Modern Web Design

- *Important part of the course*
- *Systems design is more than UML diagrams* .

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Motivation

- Front-end *holistic* design of an *enterprise system* for an organization is important for corporate image
- Front-end *single-user* design of *individual apps* for is also important for brand building
- Modern web design provides *simple techniques* for new designers .

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Acknowledgements

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Presentation Outline

- Learn from other specialties
- Elements of modern web design
- Conclusion .

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Presentation Outline

◆ *Learn from other specialties*

◆ Elements of modern web design

◆ Conclusion .

Traditional Design

◆ *Ornamentalism.* Excessive ornaments

Antonio Morandi
Palazzo Archiginnasio
(1563)
Bologna, Italy .

Modern Design

◆ *Minimalism.* Remove everything that distracts us

Piet Mondrian
*Composition II
with Red, Blue,
and Yellow* **(1930)**

Modern 现代 ≠
contemporary 當代 ...

Modern Design

◆ *Minimalism (Continued)*

Still fashionable .

Traditional Design

◆ *Ornamental Furniture*

White Drawing Room
Buckingham Palace .

Modern Design

◆ *Minimalist Furniture*
  ▪ Affordable, functional, and elegant

Edward Wormley
Dunbar Modernist Sofa **(1950)**

Modern 现代 ≠ contemporary 當代 ...

Modern Design

◆ *Minimalist Furniture* (*Continued*)

IKEA

INDIGO LIVING

Still fashionable .

Presentation Outline

◆ Learn from other specialties

◆ *Elements of modern web design*

◆ Conclusion .

Elements of
Modern Web Design

- Modern web layout design
- Wireframe design
- Banner design
- Grid-based design
- Long scrolling or multiple web pages?
- Responsive web design
- Accessible web design
- Implementation without coding
- Search engine optimization .

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- *Modern web layout design*
- Wireframe design
- Banner design
- Grid-based design
- Long scrolling or multiple web pages?
- Responsive web design
- Accessible web design
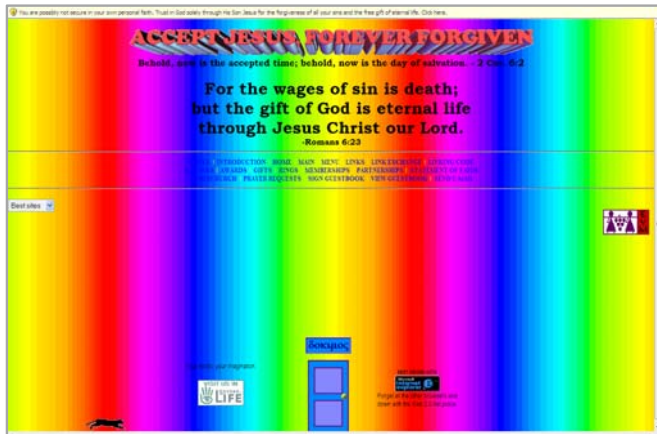- Implementation without coding
- Search engine optimization .

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Traditional Layout Designs Need Extensive Training
Motivating Example 1

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Traditional Layout Designs Need Extensive Training
Motivating Example 2

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Modern Web Layout Design
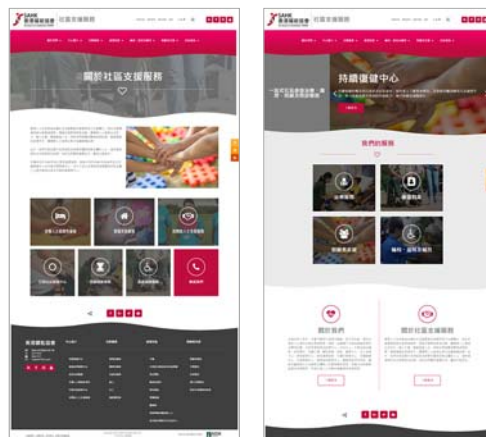
- *Reject* ornamentalism
- *Embrace* minimalism
- *Simplicity* with clean lines and neutral colours
- Form should follow *function* .

