HTML5 & CSS3

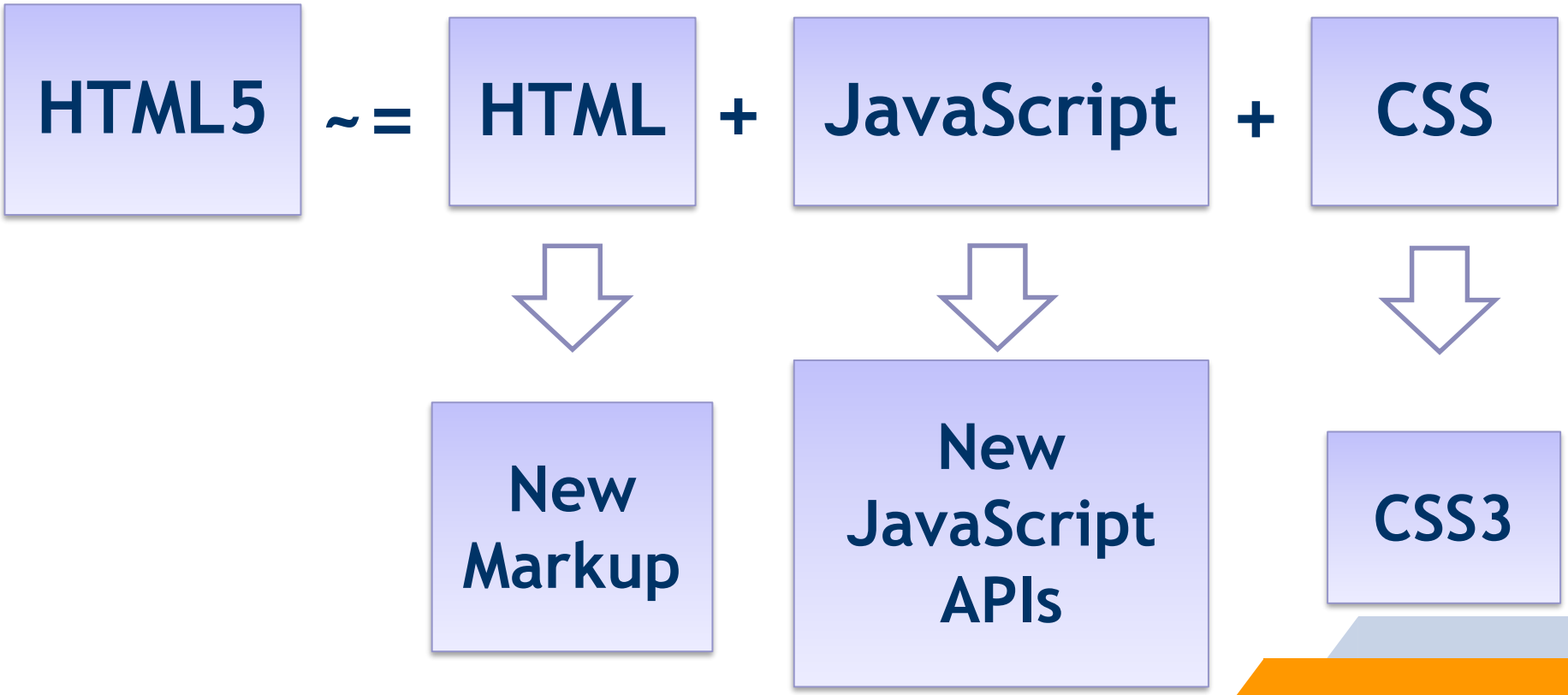
A chance to Do things Differently

Eng. Niveen Nasr El-Den
SD & Gaming CoE
iTi

Day 1

What is HTML5

HTML5 is a Constellation of technology



HTML5

A Record of Tomorrow

HTML5 includes new elements for
better structure,
better form handling,
drawing, and
media content

Overview of Enhancements

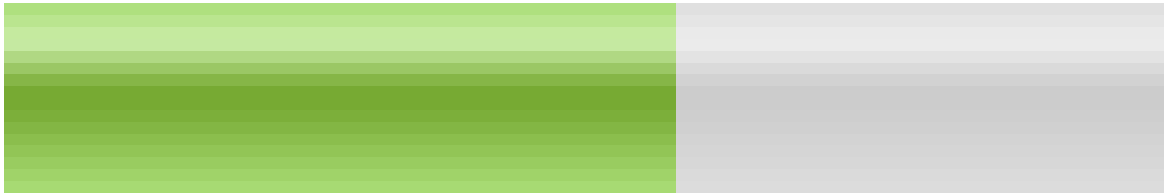
- Structure and Semantics
- Forms
- Microdata
- CSS
- Embedded Content and Multimedia
- DOM APIs drag and drop
- Web Storage
- Web worker
- …

