INFO 151
Web Systems and Services

Week 2 (T2)

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Overview

- In this session we will consider:
  - Creating Frames
  - Inline frames (<iframe>)
  - The use of frames
  - Forms
  - Data input methods in forms
  - Adding multimedia
  - The future of the WWW

Frames

Forms

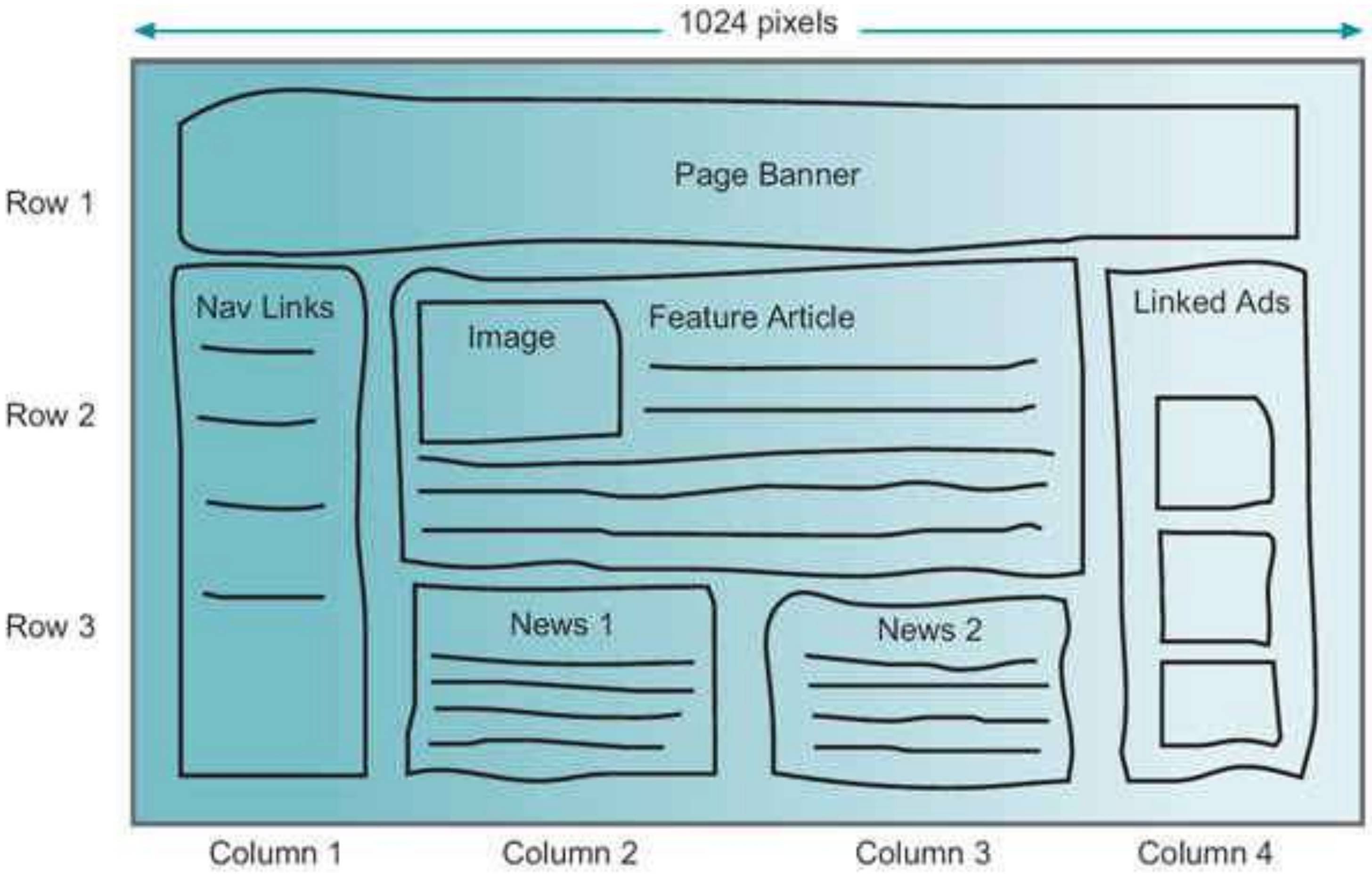
Adding Multimedia

Frames

Inline frames

Frames in Web-Page Layout

- Web-page creation requires the page layout to be designed
- As shown in the figure areas of a web-page can be allocated for specific uses
- Frames (and nested frames can be used) to build a web-page layout and navigation



Frames

- To create frames two HTML tags are used:
  - The <frameset> tag (which replaces the <body> tag in the HTML document)
  - The <frame> tag
- HTML support:
  - Frames and the <frameset> and <frame> tags are supported in HTML 4
  - The <frameset> and <frame> tags are not supported in HTML 5
  - Frames are ***deprecated*** in HTML 5
  - The frames element has been replaced in HTML 5 by HTML Layouts with CSS
- Important: to validate a web-page with frames:
  - It is essential that the <!DOCTYPE> is set to either
  - HTML Frameset DTD (or)
  - XHTML Frameset DTD

<frameset>

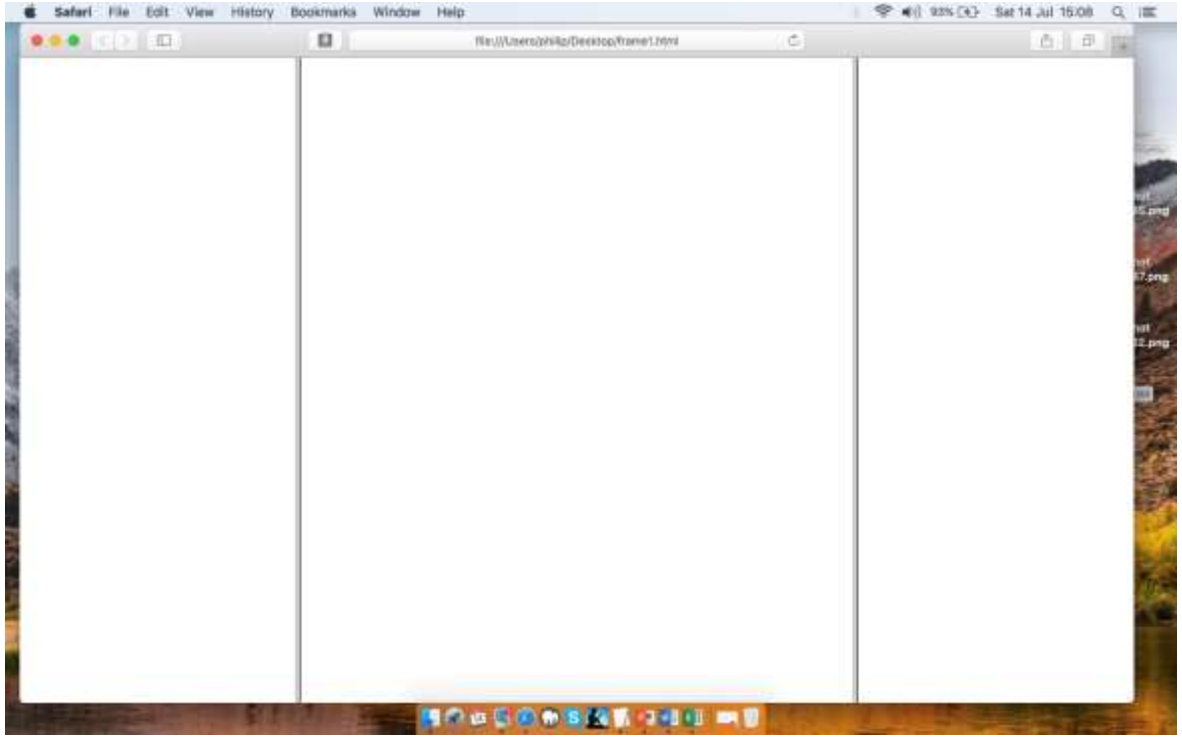
- The <frameset> element
  - Holds one or more <frame> element(s)
  - Each <frame> element can hold a separate HTML document
  - Specifies the number of columns and / or rows in a <frameset>
  - Specifies the size (the amount of space occupied by the frame)
  - The size is represented as either
    - A percentage (%) of the width of the browser window
      - The actual size varies according to the browser and the screen resolution
    - In pixels
      - This will produce a fixed size – the browser will introduce scroll bars where needed

<frame>

- The <frame> tag defines one particular window (or frame) within a <frameset> and each <frame> in a <frameset> can have different attributes:
  - frameborder: *specifies whether or not to display a border around a frame*
  - longdesc: *specifies a page that contains a long description of the content of a frame*
  - marginheight: *specifies the top and bottom margins of a frame*
  - marginwidth: *specifies the left and right margins of a frame*
  - name: *specifies the name of a frame*
  - noresize: *specifies that a frame is not resizable*
  - scrolling: *specifies whether or not to display scrollbars in a frame*
  - src: *specifies the URL of the document to show in a frame*