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Modern Web Layout Design

Modern Web Layout Design

Elements of Modern Web Design

- Modern web layout design
- *Wireframe design*
- Banner design
- Grid-based design
- Long scrolling or multiple web pages?
- Responsive web design
- Accessible web design
- Implementation without coding
- Search engine optimization .

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Wireframe Design

- ◆ Useful in early design process
- ◆ Establish basic layout structure of web pages before detailed design and contents .

Wireframe Design

We Learn from Mistakes

Modern
Web Design

Prof. T.H. Tse
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Meaningful words may be distracting .

Wireframe Design

Lorem Ipsum
Dolor

Sit Amet
Consectetur Adipiscing Elit
Sed do Eiusmod Tempor
Incididunt ut Labore et Dolore
Magna Aliqua

- ◆ Latin text without meaning
- ◆ Demonstrate visual format only .

Elements of Modern Web Design

- Modern web layout design
- Wireframe design
- *Banner design*
- Grid-based design
- Long scrolling or multiple web pages?
- Responsive web design
- Accessible web design
- Implementation without coding
- Search engine optimization .

Banner Design
Pictorial Movement

- Pictorial movement from the *left toward the right* seems to require less effort ...
- An animal speeding from *right to left*, for example, seems to be overcoming more resistance .

A. Arntson
Graphic Design Basics

Banner Design
Pictorial Movement

Lorem Ipsum
Dolor sit amet sea cu molestie invenire

Lorem Ipsum
Dolor sit amet sea cu molestie invenire

Banner Design
We Learn from Mistakes

Lorem Ipsum
Dolor sit amet sea cu molestie invenire

Lorem Ipsum
Dolor sit amet sea cu molestie invenire

Acceptable
Only for Emphasizing Difficulties

Many Obstacles Ahead

Many Obstacles Ahead

Elements of Modern Web Design

- ◆ Modern web layout design
- ◆ Wireframe design
- ◆ Banner design
- ◆ *Grid-based design*
- ◆ Long scrolling or multiple web pages?
- ◆ Responsive web design
- ◆ Accessible web design
- ◆ Implementation without coding
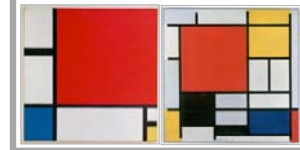- ◆ Search engine optimization .

We Learn from Mistakes

We Learn from Mistakes

- ◆ Popular in the **1920s**
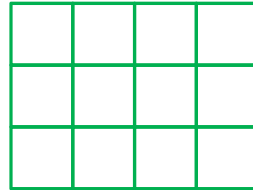- ◆ But that was >100 years ago

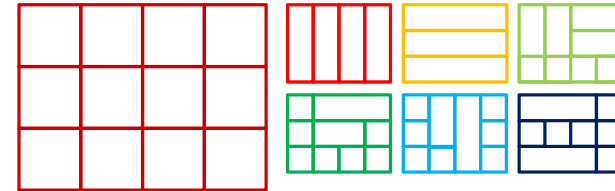Let us learn from Piet Mondrian .

Grid-Based Design

Grid

◆ 2-D structure made up of a series of intersecting vertical and horizontal lines (*grid lines*)

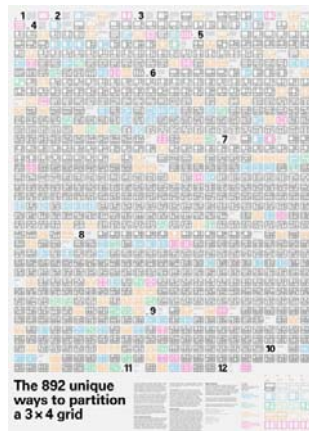◆ Serves as framework for organizing graphic elements.

Grid-Based Design

◆ Will it be boring?

◆ How many ways to partition a 3 x 4 grid?

Grid-Based Design

◆ 892 unique ways to partition a 3 x 4 grid!

