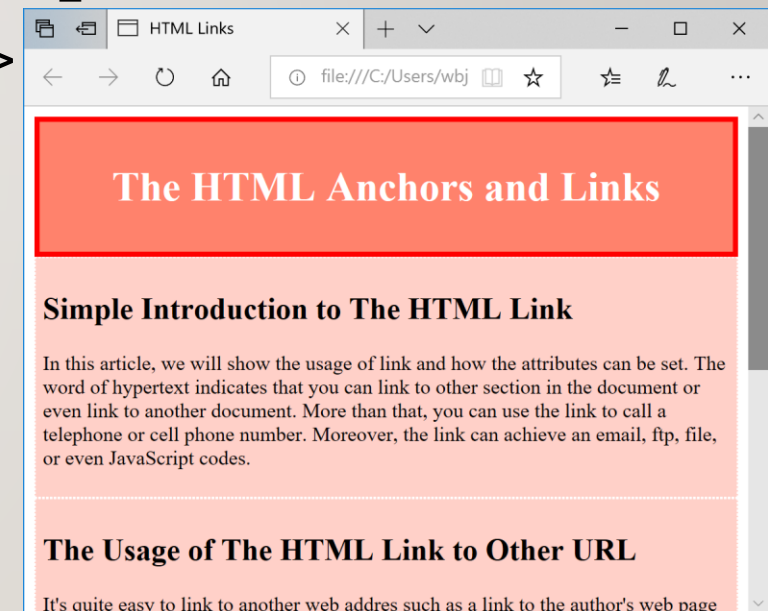
In this paragraph, we show all the other formats for text. We may use <mark> for **the marked text**. If you want to decrease the font size in line, you can use <small> to reduce the font size of the small text. Sometimes, you may want to mark the corrections for words and sentences in your article. Then you may use , <ins>, and <s> to show ~~the deleted words~~, the inserted words, and ~~the strank through text~~.

Like what you used in Microsoft Words, you can also use the underline tage, <u>, to mark your words or sentence in your documents. In addition, the HTML provides you the abbreviation tag, <abbr>. Using the attribute of title, you can put the original words for the abbreviation, such as HTML. When your mouse pointer hovers over the abbreviated words, there will be a tooltip feature showing the original, non-abbreviated words.

HTML ANCHORS & HYPERLINKS

- `description`
- Attributes: href: destination address; target: `_blank`, `_self`, `_parent`, `_top`; title: information about the link; download: to download a file
- `Another Site`
- `link to NCTU ftp server`
- `<h1 id="chap1"></h1>`, `Goto Chapter 1`
- `Call NCTU`
- `Contact Me`
- ``

IC_W605.html



HTML COMMENTS & QUOTATIONS

- `<!-- write comments about your codes here -->`
- In line quotation: `<q cite="link addr"> </q>`
- Block quotation: `<blockquote cite="link addr"> </blockquote>`
- Contact information of authors: `<address>`
- Defining the text direction: `<bdo dir="rtl"></bdo>`
- The reference of the quoted source: `<cite>title</cite>`

IC_W606.html

Showing Images in The HTML Document

It's quite simple to show images in the text. You can use the tag of `` to show images in your content. For a journal paper style, we always put figure caption to express the content of the figures. Sometimes, there are several figures put together and they are marked by a), b), c), etc. The image tag can be included in the link tag with an additional tag of text like paragraph or division so it is possible to attach the text of figure caption with the figure. On the other hand, you can also use the two new tags - figure and figcaption - to put figures with captions whereas you may find some problems when you turn the float style of the figure on. There are some difficulties to integrate text and figures together. You may try it yourself.

Figure 1. This is the logo of National Chiao Tung University.

Here we show the usage of a map on an image. You need to define a map and use it for linkage when the users click their mouse pointer on the image.

Reference

1. https://www.goodreads.com/author/quotes/289513.Benjamin_Franklin.