New Elements

<meter>

- Representing scalar measurements or fractional values
- Meter is also known as a gauge
- It should not be used to indicate progress
- Attributes:
  - **value**
  - **min**
  - **max**
  - **high**
  - **low**
  - **optimum**

Using <meter>



```
<meter value="0.6“
        min=“”
        max=“”
        optimum =" “
        low=" “
        high ="0.6“ >
        Medium
 </meter>
```

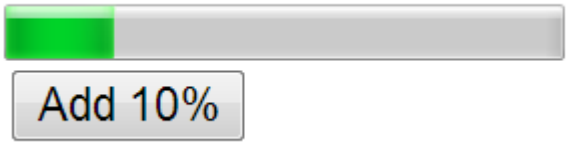
<progress>

- Show completion progress of a task
- Progress bars are widely used in other applications
- Works with scripted applications

- Attributes
  - value : Specifies how much of the task has been completed
  - max : Specifies how much work the task requires in total

- Useful for:
  - Indicate loading progress of an AJAX application
  - Show user progress through a series of forms
  - Making impatient users wait

Using <progress>




```
<progress max=“20”>
                Step 3 of 6
        </progress>

<progress value="0.5“ >
  Half way!
</progress>

<progress id=“pBar" max="100" value="0">
</progress>
```

<mark>

- Marked or Highlighted text
- Indicates point of interest or relevance
- Useful for:
  - Highlighting relevant code in a code sample
  - Highlighting search keywords in a document

Using <mark>

The highlighted part below is where the error lies:

```
var i: Integer;
begin
   i := 1.1;
end.
```

- The highlighted part below is where the error lies:
  <pre><code>var<var> i</var>: Integer;
  begin
     i := <mark>1.1</mark>;
  end.</code></pre>

is used for computer code

is used to indicate a variable within code.

Forms

Other Form's Controls

- HTML 4 controls are too limited
- Several new types added
- New Input type:
  - color
  - date
  - datetime
  - datetime-local
  - time
  - month
  - week
  - datalist
  - email
  - number
  - range
  - search
  - tel
  - url

http://www.coreservlets.com/html5-tutorial/input-types.html

Other Form’s Controls

- <input type="tel">
- <input type="time">
- <input type="color">
- <input type="month">
- <input type="search">
- <input type="number">
- <input type="email">
- <input type="range">
- <input type="date">
- <input type="time">
- <input type="url">
- …

Form’s new Attributes

- <input type=“” required>
  - Required: We also have required attribute to mark this field as mandatory.
- <input type=“” autocomplete="off">
  - Autocomplete: tells the browser whether or not the value of this input should be saved for future, should be used to protect sensitive user data
- <input type=“” pattern=“[0-9][A-Z]{3}”>
  - Pattern: custom validate, A part number is a digit followed by three uppercase letters.
- input type=“” placeholder=“”>
  - Placeholder: add a hint inside the text-field, but where the hint automatically disappears when clicking inside it.

Form Validation

Form Validation

- We can check Form Validation using
  - CSS rule Validation
  - Custom Validation
  - Built-in Form Validation

Semantics & Structure

Structured Data

- Search engines use structured data to
  - understand the content of the page
  - gather information about the web and the world in general.
  - enable special search result features and enhancements like appear in a graphical search result.

https://developers.google.com/search/docs/guides/intro-structured-data?visit_id=636758461413700902-4066872858&rd=1

- Supported formats
  - JSON-LD
    - https://json-ld.org/
  - Microdata
  - RDFa