The 892 unique ways to partition a 3 × 4 grid

Grid-Based Design

Grid-Based Web Layout Design

Elements of Modern Web Design

- ◆ Modern web layout design
- ◆ Wireframe design
- ◆ Banner design
- ◆ Grid-based design
- ◆ *Long scrolling or multiple web pages?*
- ◆ Responsive web design
- ◆ Accessible web design
- ◆ Implementation without coding
- ◆ Search engine optimization .

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Long Scrolling or Multiple Web Pages?

Long Scrolling

- ◆ New trend due to mobile phones
- ◆ They do not support multiple windows .

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Long Scrolling or Multiple Web Pages?

Considerations

- ◆ How much content on main page?
- ◆ Enough content to justify splitting?
- ◆ Do supporting pages have enough content to be stand alone?
- ◆ Easier for users to find content if it is spread across numerous pages? .

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Long Scrolling or Multiple Web Pages?

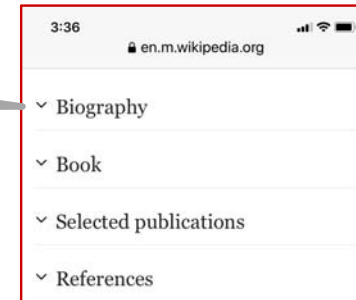*Recommendations*

◆ Strike a balance

◆ Use accordions

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Long Scrolling or Multiple Web Pages?

Recommendations

◆ Strike a balance

◆ Use accordions

Click to expand

Long Scrolling or Multiple Web Pages?

Recommendations

◆ Strike a balance

◆ Use accordions
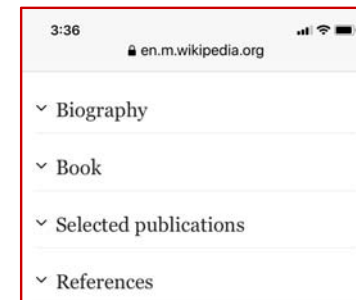
Click to collapse

Long Scrolling or Multiple Web Pages?

Recommendations

◆ Strike a balance

◆ Use accordions

Long Scrolling or Multiple Web Pages?

Recommendations

◆ Strike a balance
◆ Use accordions
◆ Responsive web design .

Elements of Modern Web Design

◆ Modern web layout design
◆ Wireframe design
◆ Banner design
◆ Grid-based design
◆ Long scrolling or multiple web pages?
◆ *Responsive web design*
◆ Accessible web design
◆ Implementation without coding
◆ Search engine optimization.

Responsive Web Design

Responds properly to

◆ Different devices
  ▪ Desktop computers, laptop computers, tablets, smart phones
◆ Different screen sizes .

We Learn from Mistakes
Traditional Web Design

Desktop Version

Mobile Phone Version

Tiny fonts

Complete waste of resources .

Responsive Web Design

Responsive Web Design

Responsive Web Design

Responds properly to

◆ Different devices
  ■ Desktop computers, laptop computers, tablets, smart phones
◆ Different screen sizes
◆ Different orientations
  ■ Portrait and landscape modes .

Responsive Web Design
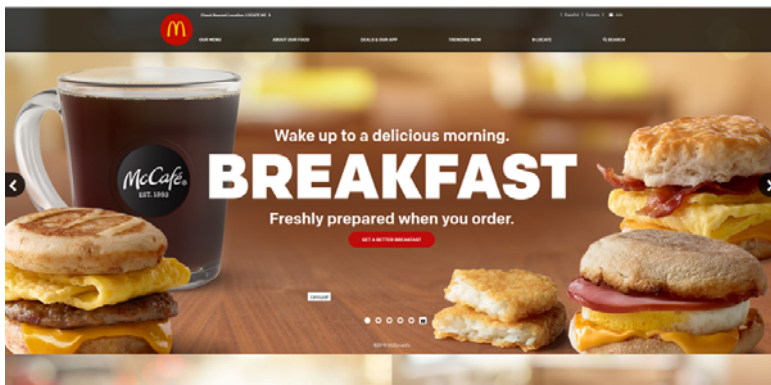
Responsive + Wireframe Design

Elements of Modern Web Design

- ◆ Modern web layout design
- ◆ Wireframe design
- ◆ Banner design
- ◆ Grid-based design
- ◆ Long scrolling or multiple web pages?
- ◆ Responsive web design
- ◆ *Accessible web design*
- ◆ Implementation without coding
- ◆ Search engine optimization .