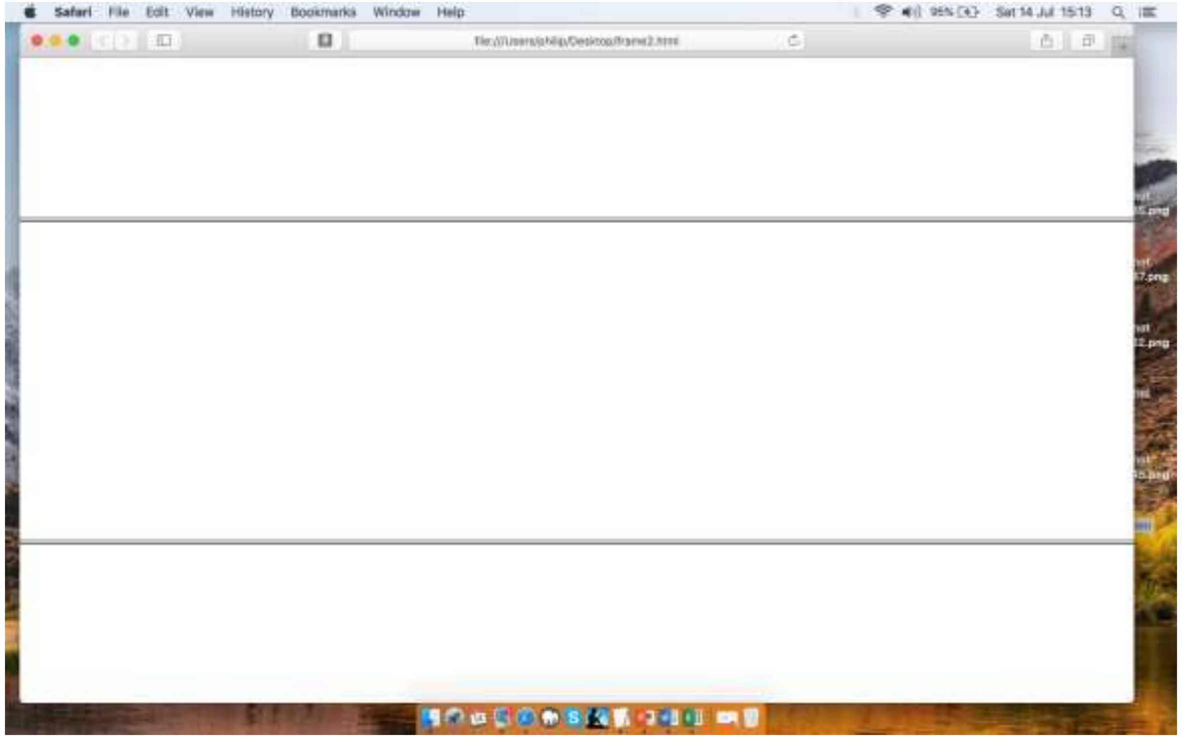
Horizontal Frames

```
<!DOCTYPE html>
<html>
<frameset cols="25%,*,25%">
  <frame src="frame_a.htm">
  <frame src="frame_b.htm">
  <frame src="frame_c.htm">
</frameset>
</html>
```



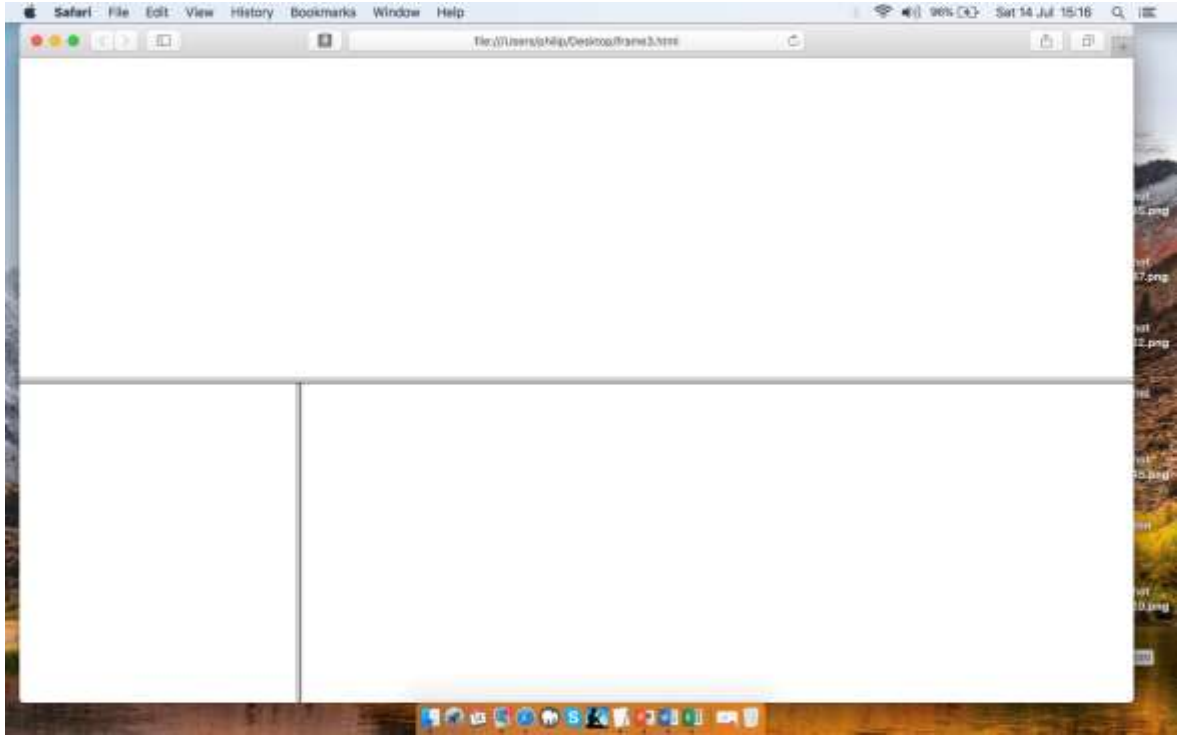
Vertical Frames

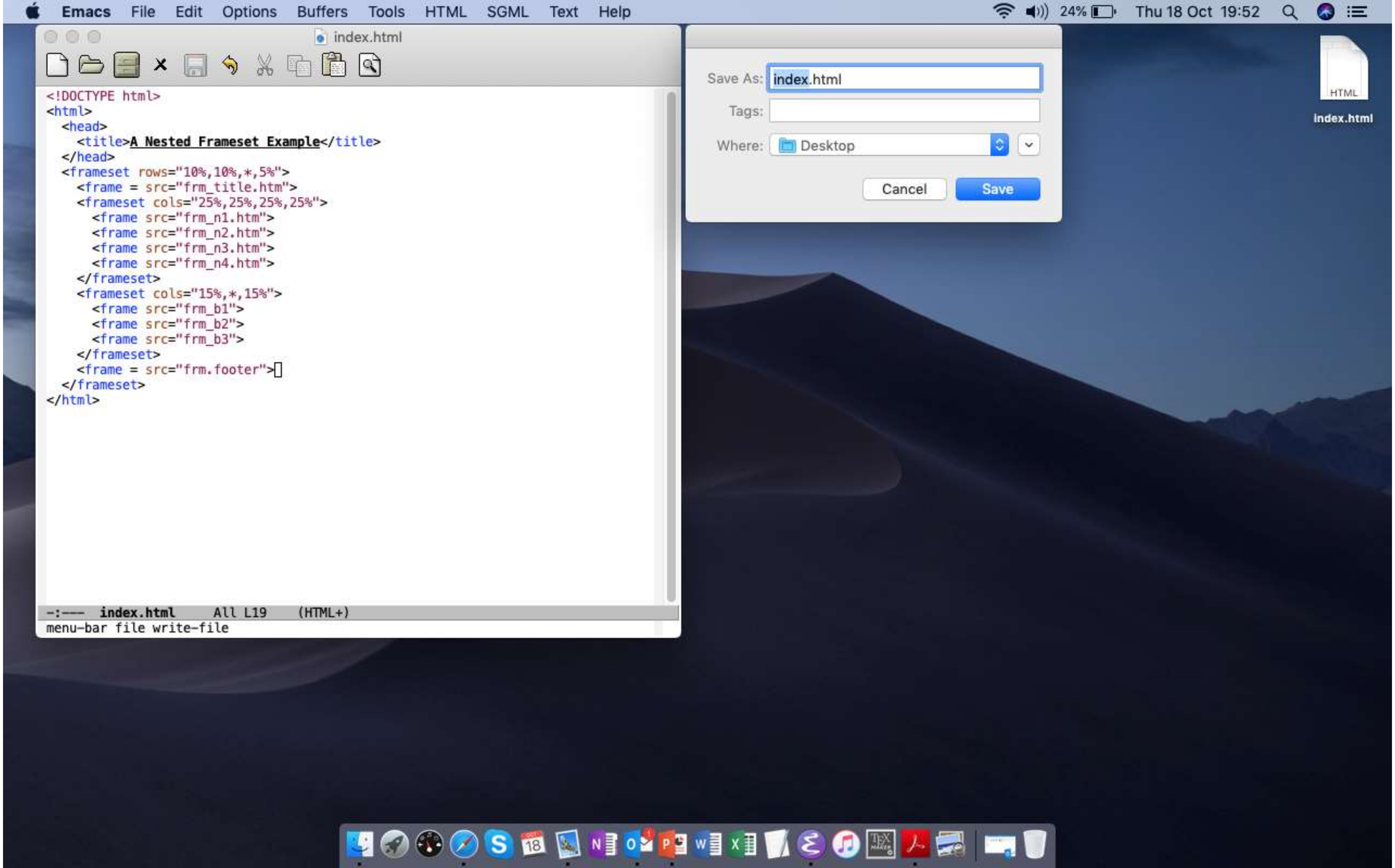
```
<!DOCTYPE html>
<html>
<frameset rows="25%,*,25%">
  <frame src="frame_a.htm">
  <frame src="frame_b.htm">
  <frame src="frame_c.htm">
</frameset>
</html>
```



