CISC 1600, Lecture 2.1
Markup Languages, DOM

Topics:

Markup language definition

Markup language types

Key terminology

HTML Document Object Model (DOM)

Question:

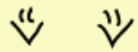
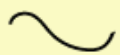
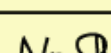
- What's a language?
  - Verbal languages
  - Written languages
  - Visual languages
  - Programming languages
  - Markup languages
- Simple Answer: "A medium for sharing/exchanging information".

Markup Languages (defined).

From: http://en.wikipedia.org/wiki/Markup_language

“A markup language is a system for annotating a document in a way that is syntactically distinguishable from the text. The idea and terminology evolved from the "marking up" of paper manuscripts, i.e., the revision instructions by editors, traditionally written with a blue pencil on authors' manuscripts.”

Editing/Proofreading Symbols (a type of markup language)

Symbol	Meaning	Example
	**Insert a comma**	A stitch in time saves nine.
	**Apostrophe or single quotaion mark**	The woodchuck couldnt chuck wood.
	**Insert something**	An Apple a keeps the doctor away.
	**Use double quotation**	The better to see you with. said the wolf.
	**Use a period here**	Mary had a little lamb
	**Delete**	The cow jumped over the full moon.
	**Transpose elements**	Jack over jumped the candlestick.
	**Close up this space**	The win dows on the bus goes up and down.
	**A space is needed here**	And they all lived happly everafter.
	**Begin new paragraph**	"Knock, knock." "Who's there?"
	**no paragraph**	"I'll huff and puff" said the wolf. "And I'll blow your house down!"

Markup Languages are not the same as programming languages

- Programming languages are used to create programs that control the behavior of a machine.
  - C/++/#, Java, Processing, Python, PHP, Ruby, Haskel

- Markup languages are used for adding information (sometimes called metadata) to **text** in a way which is distinguishable from that text.
  - GenCode, LaTeX, SGML, XML, HTML

- It is possible to embed programming language statements / commands into a markup language.

Types of Markup

1. Presentational markup: Used by traditional word-processing systems, to create a WYSIWYG effect. Examples: add a line break, bold a word, change font style or color.
2. Procedural markup: Provides instructions for programs that are to process the text. Examples: add an image, video, or link to a document.
3. Semantic markup: Used to label parts of a document and attach additional meaning to those sections. Examples: define the title of a document or declaring that a section of text is an address.

Motivation: Plain Text

Computer and Information Science CISC 1600: Introduction to Multimedia Computing Fall, 2015 (3 hours, 3 credits) Description. Introduction to multimedia topics, including: web design, game design, animation, data visualization, simulation and robotics. Introduction to multimedia hardware and software, including game boxes. Human interface design and input using multimedia devices. Graphical and other forms of output to multimedia devices. Emphasis on design and creation of web pages with HTML and cascading style sheets; interactive, graphical web-based programs; simple computer games, movies and narratives. Computer-based sound editing. Introduction to agent-based programming for simulations and robotics. Uses of multimedia in industry. Hands-on exercises. Instructor: Prof. Michael Mandel. Email: mim@sci.brooklyn.cuny.edu Phone: 718-951-5600 x2053 Office: 2232N Web: http://mr-pc.org Office hours: Wednesdays 3:00–6:00 pm and by appointment Meetings. Wednesday, 6:30–9:10 pm, IH-5301 Prerequisites. [None] Textbook. There is no textbook for the course. Online Resources. Slides, labs, assignments, and readings will be posted on the course website: http://mr-pc.org/teaching/cisc1600 Grading. The course will be graded on a curve, with the final grade computed by combining individual assignments as follows: Participation / attendance Projects (x4) Homeworks (x2) Midterm Final exam 10% 40% 8% 12% 30% All homeworks and projects should be turned in at the beginning of the corresponding class period. Attending class is mandatory and attendance will be taken at the beginning of every meeting. This rule does not apply to absences due

Text augmented with **presentational** markup

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Instructor: Prof. Michael Mandel.

Email: `mim@sci.brooklyn.cuny.edu`
Phone: 718-951-5600 x2053
Office: 2232N
Web: `http://mr-pc.org`
Office hours: Wednesdays 3:00–6:00 pm and by appointment

Meetings. Wednesday, 6:30–9:10 pm, IH-5301

Prerequisites. [None]

Textbook. There is no textbook for the course.