https://developers.google.com/search/docs/guides/sd-policies

Microdata

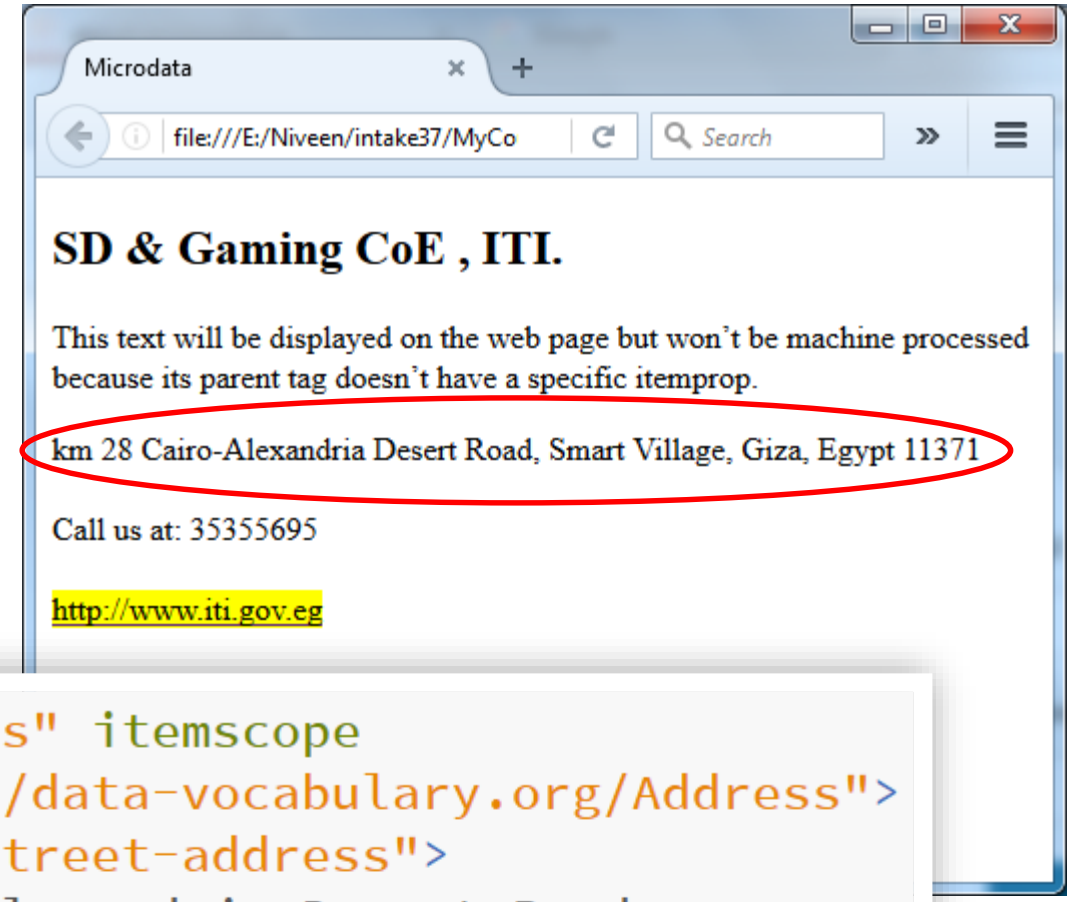
https://www.w3.org/TR/microdata/

- Microdata a new lightweight semantic meta-syntax.
- Microdata defines five HTML attributes that can be applied to any HTML5 tag.
- It helps search engines and other applications better understand our content and display it in a useful, relevant way.
- It gives us a whole new way to *add extra semantic information and extend HTML5*.
- It provides a meaning of an Item.