Nested Frames

```
<!DOCTYPE html>
<html>
<frameset rows="50%,50%">
  <frame src="frame_a.htm">
  <frameset cols="25%,75%">
    <frame src="frame_b.htm">
    <frame src="frame_c.htm">
  </frameset>
</frameset>
</html>
```





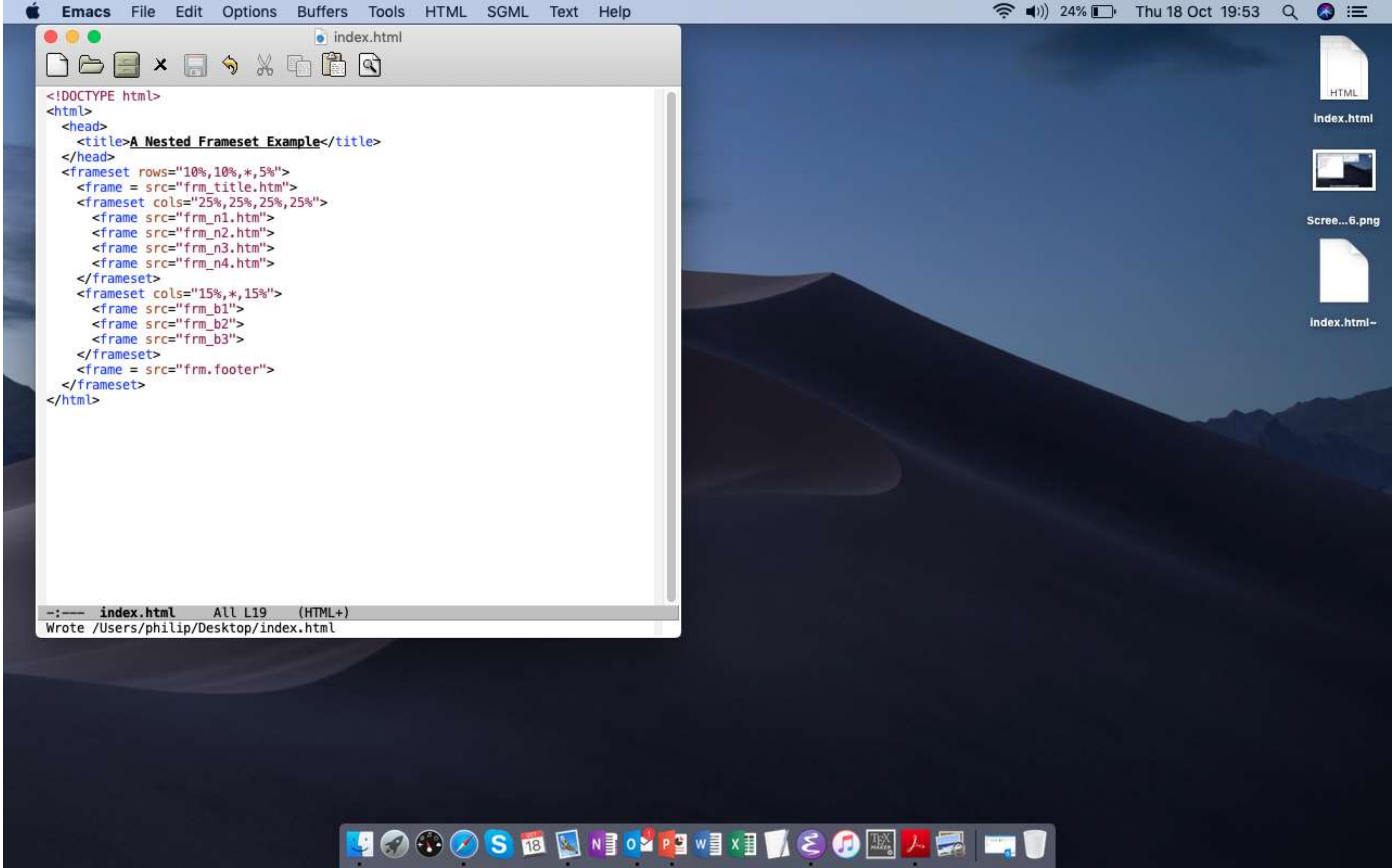
```
<!DOCTYPE html>
<html>
  <head>
    <title>A Nested Frameset Example</title>
  </head>
  <frameset rows="10%,10%,*,5%">
    <frame = src="frm_title.htm">
    <frameset cols="25%,25%,25%,25%">
      <frame src="frm_n1.htm">
      <frame src="frm_n2.htm">
      <frame src="frm_n3.htm">
      <frame src="frm_n4.htm">
    </frameset>
    <frameset cols="15%,*,15%">
      <frame src="frm_b1">
      <frame src="frm_b2">
      <frame src="frm_b3">
    </frameset>
    <frame = src="frm.footer">
  </frameset>
</html>
```

```
-:---  index.html      All L19     (HTML+)
menu-bar file write-file
```

Save As: index.html

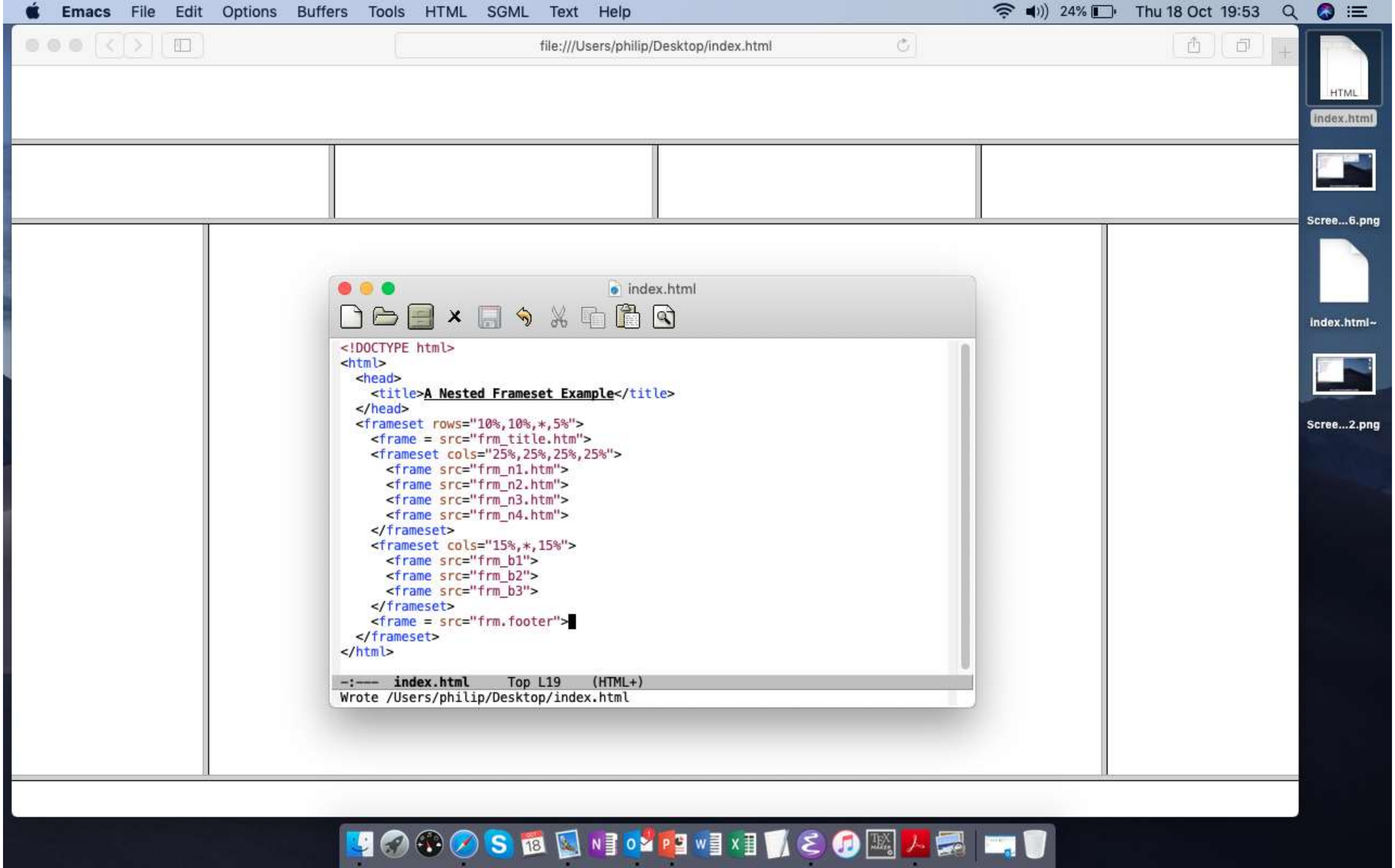
Tags:

Where: Desktop



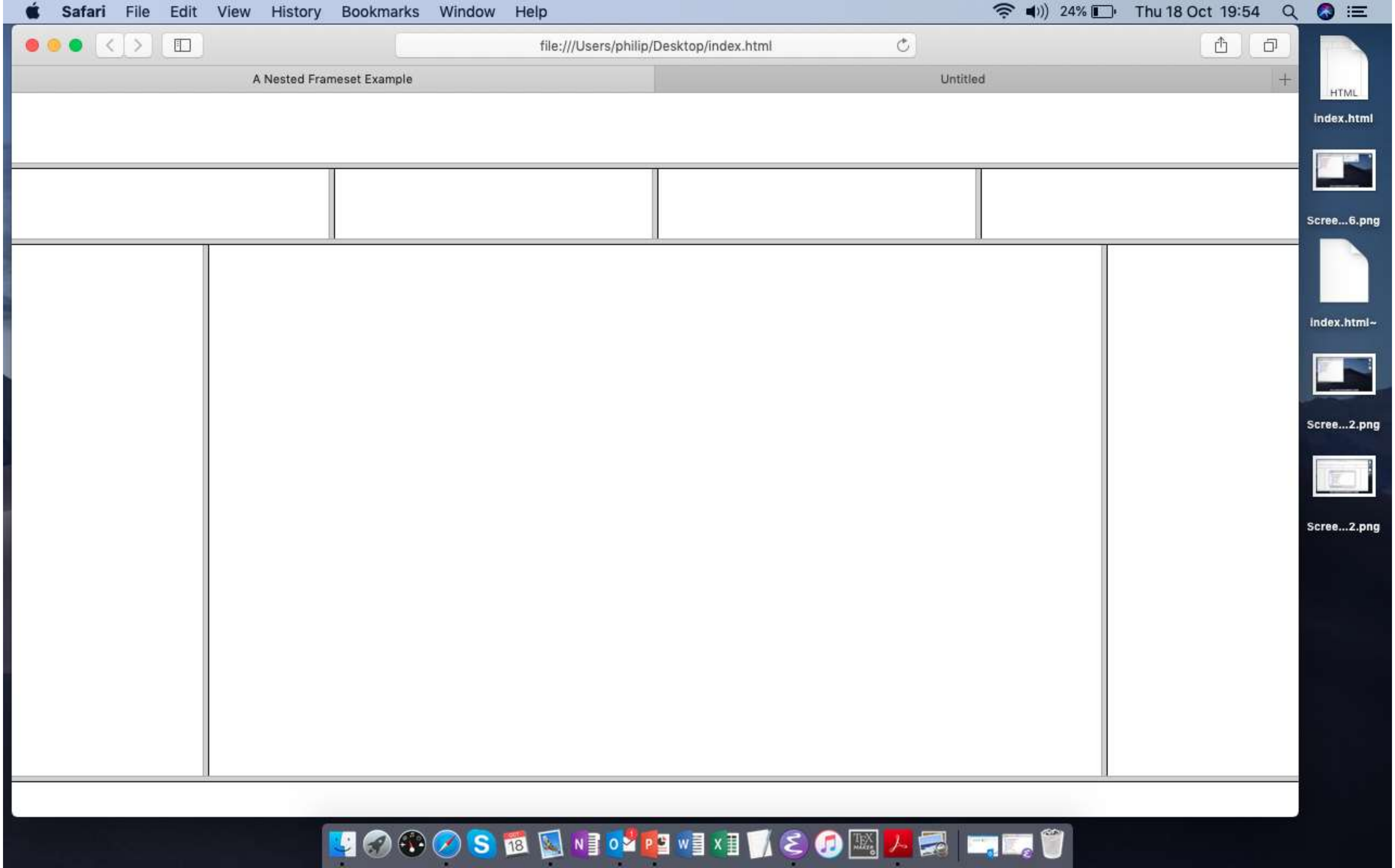
```
<!DOCTYPE html>
<html>
  <head>
    <title>A Nested Frameset Example</title>
  </head>
  <frameset rows="10%,10%,*,5%">
    <frame = src="frm_title.htm">
    <frameset cols="25%,25%,25%,25%">
      <frame src="frm_n1.htm">
      <frame src="frm_n2.htm">
      <frame src="frm_n3.htm">
      <frame src="frm_n4.htm">
    </frameset>
    <frameset cols="15%,*,15%">
      <frame src="frm_b1">
      <frame src="frm_b2">
      <frame src="frm_b3">
    </frameset>
    <frame = src="frm.footer">
  </frameset>
</html>
```

```
-:---  index.html     All L19     (HTML+)
Wrote /Users/philip/Desktop/index.html
```


Emacs File Edit Options Buffers Tools HTML SGML Text Help
24% Thu 18 Oct 19:53
file:///Users/philip/Desktop/index.html
index.html
HTML
index.html
Scree...6.png
index.html~
Scree...2.png

```
<!DOCTYPE html>
<html>
  <head>
    <title>A Nested Frameset Example</title>
  </head>
  <frameset rows="10%,10%,*,5%">
    <frame = src="frm_title.htm">
    <frameset cols="25%,25%,25%,25%">
      <frame src="frm_n1.htm">
      <frame src="frm_n2.htm">
      <frame src="frm_n3.htm">
      <frame src="frm_n4.htm">
    </frameset>
    <frameset cols="15%,*,15%">
      <frame src="frm_b1">
      <frame src="frm_b2">
      <frame src="frm_b3">
    </frameset>
    <frame = src="frm.footer">
  </frameset>
</html>
```

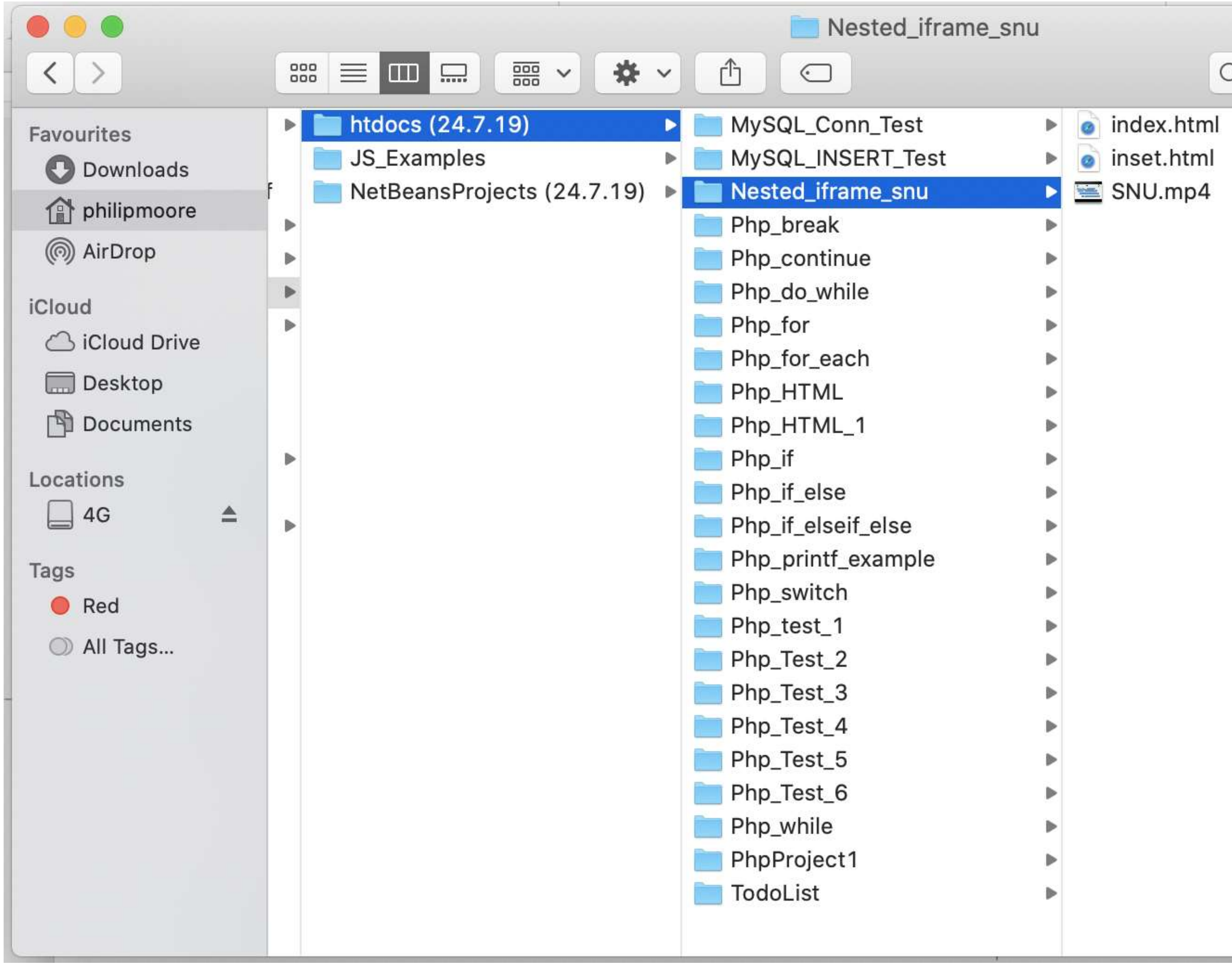
```
-:---  index.html     Top L19    (HTML+)
Wrote /Users/philip/Desktop/index.html
```