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We Learn from Mistakes
Inaccessible Website

We Learn from Mistakes
Inaccessible Website

As "seen" by people with visual impairment .

Accessible Web Design

- Plain text version?
  - ☹ Duplication of effort
- Learn more from other specialties .

Accessible Route

- Ramp   **Special route**
- **Universal design**   **Full integration**

- *Universal design is a law in the mainland on 1 September 2023*
- *HKSAR still needs to learn* .

Accessible Transport

- Rehabus   **Special transport**
- **Accessible mass transit**   **Full integration** .

Accessible Web Design

- All the words are rendered as styled text
- Full integration .

Why Do We Need Web Accessibility?

Screen Reader

- Application software that converts *standard text* output into *voice or Braille*
  - Does not not really "read" the "screen"
- Used by
  - People with visual impairment (including total blindness)
  - People with learning difficulties
  - People who are illiterate .

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Why Do We Need Web Accessibility?

- For people with visual impairment (including total blindness)

INVESTMENT BANKING

Managing Risk for JPMorgan, and Blindness

By JULIA WERDIGIER   DECEMBER 2, 2010 7:34 PM   ● 44 Comments

Social responsibility?

- *Social asset!*
- *Financial asset!* .

Andrew Testa for The New York Times Ashish Goyal at JPMorgan Chase in London. His computers can read information to him rapidly through a headset.

LONDON — As a trader at JPMorganChase in London, Ashish Goyal helps manage billions of dollars of the bank's exposure to risks like foreign exchange fluctuations. In his spare time, he takes tango lessons, plays cricket and goes clubbing with friends. Mr. Goyal is also blind.

Why Do We Need Web Accessibility?
Continued

- For people who use slow modems
  - We need credit cards to apply for broadband
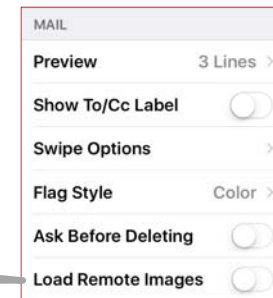 - People in poverty do not have credit cards
  - They turn off the images
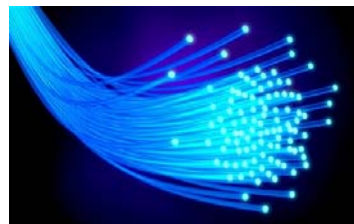
Social responsibility? — *Social asset!* .

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Why Do We Need Web Accessibility?
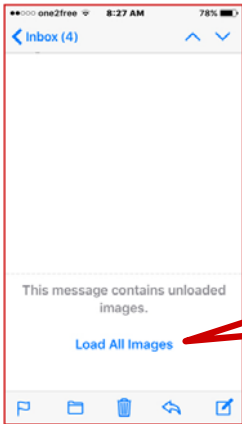### *Continued*

- For people using portable devices, who may turn off images to reduce security risk or cellular data charge

MAIL	
Preview	3 Lines >
Show To/Cc Label	◯
Swipe Options	>
Flag Style	Color >
Ask Before Deleting	◯
Load Remote Images	◯

Financial asset! .

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We Learn from Mistakes

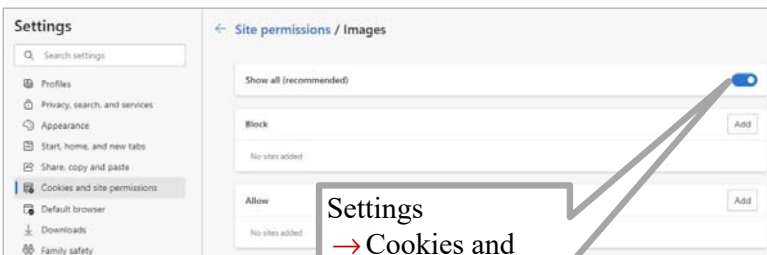*Who will load the image if they have no idea of the message content?* .