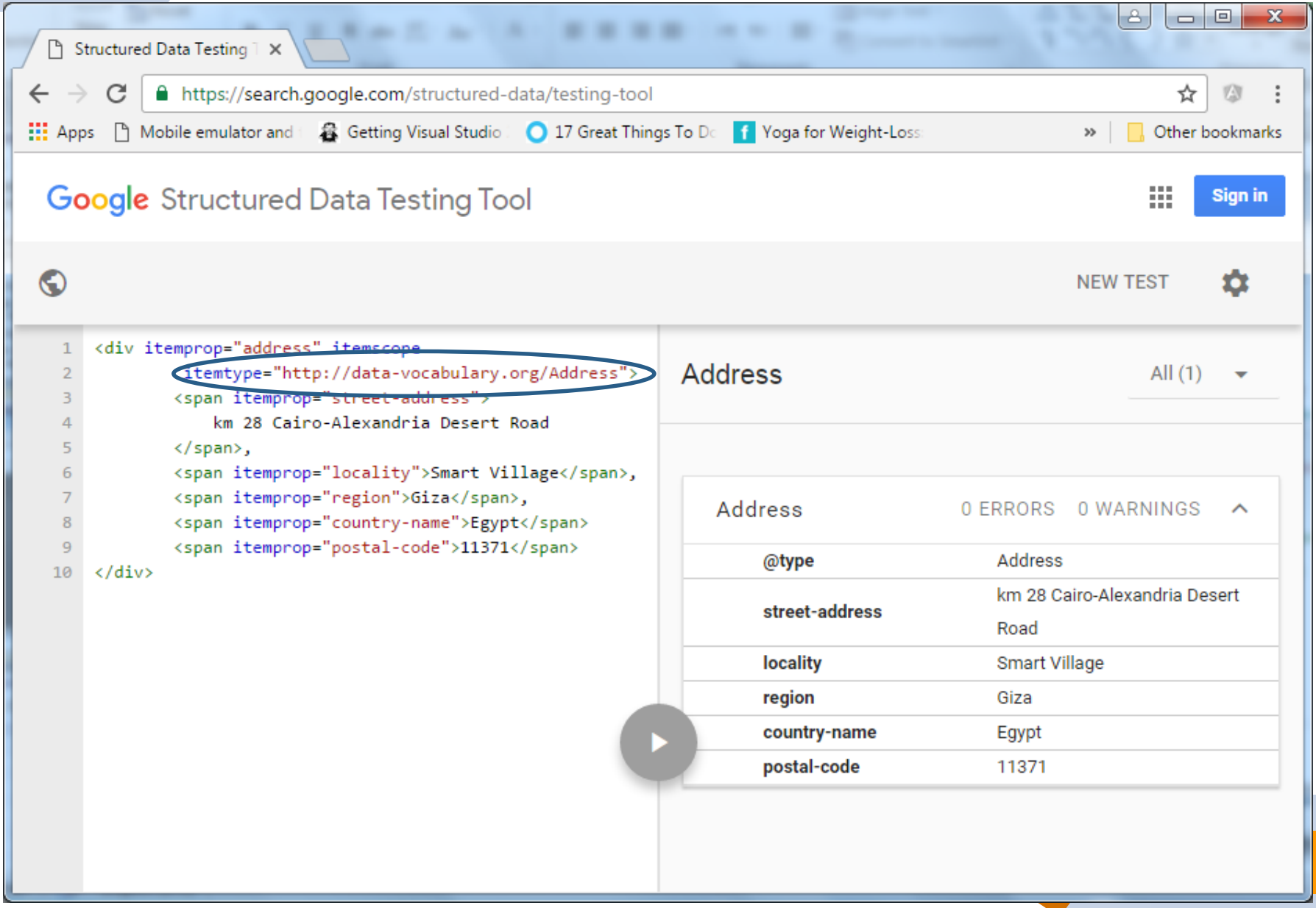
Microdata

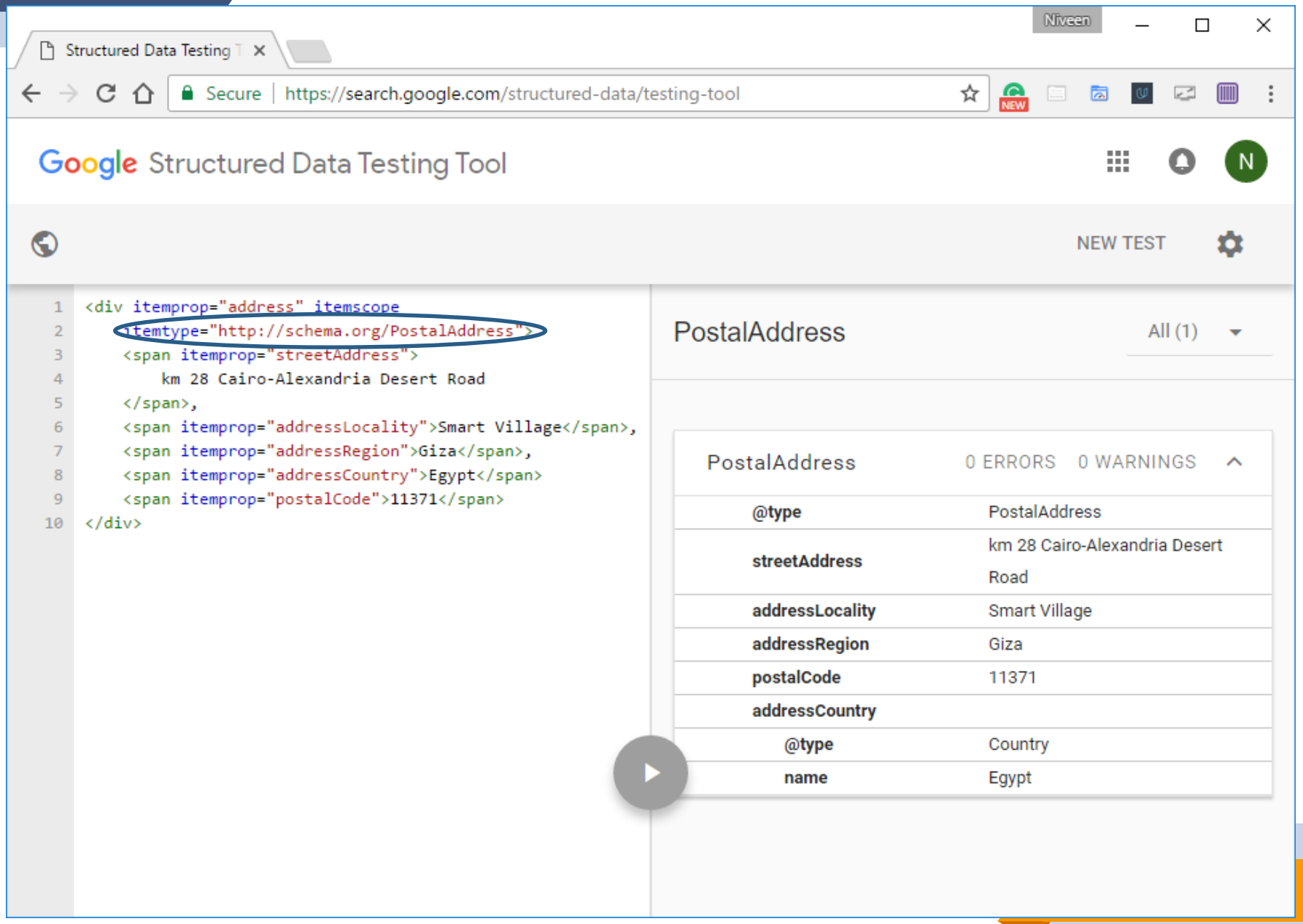
- Instead of elements, these name-value pairs are defined via attributes:
  - **itemscope**
    - Indicates the element is a microdata element and its child elements are part of its microdata format.
  - **itemprop**="property-name"
    - An individual data element that adds a *property* to a microdata item
  - **itemtype=**"URL"
    - Defines the vocabulary to be used by the microdata format.

http://schema.org/docs/gs.html
http://data-vocabulary.org/




```
<div itemprop="address" itemscope
     itemtype="http://data-vocabulary.org/Address">
    <span itemprop="street-address">
        km 28 Cairo-Alexandria Desert Road
    </span>,
    <span itemprop="locality">Smart Village</span>,
    <span itemprop="region">Giza</span>,
    <span itemprop="country-name">Egypt</span>
    <span itemprop="postal-code">11371</span>
</div>
```


Structured Data Testing
https://search.google.com/structured-data/testing-tool
Apps
Mobile emulator and
Getting Visual Studio
17 Great Things To D