Safari
File
Edit
View
History
Bookmarks
Window
Help
24%
Thu 18 Oct 19:54
file:///Users/philip/Desktop/index.html
A Nested Frameset Example
Untitled
HTML
index.html
Scree...6.png
index.html~
Scree...2.png
Scree...2.png

Inline Frames (<iframe>)

- The <iframe> tag specifies an inline frame which is used to embed another document within the current HTML document: the same function achieved using the <frameset> and <frame> tags
- To work with browsers that do not support <iframe>
  - add an alternative text between the opening <iframe> tag and the closing </iframe> tag
- While style may be embedded in an HTML document it is recommended that a CSS is used to style <iframe> (including scrollbars)
- There are differences Between HTML 4 and HTML5: in HTML5 there are additional new attributes with several HTML 4.01 attributes are removed from HTML5
- There are differences Between HTML and XHTML: in XHTML the <name> attribute is ***deprecated*** and will be removed - use the *global id attributes* (w3schools.com)

Example <iframe> Implementation



- Where files are located in the local web site (or web page) project folder all files must be located in one folder:
  - A example is the Nested_iframe_snu multimedia file and the two web page files. In this case the location of the files are known.
- Where files are located in a local folder (not the project folder) the PATH to the folder must be specified in the HTML code
- Where files are located over the Internet the URL to the file must be specified in the HTML code

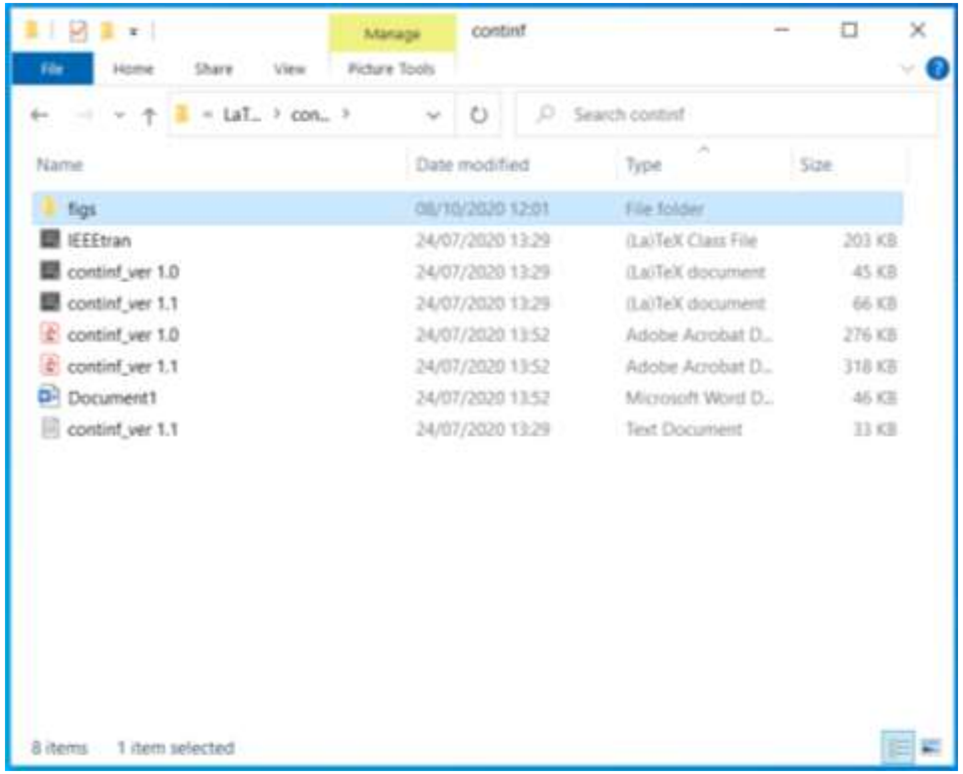
inset.html Link

```
<!DOCTYPE html>
<!--In this example I have used a local file
You may also use a url such as: https://www.google.co.uk/...
-->
<html>
   <head>
      <meta charset="utf-8">
      <title>nested iframe</title>
   </head>
   <body>
      <iframe width="600" height="355" src="SNU.mp4" style="border:0"></iframe>
   </body>
</html>
```

Where the mp4 file is located in a separate folder (e.g., figs) the link to the mp4 file would be: **src="figs/SNU.mp4"**

Example File Structure

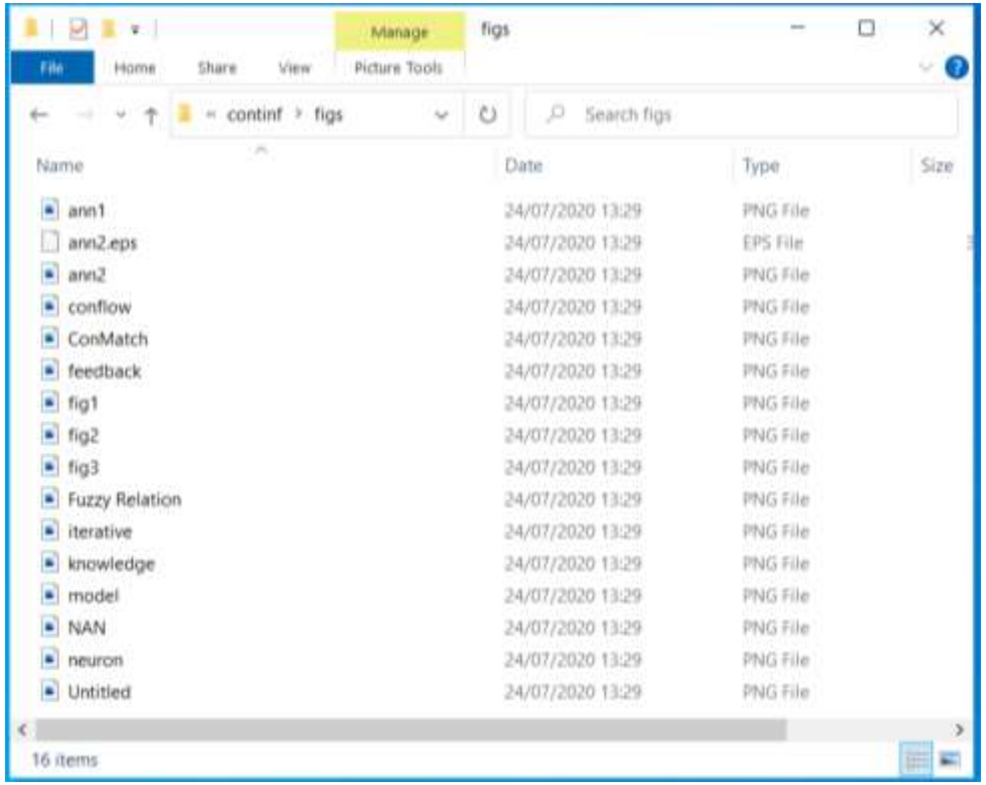
Project File Structure



Name	Date modified	Type	Size
figs	08/10/2020 12:01	File folder	
IEEEtran	24/07/2020 13:29	(La)TeX Class File	203 KB
continf_ver 1.0	24/07/2020 13:29	(La)TeX document	45 KB
continf_ver 1.1	24/07/2020 13:29	(La)TeX document	66 KB
continf_ver 1.0	24/07/2020 13:52	Adobe Acrobat D...	276 KB
continf_ver 1.1	24/07/2020 13:52	Adobe Acrobat D...	318 KB
Document1	24/07/2020 13:52	Microsoft Word D...	46 KB
continf_ver 1.1	24/07/2020 13:29	Text Document	33 KB

