

SGI

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Temario - Lab

- Introduction
- HTML5 + CSS + Javascript (1 sessions)
- WebGL (3 sessions)
- SW RV (1 sessions)
- SW RA (1 sessions)
- Project (2 sessions)

Entregas

- 1 multimedia project
(HTML5+CSS+Javascript+webGL)
- 1 project RV/RA

HTML5

- New Elements
- New Attributes
- Full CSS3 Support
- Video and Audio
- 2D/3D Graphics
- Web Application

http://www.w3schools.com/html/html5_intro.asp

What is HTML5

- HTML5 is the new standard for HTML (since 2014).
- The previous version of HTML, HTML 4.01, came in 1999. The web has changed a lot since then.
- The major browsers support many of the new HTML5 elements and APIs.
- Chrome, Safari, Firefox, Opera
- Internet explorer 9+ (but check carefully!)

Minimum HTML5 Document

```
<!DOCTYPE html>  
<html>  
  <head>  
    <title>Title of the document</title>  
  </head>  
  
  <body>  
    The content of the document.....  
  </body>  
  
</html>
```

HTML5 - New Features

- The <canvas> element for 2D drawing
- The <video> and <audio> elements for media playback
- New content-specific elements, like <article>, <footer>, <header>, <nav>, <section>
- New form controls, like calendar, date, time, email, url, search

New Semantic/Structural Elements

Tag	Description
<details>	Defines additional details that the user can view or hide
<figure>	Specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.
<figcaption>	Defines a caption for a <figure> element
<footer>	Defines a footer for a document or section
<header>	Defines a header for a document or section
<mark>	Defines marked/highlighted text
<nav>	Defines navigation links
<progress>	Represents the progress of a task
<time>	Defines a date/time

http://www.w3schools.com/html/html5_semantic_elements.asp

New media elements

Tag	Description
<audio>	Defines sound content
<video>	Defines a video or movie
<source>	Defines multiple media resources for <video> and <audio>
<embed>	Defines a container for an external application or interactive content (a plug-in)
<track>	Defines text tracks for <video> and <audio>

The new <canvas> Element

Tag	Description
<canvas>	Used to draw graphics, on the fly, via scripting (usually JavaScript)



The new <canvas> Element

- The <canvas> element is only a container for graphics. You must use a script to actually draw the graphics.
- Canvas has several methods for drawing paths, boxes, circles, characters, and adding images.

Inserting a canvas

- Always specify an id attribute (to be referred to in a script), and a width and height attribute to define the size of the canvas.
- You can have multiple <canvas> elements on one HTML page.

```
<canvas id="myCanvas" width="200" height="100"></canvas>
```

- To add a border:

```
<canvas id="myCanvas" width="200" height="100"  
style="border:1px solid #000000;">  
</canvas>
```

Draw Onto The Canvas With JavaScript

```
<!DOCTYPE html>
<html>
<body>

<canvas id="myCanvas" width="200" height="100"
style="border:1px solid #c3c3c3;">
Your browser does not support the HTML5 canvas tag.
</canvas>

<script>

var c=document.getElementById("myCanvas");
var ctx=c.getContext("2d");
ctx.fillStyle="#FF00DD";
ctx.fillRect(170,0,10,20);

</script>

</body>
</html>
```

The `getContext("2d")` object is a built-in HTML5 object, with many properties and methods for drawing paths, boxes, circles, text, images, and more.

The `fillStyle` property can be a CSS color, a gradient, or a pattern

[example](#)

Writing text in a canvas

- font - defines the font properties for text
- fillText(text,x,y) - Draws "filled" text on the canvas
- strokeText(text,x,y) - Draws text on the canvas (no fill)
- JavaScript: [canvas_text.html](#)

```
var c=document.getElementById("myCanvas");  
var ctx=c.getContext("2d");  
ctx.font="30px Arial";  
ctx.fillText("Hello World",10,50);
```

images and transformations

- ◉ drawImage(*image*,*x*,*y*)
 - > [example](#)

Canvas transformations

Method	Description
<code>scale()</code>	Scales the current drawing bigger or smaller
<code>rotate()</code>	Rotates the current drawing
<code>translate()</code>	Remaps the (0,0) position on the canvas
<code>transform()</code>	Replaces the current transformation matrix for the drawing
<code>setTransform()</code>	Resets the current transform to the identity matrix. Then runs <code>transform()</code>

Canvas reference

- http://www.w3schools.com/tags/ref_canvas.asp

Drag & Drop

https://www.w3schools.com/html/html5_draganddrop.asp

- Any element can be draggable.
- To make an element draggable, set the *draggable* attribute to true:
- *ondragstart* attribute calls a function, to specify what should happen when the element is dragged
- *dataTransfer.setData()* method sets the data type and the value of the dragged data
- *ondragover* event specifies where the dragged data can be dropped
- *ondrop* attribute calls a function
- [Drag_drop.html](#)
- [Example](#) (w3schools)

Video

- `<video>`
- The control attribute adds video controls, like play, pause, and volume.
- The `<video>` element allows multiple `<source>` elements. `<source>` elements can link to different video files. The browser will use the first recognized format.

```
<video width="320" height="240" controls="controls">  
  <source src="movie.mp4" type="video/mp4">  
  <source src="movie.ogg" type="video/ogg">  
Your browser does not support the video tag.  
</video>
```

Audio

- Up to now, most audio files are played through a plug-in (like flash)
- The `<audio>` element allows multiple `<source>` elements. `<source>` elements can link to different audio files. The browser will use the first recognized format.

```
<audio controls="controls">  
  <source src="horse.ogg" type="audio/ogg">  
  <source src="horse.mp3" type="audio/mpeg">  
Your browser does not support the audio element.  
</audio>
```

HTML5 new input types

- color
- date
- datetime
- datetime-local
- email
- month
- number
- range
- search
- tel
- time
- url
- week

url types

HTML styles - CSS

- CSS (Cascading Style Sheets) is used to style HTML elements.
- Inline Styles
 - An inline style can be used if a unique style is to be applied to one single occurrence of an element
- Internal Style Sheet
 - if one single document has a unique style. Internal styles are defined in the `<head>` section of an HTML page, by using the `<style>` tag
- External Style Sheet
 - With an external style sheet, you can change the look of an entire Web site by changing one file.

Internal Style Sheet

```
<!DOCTYPE html>
<html>
<head>
<style type="text/css">
body
{
background-color:#d0e4fe;
}
h1
{
color:orange;
text-align:center;
}
```

```
p
{
font-family:"Times New Roman";
font-size:20px;
}
</style>
</head>

<body>

<h1>CSS example!</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

External Style Sheet

```
<head>  
<link rel="stylesheet" type="text/css" href="mystyle.css">  
</head>
```


Exercise 1

- Create a web page with HTML5 to make a puzzle.
- Divided an image in 4 or more parts
- Destination a container with the same size as the initial image.
- Use drag and drop to put each piece in the right position of the puzzle area (container)

Exercise 2

- Create a website with a canvas to draw in 2D
- Capture mouse events on the canvas to draw a rectangle with one vertex where the user clicks the mouse and the opposite vertex where the user releases the mouse button.