Online Resources. Slides, labs, assignments, and readings will be posted on the course website:
`http://mr-pc.org/teaching/cisc1600`

Markup Languages
Key Terminology

Tag: A markup that constitutes an instruction to an interpreting program, and is not part of the text being marked up.

Element: If a document can be converted into a “tree”-like representation, as HTML can, then an element is a “node” in the “tree”.

Attribute: A markup signifying a property of an element.

Markup Languages
Key Terminology: Tag

Tag: A markup that constitutes an instruction to an interpreting program, and is not part of the text being marked up.

- In HTML, tags begins with "<" and ends with ">"
- They come in three flavors
  - start-tags, for example
  - end-tags, for example
  - and empty-element tags, for example

Markup Languages
Key Terminology: Element

Element: If a document can be converted into a “tree”-like representation, as HTML can, then an element is a “node” in the “tree”.

- In HTML, an element begins with a start-tag and ends with a matching end-tag
  - or consists only of an empty-element tag
- Characters between the start- and end-tags are the element's content
  - May include other elements, which are called child elements
  - An example of an element is Hello, world.
  - Another is

Markup Languages
Key Terminology: Attribute

Attribute: A markup signifying a property of an element.

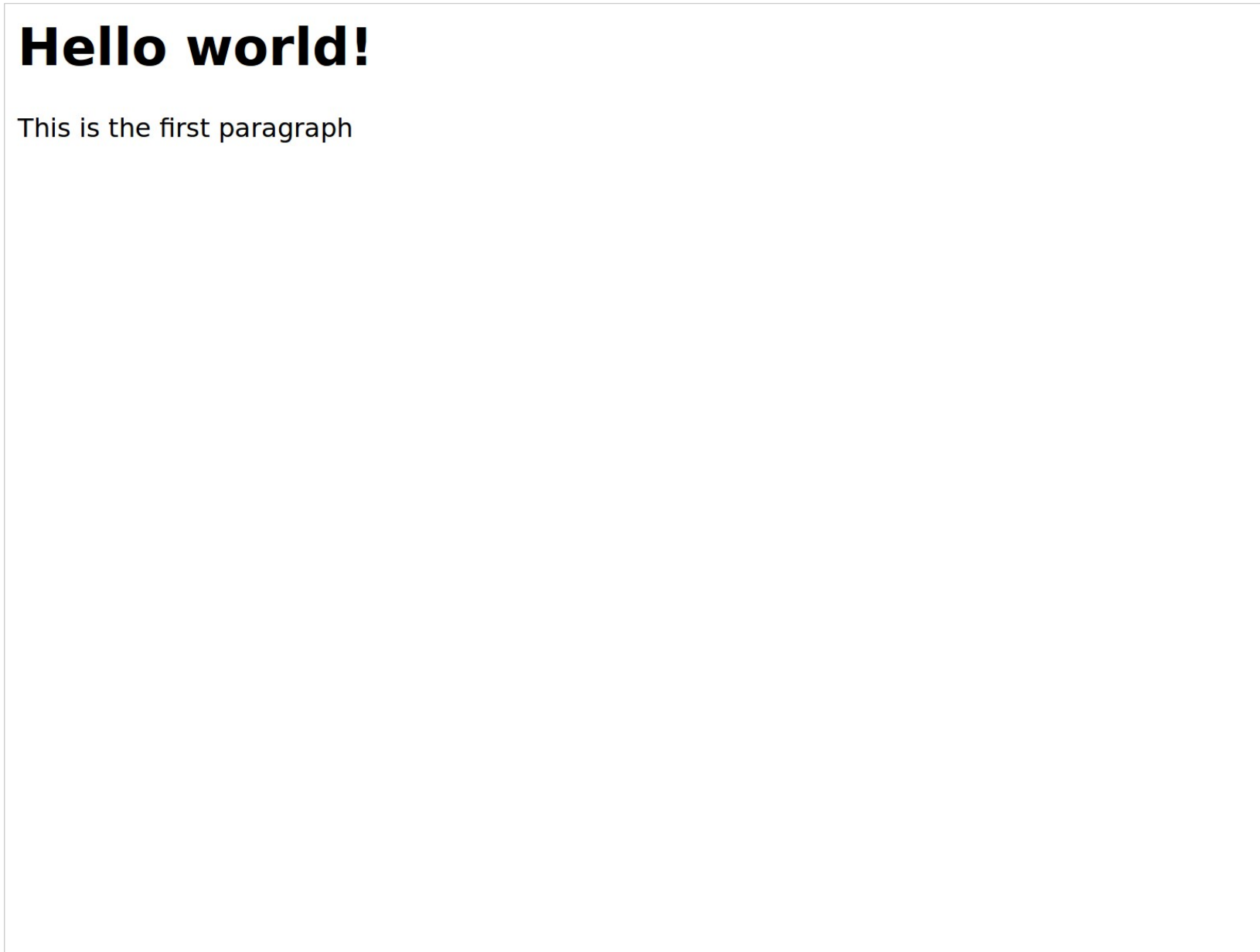
- In HTML, attributes consist of a name/value pair within a start-tag or empty-element tag