8 items 1 item selected

figs Folder Structure

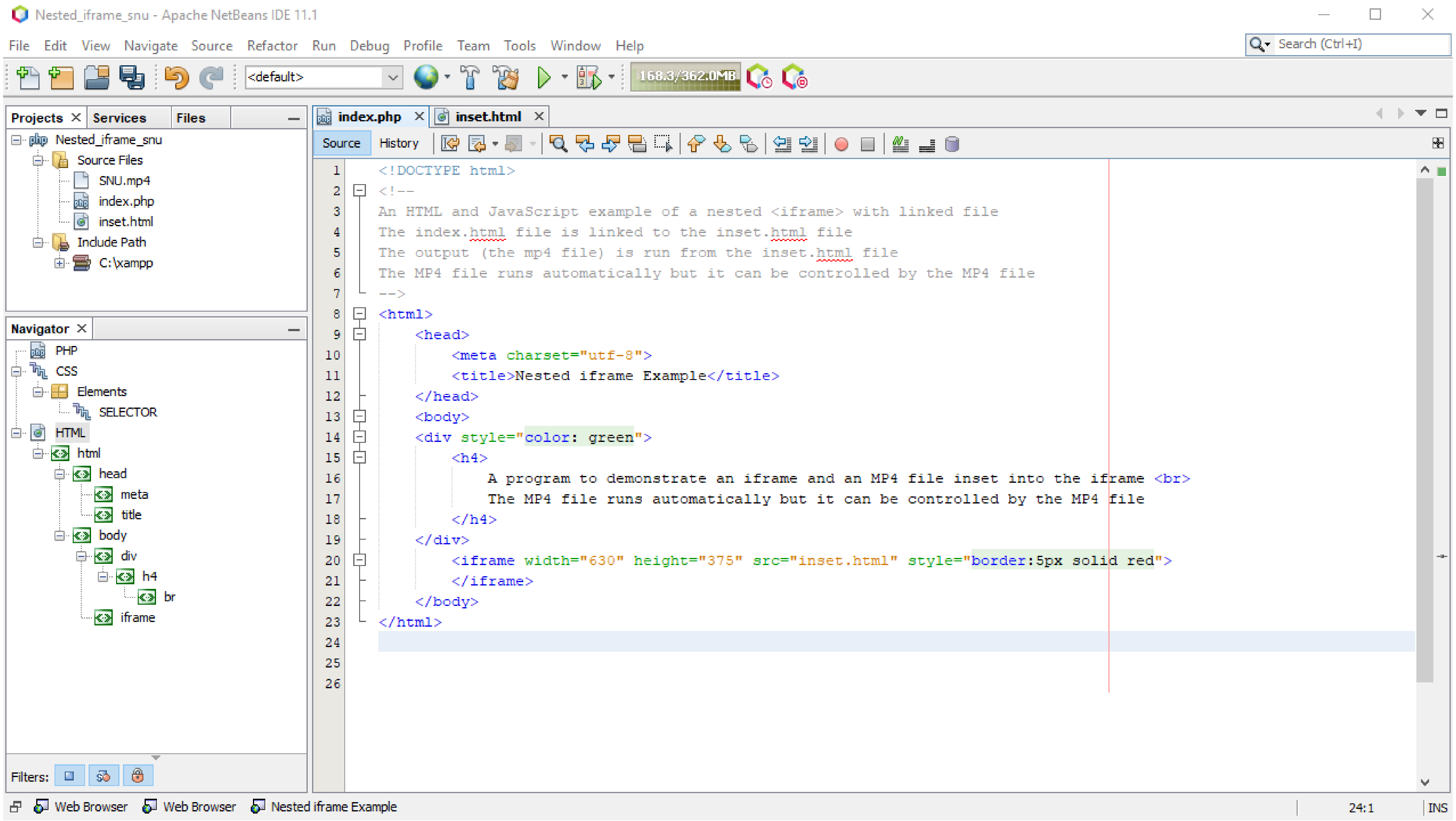


Name	Date	Type	Size
ann1	24/07/2020 13:29	PNG File	
ann2.eps	24/07/2020 13:29	EPS File	
ann2	24/07/2020 13:29	PNG File	
conflow	24/07/2020 13:29	PNG File	
ConMatch	24/07/2020 13:29	PNG File	
feedback	24/07/2020 13:29	PNG File	
fig1	24/07/2020 13:29	PNG File	
fig2	24/07/2020 13:29	PNG File	
fig3	24/07/2020 13:29	PNG File	
Fuzzy Relation	24/07/2020 13:29	PNG File	
iterative	24/07/2020 13:29	PNG File	
knowledge	24/07/2020 13:29	PNG File	
model	24/07/2020 13:29	PNG File	
NAN	24/07/2020 13:29	PNG File	
neuron	24/07/2020 13:29	PNG File	
Untitled	24/07/2020 13:29	PNG File	

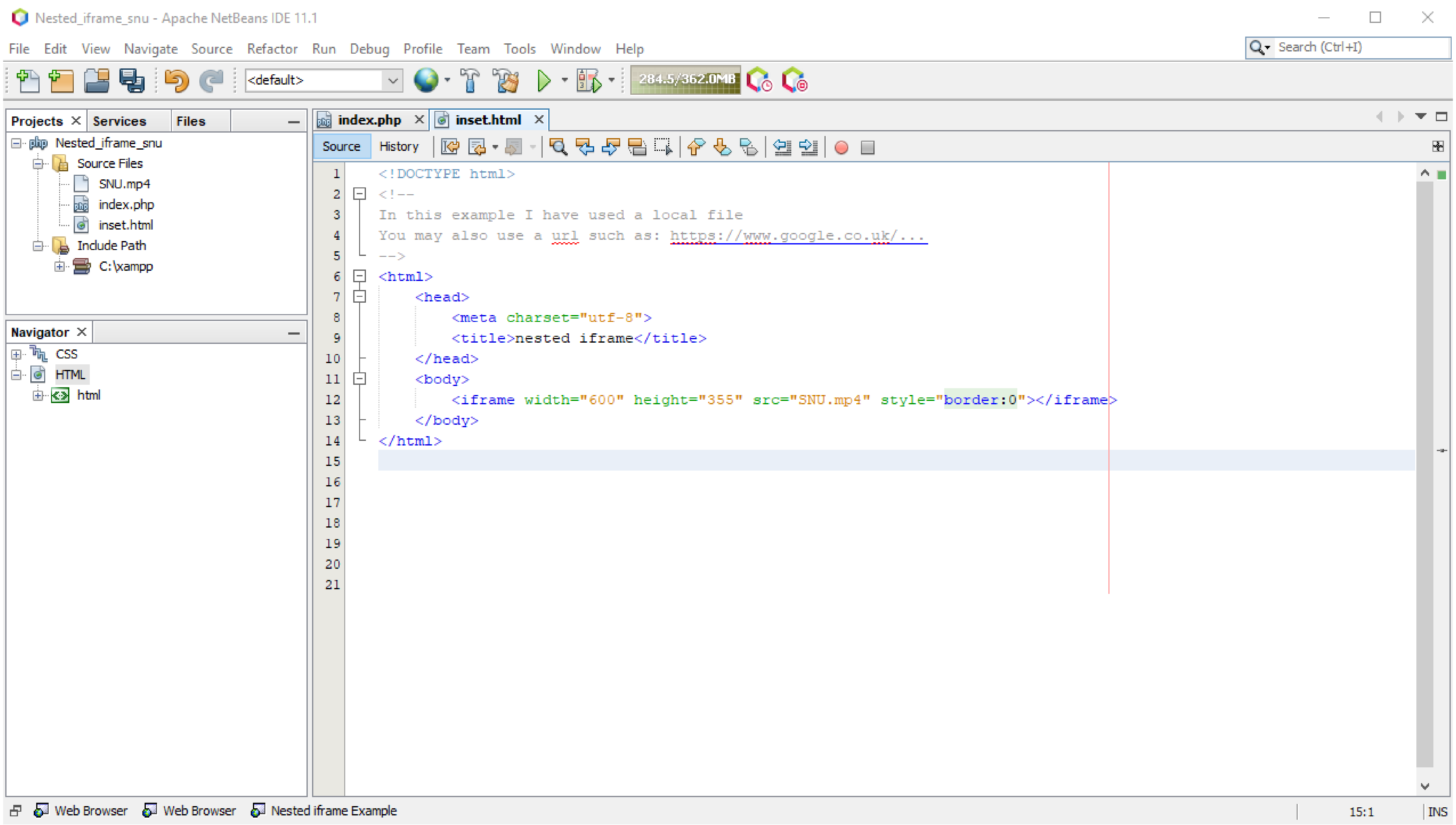
16 items

index.html

```
<html>
    <head>
        <meta charset="utf-8">
        <title>Nested iframe Example</title>
    </head>
    <body>
    <div style="color: green">
        <h4>
            A program to demonstrate an iframe and an MP4 file inset into the iframe <br>
            The MP4 file runs automatically but it can be controlled by the MP4 file
        </h4>
    </div>
        <iframe width="630" height="375" src="inset.html" style="border:5px solid red"></iframe>
    </body>
</html>
```