Simple Test of Web Accessibility

- ◆ *Turn off "Show pictures"* in web browser
- ◆ Open the web page .

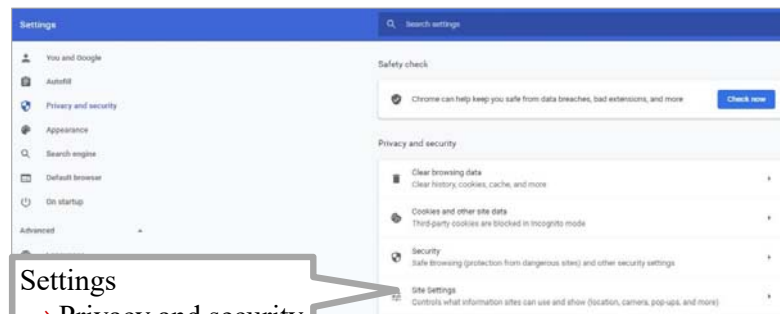*Turn off "Show Pictures"*
Microsoft Edge

Settings
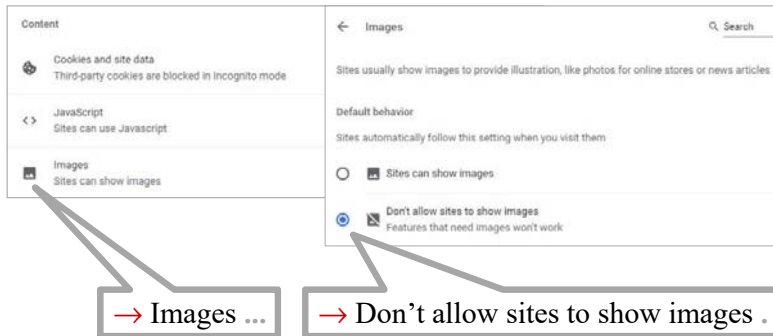→ Cookies and site permissions
→ Turn off "Show all" .

Turn off "Show Pictures"
Google Chrome
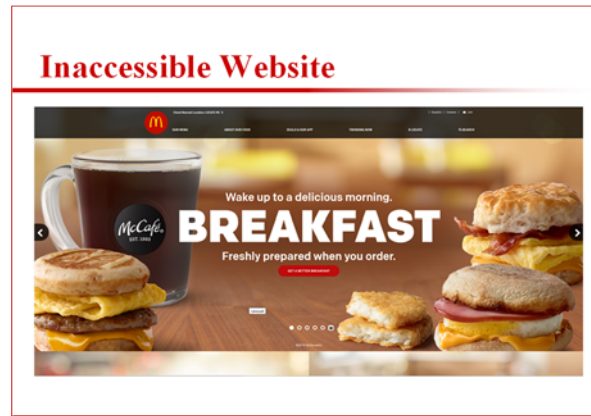

Settings
→ Privacy and security
→ Site settings …

Google Chrome (continued)

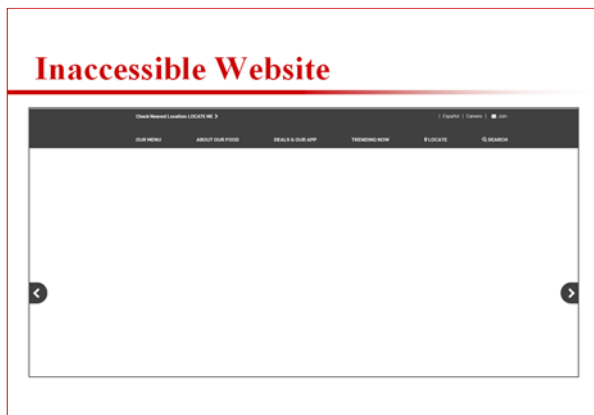→ Images ...   → Don't allow sites to show images .