- Here the element img has two attributes, src and alt

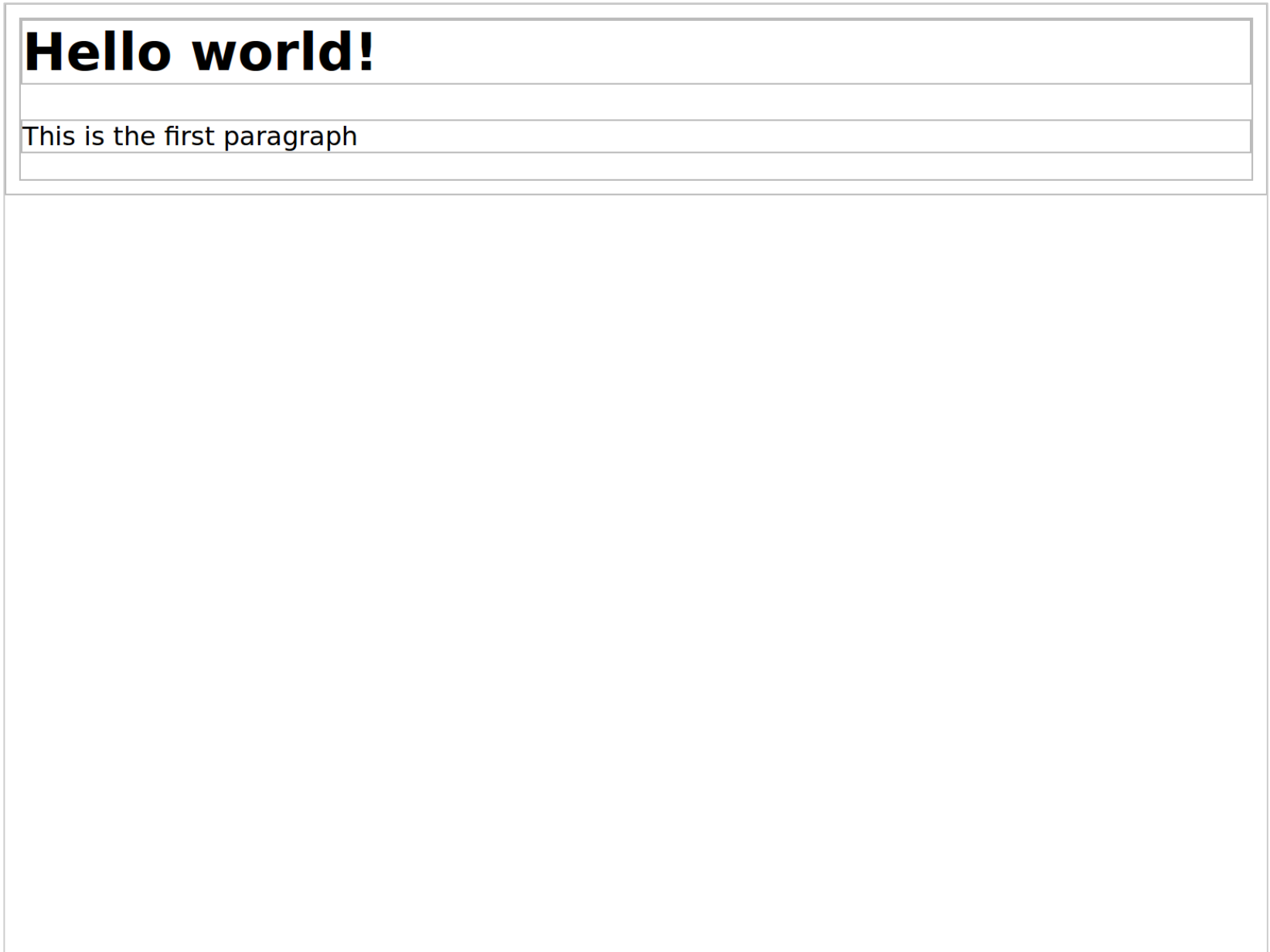
HTML5 Skeleton

```
<!DOCTYPE html>
<html>
<head>
   <meta charset="utf-8" />
   <meta name="viewport" content="width=device-width, initial-scale=1" />
   <title>Prof Mandel's App</title>
</head>
<body>
   <h1>Hello world!</h1>
   <p>This is the first paragraph</p>
</body>
</html>
```