Yoga for Weight-Loss
Other bookmarks
Google Structured Data Testing Tool
Sign in
NEW TEST
1 <div itemprop="address" itemscope
2 itemtype="http://data-vocabulary.org/Address">
3
4 km 28 Cairo-Alexandria Desert Road
5 ,
6 Smart Village,
7 Giza,
8 Egypt
9 11371
10
Address
All (1)
Address
0 ERRORS
0 WARNINGS
@type
Address
street-address
km 28 Cairo-Alexandria Desert Road
locality
Smart Village
region
Giza
country-name
Egypt
postal-code
11371


Niveen
Structured Data Testing
Secure
https://search.google.com/structured-data/testing-tool
Google Structured Data Testing Tool
N
NEW TEST
1 <div itemprop="address" itemscope
2 itemtype="http://schema.org/PostalAddress">
3
4 km 28 Cairo-Alexandria Desert Road
5 ,
6 Smart Village,
7 Giza,
8 Egypt
9 11371
10
PostalAddress
All (1)
PostalAddress
0 ERRORS
0 WARNINGS
@type
PostalAddress
streetAddress
km 28 Cairo-Alexandria Desert Road
addressLocality
Smart Village
addressRegion
Giza
postalCode
11371
addressCountry
@type
Country
name
Egypt

Demo

Developers can test pages containing Microdata using Google's Rich Snippet Testing Tool