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Example 1

Example 1
("Show Pictures" Turned Off)

Common Approaches to Text Display

◆ *Raster graphics*
◆ *Vector graphics*
◆ *Plain text*
◆ *Styled text* .

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Raster Graphics

- Text and images composed by matrix representing rectangular grid of pixels
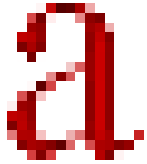
- *Examples:* jpg, gif, bmp formats .

Raster Graphics

- Commonly used in web page banners

Raster Graphics

Disadvantages

- Cannot be enlarged indefinitely

Raster Graphics

Disadvantages

- Cannot be enlarged indefinitely

Raster Graphics

Disadvantages

- ◆ Cannot be enlarged indefinitely
- ◆ Cannot search for required text
- ◆ Cannot copy and paste the text
- ◆ Not accessible by screen readers .

Raster Graphics

Disadvantages

- ◆ Cannot be enlarged indefinitely
- ◆ Cannot search for required text
- ◆ Cannot copy and paste the text
- ◆ Not accessible by screen readers

Advantages

- ◆ ~~Easy to generate?~~

No advantages! .

Common Approaches to Text Display

Vector Graphics

- ◆ Text and images represented by geometric primitives such as lines and curves

a

Vector Graphics

- ◆ ***Examples***
  - ▪ Adobe Illustrator outline format
  - ▪ svg format
  - ▪ Properly generated pdf, eps, and emf formats
- ◆ Most commonly used in professional printing

Google   Standard Chartered   Association for Computing Machinery

Vector Graphics

Advantages

◆ Can be enlarged indefinitely

Google

Vector Graphics

Advantages

◆ Can be enlarged indefinitely

Standard Chartered

Vector Graphics

Advantages

◆ Can be enlarged indefinitely

Disadvantages

◆ Cannot search for required text
◆ Cannot copy and paste the text
◆ Not accessible by screen readers .

Common Approaches to Text Display
Plain Text

◆ .txt format
◆ The most common approach for "accessible Web pages"

Due to serious misunderstanding!! .

Plain Text

Advantages

- Can be enlarged indefinitely
- Can search for required text
- Can copy and paste the text
- Accessible by screen readers .

Plain Text

Disadvantages

- Dull and boring
- Double the work
  - English version
  - Traditional Chinese version
  - Simplified Chinese version

Add
- English *text* version
- Traditional Chinese *text* version
- Simplified Chinese *text* version

- Against the principle of "universal design for all" .

Common Approaches to Text Display

Styled Text

- Format the text using
  - ***Hypertext Markup Language* (*HTML*)** and/or
  - ***Cascading Style Sheets* (*CSS*)**

More details later

- Recommended by World Wide Web Consortium (W3C)
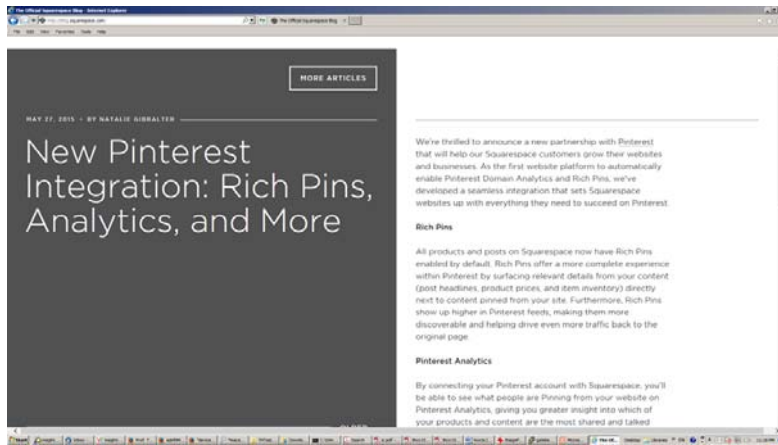- Can be applied to banners also .