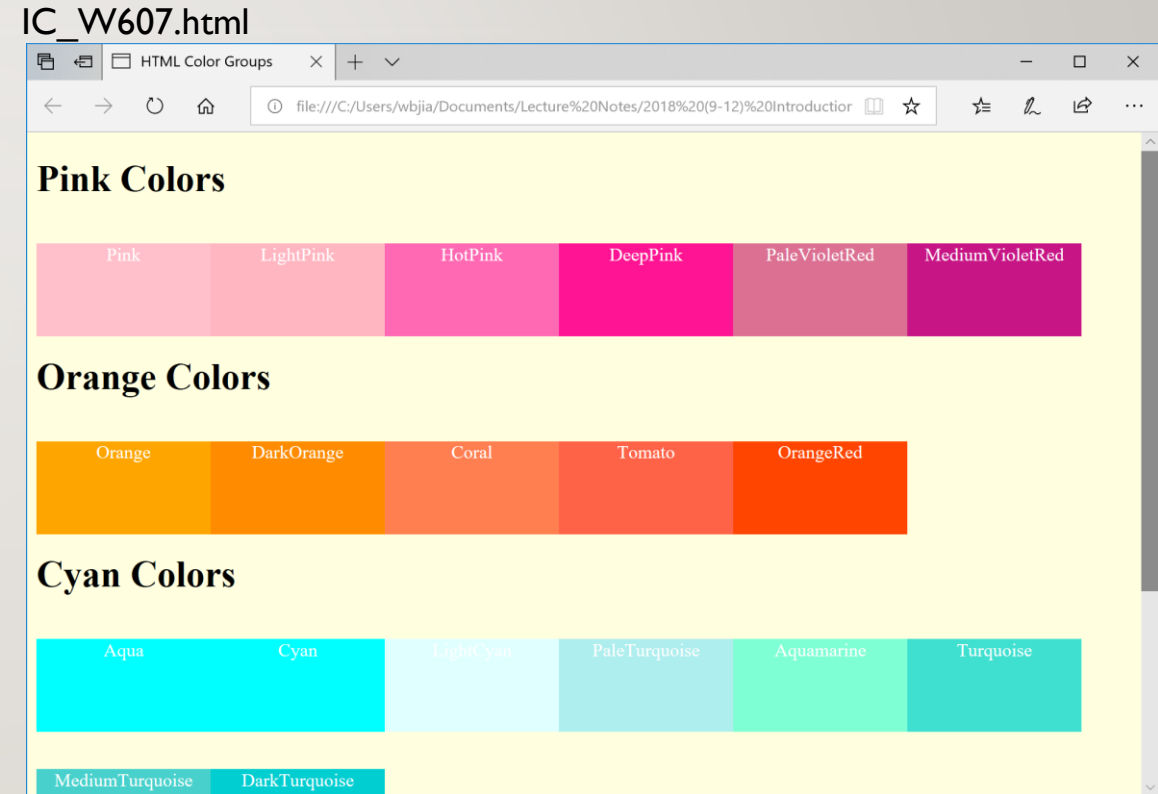
This document was prepared by Mr. Wen-Bin Jian.

HTML IMAGES

- ``
 - `` = ``
 - To float your image: ``, float to right
 - Image map: clickable areas on the image
 - ``
 - `<map name="mymap"> <area shape="rect" coords="xl, yt, xr, yb" alt="expr" href="link addr">... </map>`
 - Responsive appearance:
 - `<picture>`
 - `<source media="(min-width: 600px)" srcset="fileA"><source media="(min-width: 400px)" srcset="fileB"> `
 - `</picture>`
 - Background image: `<p style="background-image: url('name.jpg');"> ... </p>`
- semantic:
`<figure>`
 ``
 `<figcaption></figcaption>`
`</figure>`

HTML COLORS

- `<p style="color:White; background-color:DodgeBlue; border: 2px solid Black;"></p>`
 - 140 colors: Pink, LightPink, HotPink, DeepPink, PaleVioletRed, MediumVioletRed ...
- `color: rgb(255, 128, 128) – rgb(R, G, B)`
- `color: #ff8080 - #rrggbb`
- `color: rgba(255, 128, 128, 0.5)`



EXERCISE

1. Please use all kinds of html tags to prepare a CV (curriculum vitae) for yourself.
2. Use the HTML table to prepare your weekly schedule of courses.
3. Use the HTML to design a list to show contact information of your friends. Make sure that you can use your cell phone to reach your friends by using links in your HTML file.
4. Use the HTML to design a Taiwan map on which you can click the city (or county) area and link to the city's government homepage.
5. Use the HTML to give a photo of a car with descriptions of its components. When you click on one component on the car, it will link to a description of that component.

EXERCISE

- Please use a text editor rather than a software of web developer for preparing the HTML pages. Please prepare an HTML web page with the following features:
 - A. Show a title (Universities in Taiwan) of this homework on the header area.
 - B. Show a Taiwan map with cities or counties on the central area.
 - C. When the user moves his mouse icon to one county such as Yunlin county, please show a tip of one university name in that county.
 - D. When the user clicks on the county of the map, please link to the web page of that university.
 - E. Show your ID & name on the footer area.

EXERCISE

- Please use html file to prepare a web page showing the following information:
 - Please print out “2021 The 4th of November, Quiz of Week06” on the header area of the page.
 - Please show 10 floating boxes with colors of #FFFFFF, #EFEFEF, #DFDFDF, ...#6F6F6F.
 - Please print out “Program Designer: your_name with Student ID of your_ID” on the footer area.
- Please use html file to prepare a web page showing the following information:
 - Please prepare a document like that shown in the following figure.
 - The footer information shall be changed to fit your own descriptions with your name and student id number.