HTML 5 Microdata

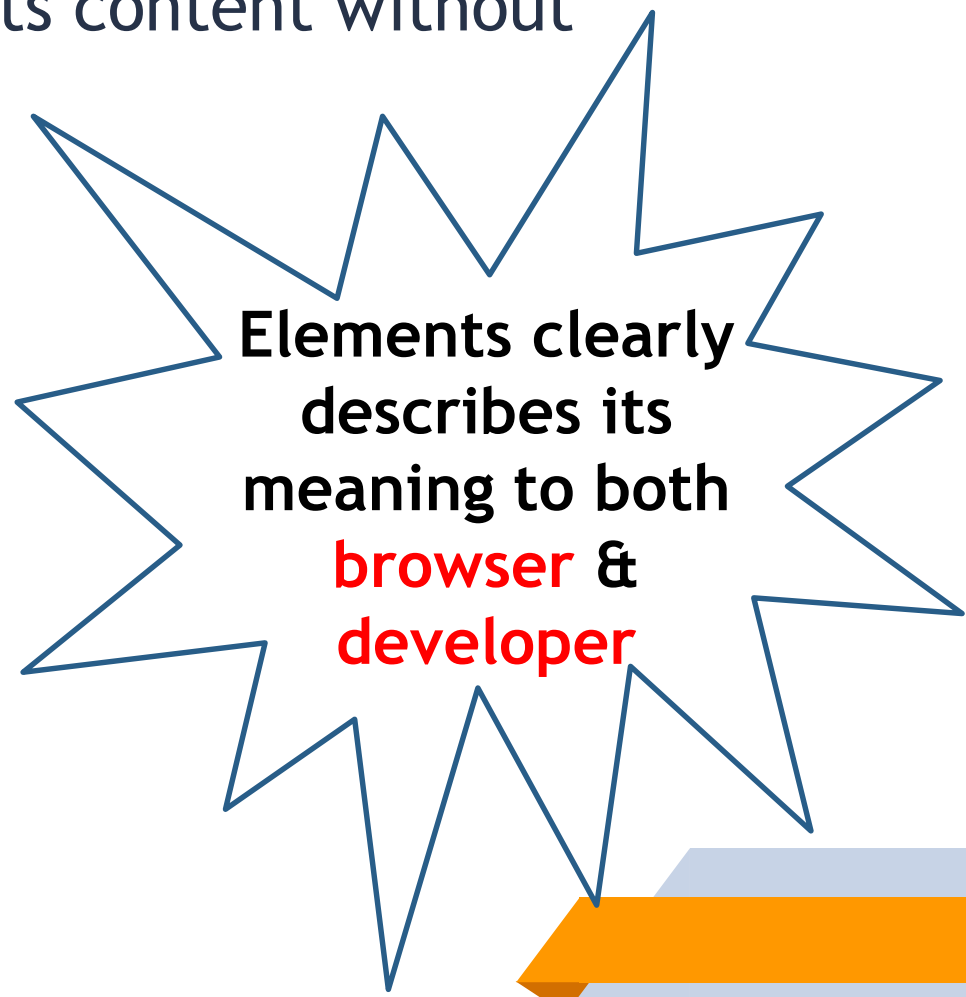
http://www.google.com/webmasters/tools/richsnippets