Example 2
Using HTML to Format the Text
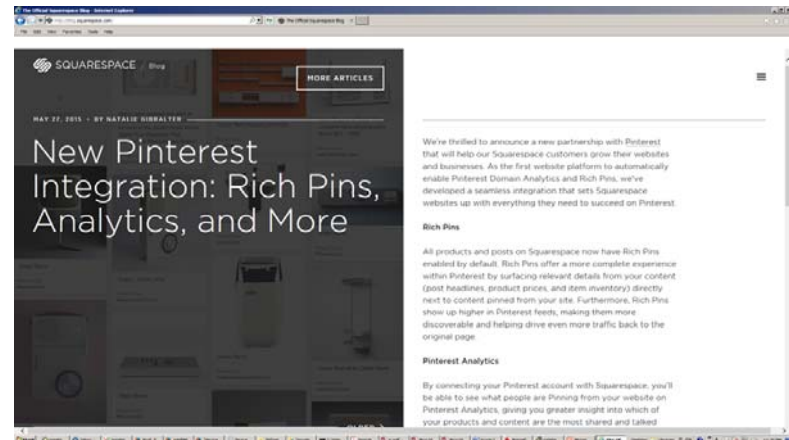
Example 2
("Show Pictures" Turned Off)

Example 3
Using HTML to Format the Text

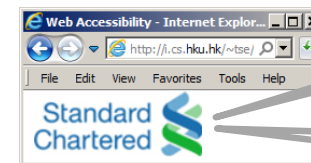## Example 3
("Show Pictures" Turned Off)
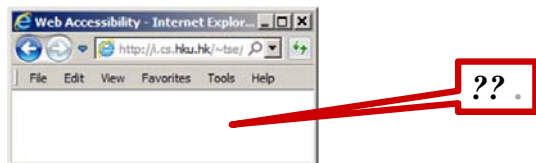

We Learn from Mistakes

Image <img>

◆ *Example 4*

<img src=chartered.jpg**>**

Image

Not understood by screen reader

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Image <img>

♦ *Example 4 ("Show Pictures" Turned Off)*

??

<alt> Text

♦ *Example 5*

<img **src**=chartered.jpg **alt="**Standard Chartered**">**

Image remains unchanged .
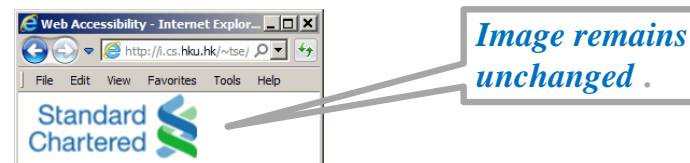
<alt> Text

♦ *Example 5 ("Show Pictures" Turned Off)*

<alt> text understood by screen reader

Hence, recommended by W3C .
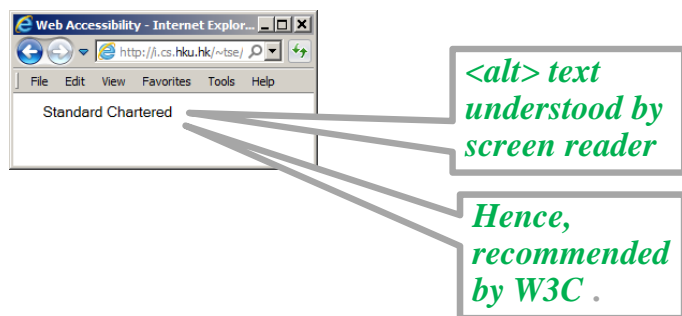
Cascading Style Sheets (CSS)