Every HTML element is a box



Every HTML element is a box



Example of boxes

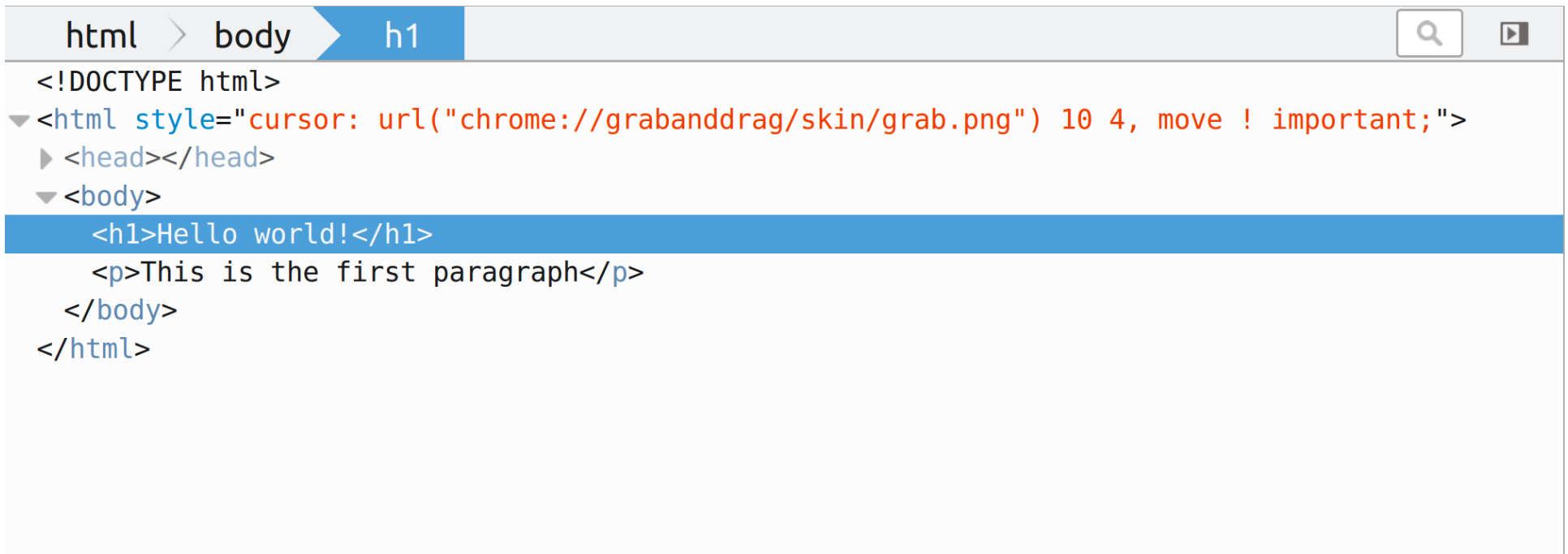
Explore boxes with developer tools on:

http://mr-pc.org/teaching/cisc1600/lec01.html

Document Object Model (DOM)

- A web browser interprets your HTML
  - And builds a model of the page, the DOM
- The DOM is what is rendered to the screen
- The DOM can be manipulated by CSS and javascript after it is built
- When building a page, consider its structure first, i.e., the DOM

Example DOM


html
body
h1
<!DOCTYPE html>
<html style="cursor: url("chrome://grabanddrag/skin/grab.png") 10 4, move ! important;">
<head></head>
<body>
<h1>Hello world!</h1>
This is the first paragraph
</body>
</html>

Example DOM