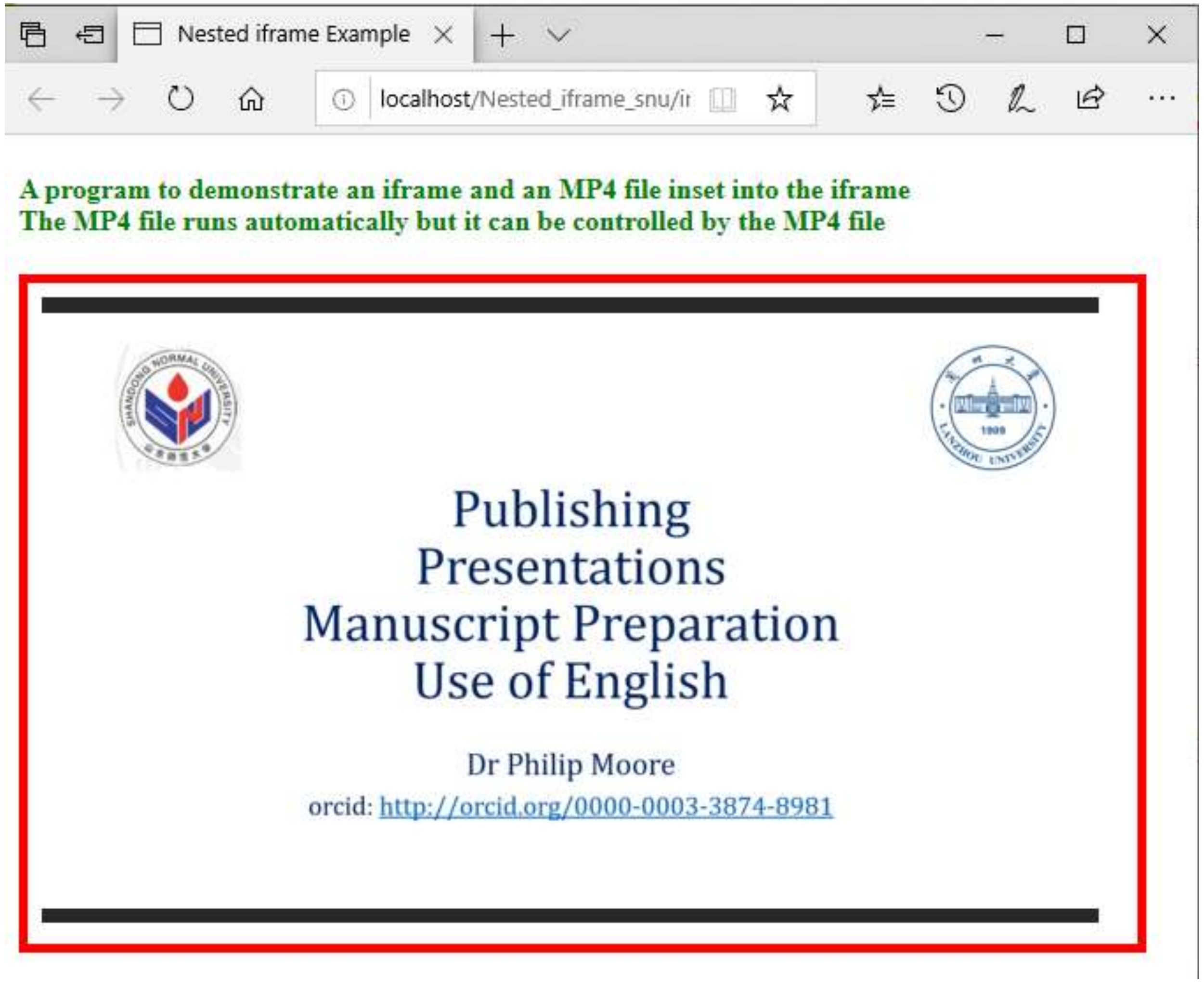


```html
<!DOCTYPE html>
<!--
An HTML and JavaScript example of a nested <iframe> with linked file
The index.html file is linked to the inset.html file
The output (the mp4 file) is run from the inset.html file
The MP4 file runs automatically but it can be controlled by the MP4 file
-->
<html>
    <head>
        <meta charset="utf-8">
        <title>Nested iframe Example</title>
    </head>
    <body>
    <div style="color: green">
        <h4>
            A program to demonstrate an iframe and an MP4 file inset into the iframe <br>
            The MP4 file runs automatically but it can be controlled by the MP4 file
        </h4>
    </div>
        <iframe width="630" height="375" src="inset.html" style="border:5px solid red">
        </iframe>
    </body>
</html>
```



```
<!DOCTYPE html>
<!--
In this example I have used a local file
You may also use a url such as: https://www.google.co.uk/...
-->
<html>
    <head>
        <meta charset="utf-8">
        <title>nested iframe</title>
    </head>
    <body>
        <iframe width="600" height="355" src="SNU.mp4" style="border:0"></iframe>
    </body>
</html>
```

The Output



A program to demonstrate an iframe and an MP4 file inset into the iframe
The MP4 file runs automatically but it can be controlled by the MP4 file

Publishing
Presentations
Manuscript Preparation
Use of English

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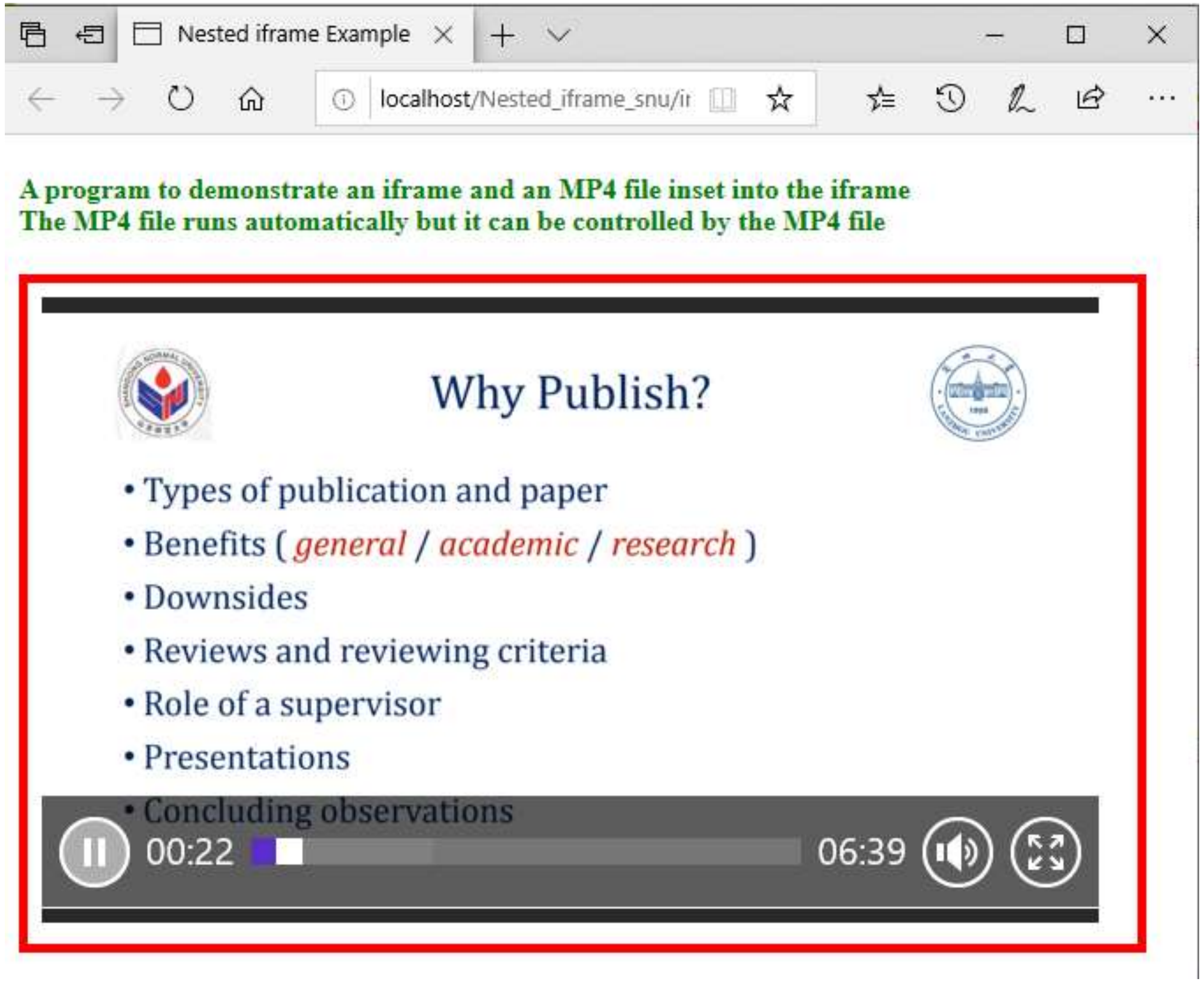
The Output Control



A program to demonstrate an iframe and an MP4 file inset into the iframe
The MP4 file runs automatically but it can be controlled by the MP4 file

Why Publish?