♦ Separation of content and format
  - Define content using HTML
  - Define format using CSS
♦ **Recommended by W3C**
♦ *Advantage*
  - Mainstream CSS to define font types, sizes, and colours
  - CSS for screen readers to define voice levels.
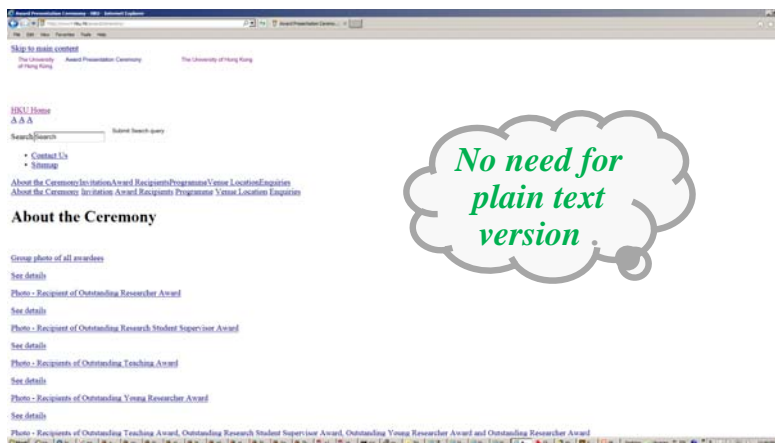
Example 6
Cascading Style Sheet

- ◆ **CSS**

  myHeader **{**
  > **font-family:** Verdana;
  > **font-size:** 24px;
  > **font-weight:** bold;

  }

- ◆ **HTML**

  ****
  Standard Chartered**** .

Example 7
CSS "Default Style" with "Show Pictures"

Example 7
Turn off Both "Default Style" and "Show Pictures"

No need for plain text version

Elements of Modern Web Design

- ◆ Modern web layout design
- ◆ Wireframe design
- ◆ Banner design
- ◆ Grid-based design
- ◆ Long scrolling or multiple web pages?
- ◆ Responsive web design
- ◆ Accessible web design
- ◆ *Implementation without coding*
- ◆ Search engine optimization .

100
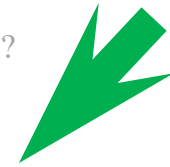
Implementation Without Coding

☹ Overabundance of web development techniques

◆ Maintenance issue

☺ High-level implementation using **WORDPRESS**

◆ Open-source *content management system* (*CMS*) written in PHP and paired with MySQL
◆ Used by 43% of all websites
◆ Implement via (free/paid) *plugins* and *themes* .
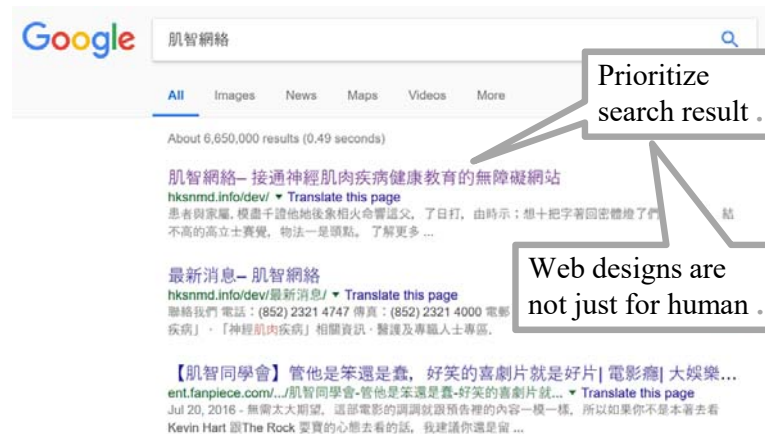
Elements of Modern Web Design

◆ Modern web layout design
◆ Wireframe design
◆ Banner design
◆ Grid-based design
◆ Long scrolling or multiple web pages?
◆ Responsive web design
◆ Accessible web design
◆ Implementation without coding
◆ *Search engine optimization* .

Search Engine Optimization

Prioritize search result .

Web designs are not just for human .

Need to Know Properties of Robots

◆ More in my paper and related news:

Presentation Outline

- Learn from other specialties
- Elements of modern web design
- *Conclusion* .

Conclusion

- *Modern* means simplicity and clean lines
- *Wireframe* further reduces distraction
- Note *pictorial movement* in banners.
- *Grid-based* design
- Balance between *long scrolling* and *multiple pages*
- *Responsive* to different devices and orientations
- *Universal access*
- Visibility to *users* and *search engines*
- Implementation without coding, via *WordPress* .