HTML5 data Attributes

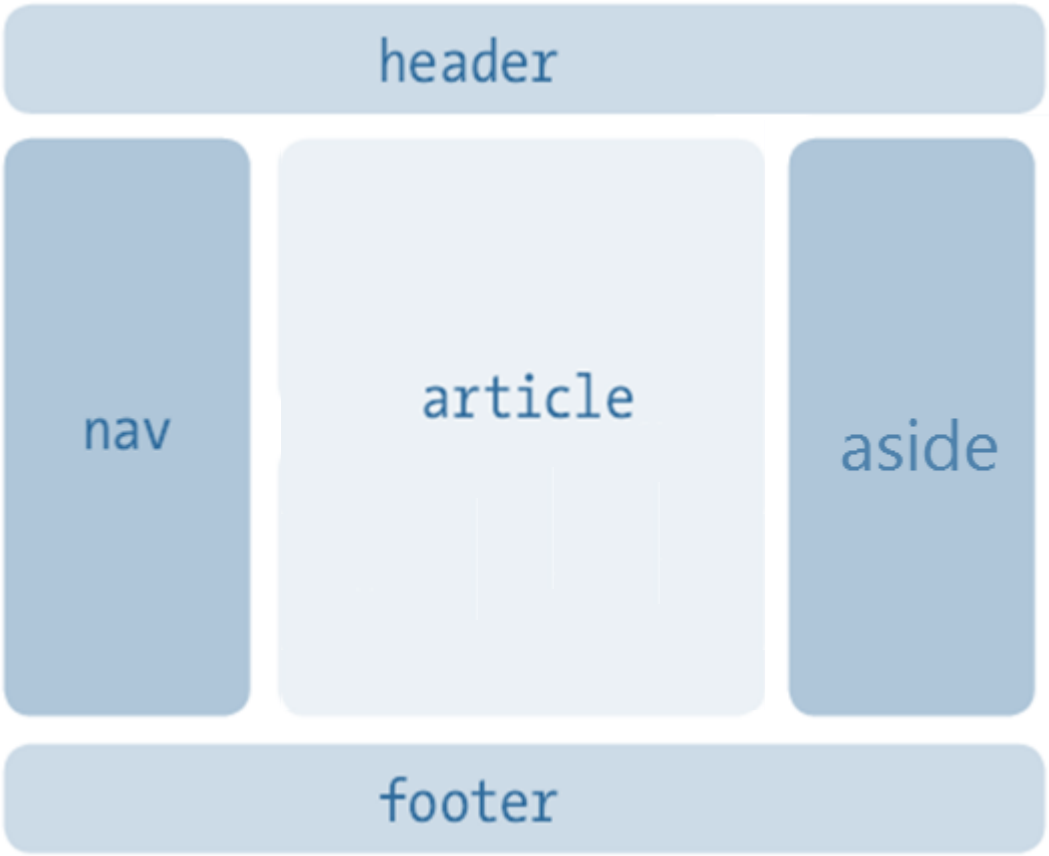
- Store some extra information that doesn’t have any visual representation.
- The name of a custom data attribute begins with data-* , and must be at least one character long after this prefix.
- The attribute value can be any string that contains only [a-z], [0-9], (-), (.), (:), (_).
- It should not contain ASCII capital letters (A to Z).

New Semantic Elements

- Markups that describe its content without presenting it e.g.
  - <header>
  - <hgroup>
  - <nav>
  - <section>
  - <article>
  - <aside>
  - <footer>
  - etc.



Structure



Embedded Content & Multimedia

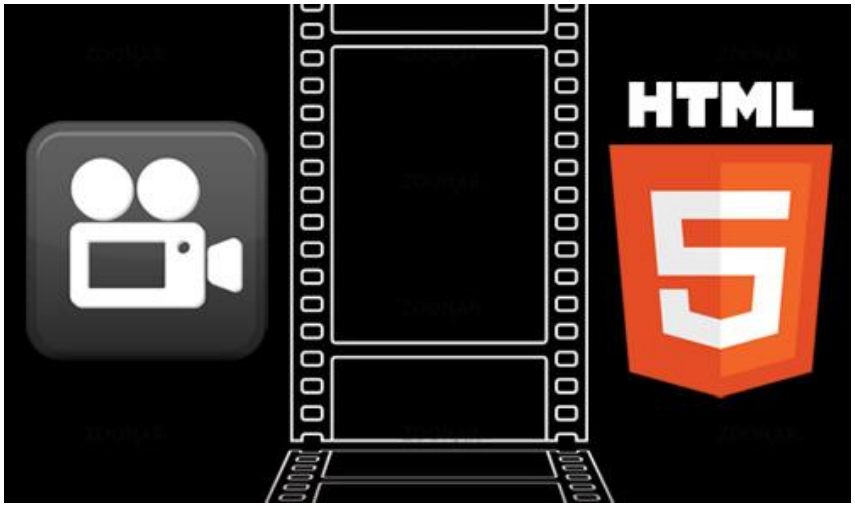
Multimedia

No need for plugin to play video and audio

HTML 5 will do it for you

Video & Audio

- HTML5 offers the ability to easily embed media into HTML documents.
- Media playback can be controlled via JavaScript and media events.



- Nothing to install.
- Works in all browsers and phones (adding native support to browsers).

Native Media format for HTML5

- Video
  - webM
  - H.264(mp4)
  - oggTheora
- Audio
  - wav
  - mp3
  - oogVorbis

- No common format to use.
- We have to encode in different multiple formats.
- Need of converter to convert into different format.

Native Video Browser Support

https://en.wikipedia.org/wiki/HTML5_video

VP8 (WebM)	✗	6.0	4.0	5.1	10.5
H.264 (MP4)	9 beta	6.0	4.0	3.1	24
Ogg Theora	✗	3.0	3.5	✗	10.5
					

Native Audio Browser Support

WAV	✗		3.6	5.1	10.5
MP3	9 beta	6.0	3.6	5.1	10.5
Ogg Vorbis	✗	6.0	3.6	✗	10.5
					

Media Attributes

Attribute	Description
src	Specifies the URL of the **media** source file
controls	Specifies whether or not to display **media** controls (such as a play/pause button etc).
autoplay	Specifies whether or not to start playing the **media** as soon as it has been loaded.
loop	Specifies whether to keep re-playing the **media** once it has finished.
poster=“”	display a frame of the **video** (as a .jpg, .png..)
width=“”	Specifies the width, in pixels, to display the **video**.
height=“”	Specifies the height, in pixels, to display the **video.**

- NOTE:
  - HTML5 isn’t extension for XHTML
    - There is no need to have a value for each attribute, otherwise set its value either to true or its name

Media Methods & Properties

Method	Description
load()	Re-loads the audio/video element
play()	Starts playing the audio/video
pause()	Pauses the currently playing audio/video

- controls
- loop
- autoplay
- played
- paused
- ended

- playbackRate
- currentTime
- duration
- src
- muted
- volume

https://developer.mozilla.org/en/docs/Web/Guide/Events/Media_events

GeoLocation

Geolocation

- The Geolocation API is one of the most exciting features of the new web standard.
- Geolocation is the art of figuring out where you are in the world and (optionally) sharing that information with people you trust.
- The ability to get device's geographic location.
- It is set to request location once or continually.

Geolocation Facts

- HTML5 uses this API for working with maps.
- It is a new property that is added to the existing DOM browser object **navigator**
- The user must agree to share their location, and can tell the browser to remember his choice.

Geolocation Requesting Pattern

- To get user's current location (once)
  - navigator.geolocation.getCurrentPosition(x[,y,z])
    - x: is the onSuccess callback function where a Position object is passed in as the only invocation argument. This Position object contains a coords object which, in turn, contains our latitude and longitude, etc.. values.
    - y: is the errorHandler callback function where the object passed to this handler has code and message properties as follows:
      - 0: UNKNOWN_ERROR
      - 1: PERMISSION_DENIED
      - 2: POSITION_UNAVAILABLE
      - 3: TIMEOUT
    - z: is the options object

Location Option

- enableHighAccuracy (Boolean)
  - Attempt to gather more accurate location coordinates
  - May not do anything and cause request to take longer
  - Default **false**
- timeout (msec)
  - Determines max time allowed to calculate location
  - Default is **no limit**
- maximumAge (msec)
  - Determines how old location value may be before an attempt to refresh coordinates
  - Default is **0** (immediate recalc)

Example

```
var options = {
  enableHighAccuracy: true,  //boolean (default: false)
  timeout: 10000,//00        // in ms (default: no limit)
  maximumAge: 1000          //  in ms (default: 0)
};

navigator.geolocation.getCurrentPosition(showPosition, positionError, options);

  function showPosition(position) {
    var coords = position.coords;
    console.log(coords.latitude);
    console.log(coords.longitude);
  }
```

```
function positionError(e){//error has code and message properties
  switch (e.code) {
    case 0: // e.UNKNOWN_ERROR -->error.UNKNOWN_ERROR
      console.log("The application has encountered an unknown error while trying\
      to determine your current location. Details: ")
      console.log(e.message);
      break;
    case 1: // e.PERMISSION_DENIED-->error.PERMISSION_DENIED
    //Permission denied - The user did not allow Geolocation
      console.log("You chose not to allow this application access to your location.");
      break;
    case 2: // e.POSITION_UNAVAILABLE--error.POSITION_UNAVAILABLE
    //Position unavailable - It is not possible to get the current location
      console.log("The application was unable to determine your location.");
      break;
    case 3: // e.TIMEOUT-->error.TIMEOUT
    //Timeout - The operation timed out
      console.log("The request to determine your location has timed out.");
      break;
  }
}
```

Geolocation Requesting Pattern

- To watch location change (continual)
  - navigator.geolocation.watchPosition(x[,y,z])
    - gets the user's current position and continually returns updated position.
  - navigator.geolocation.clearWatch()
    - used to stop "watchPosition()" running & execution.

Assignments