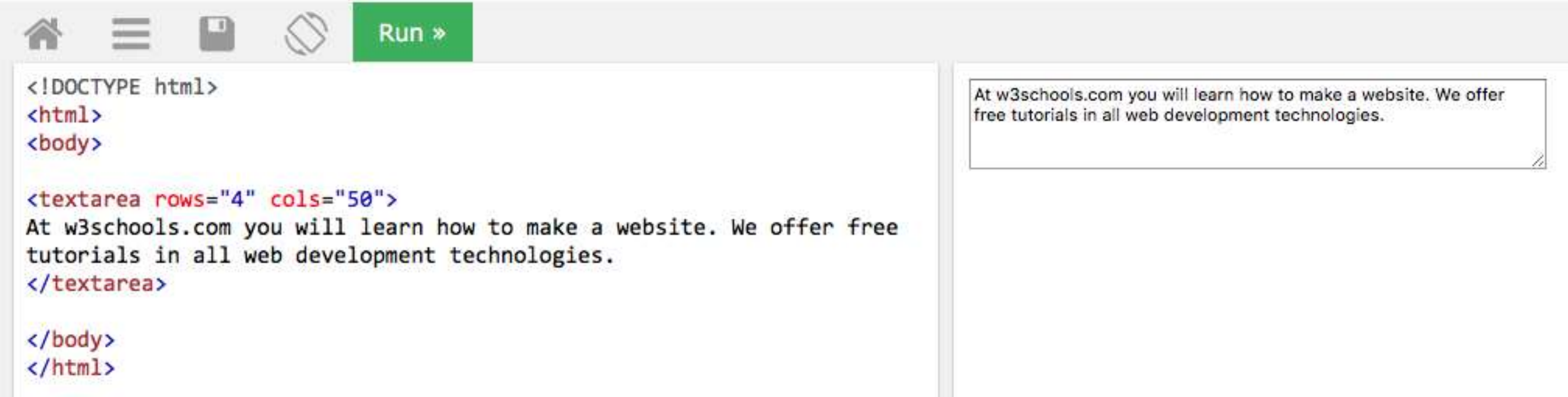
- Types of publication and paper
- Benefits (*general* / *academic* / *research*)
- Downsides
- Reviews and reviewing criteria
- Role of a supervisor
- Presentations
- Concluding observations

Forms

Creating Forms

- Creating forms is an important feature in web-systems created using HTML 5.
- A comprehensive introduction to forms can be located at
  - w3schools.com
- Creating forms uses form functions:
  - HTML form *elements*
  - HTML form *input types*
  - HTML form *attributes*

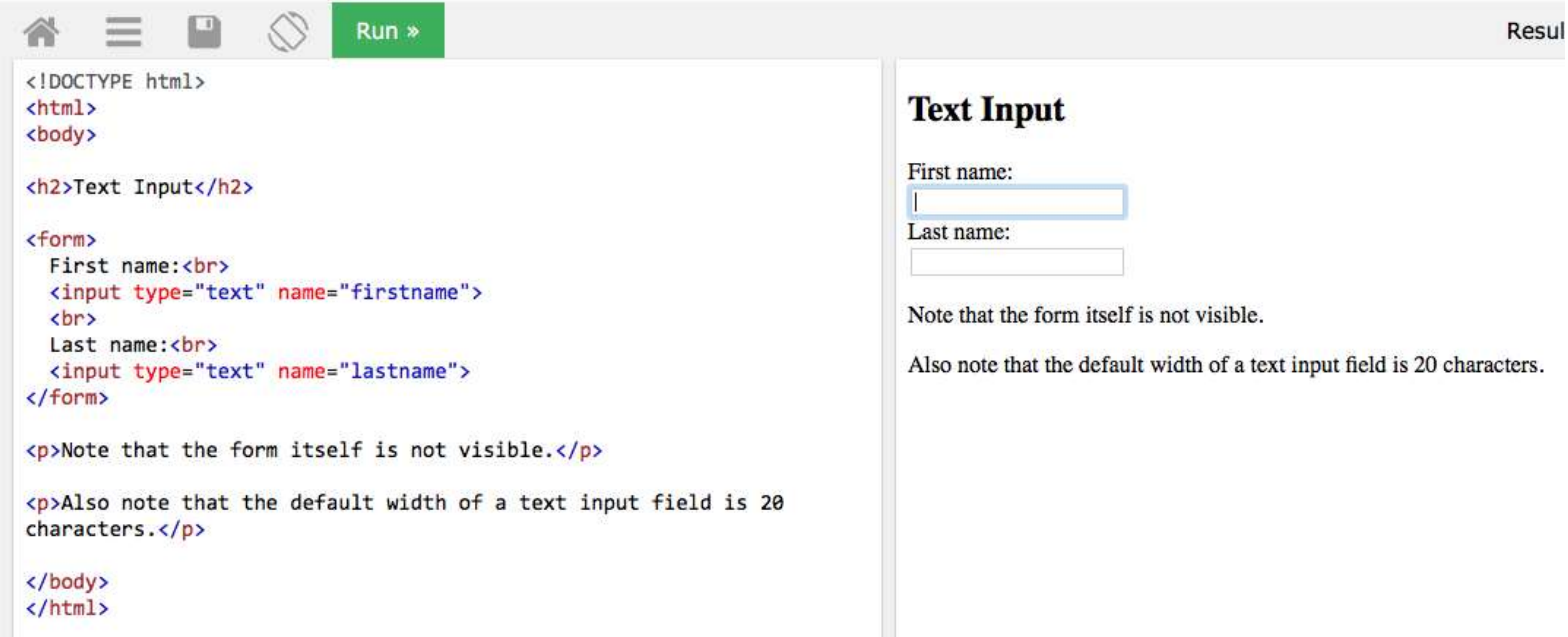
Defined Text Area



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

<textarea rows="4" cols="50">
At w3schools.com you will learn how to make a website. We offer free
tutorials in all web development technologies.
</textarea>

</body>
</html>
```

At w3schools.com you will learn how to make a website. We offer free tutorials in all web development technologies.

Text Form Input



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

<h2>Text Input</h2>

<form>
  First name:<br>
  <input type="text" name="firstname">
  <br>
  Last name:<br>
  <input type="text" name="lastname">
</form>

<p>Note that the form itself is not visible.</p>

<p>Also note that the default width of a text input field is 20
characters.</p>

</body>
</html>
```

Text Input

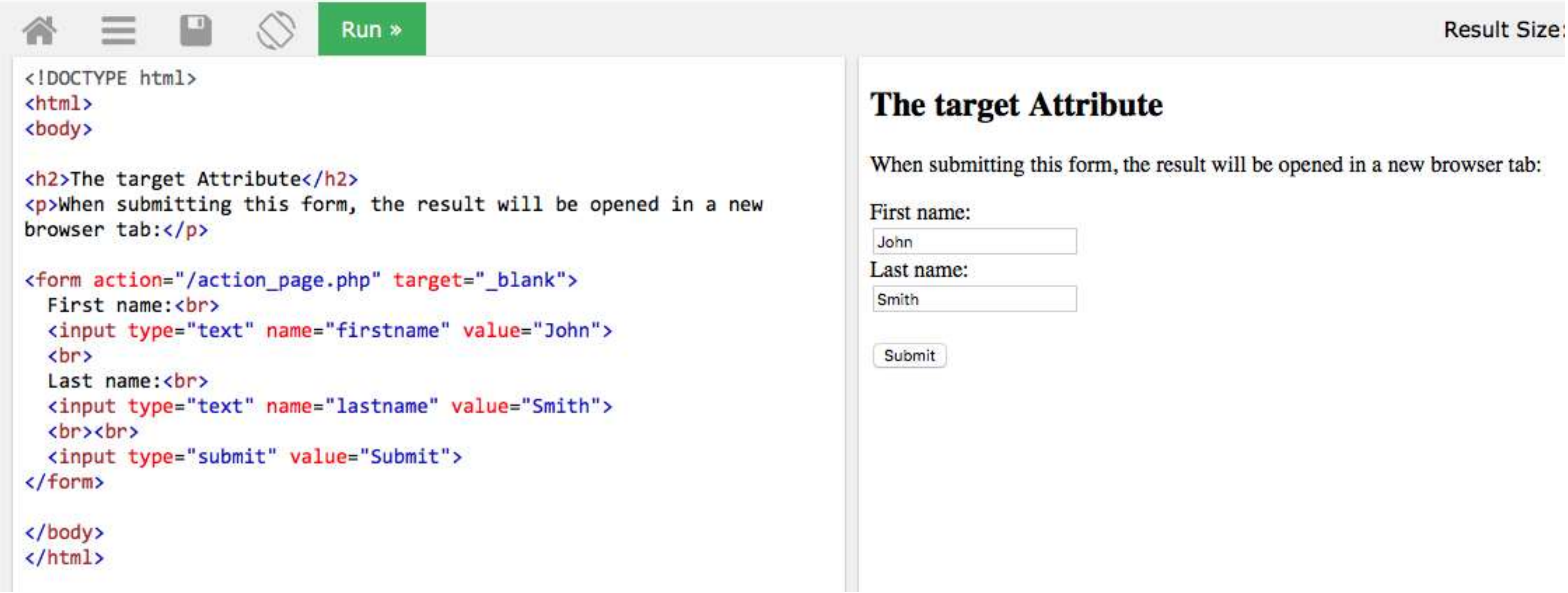
First name:

Last name:

Note that the form itself is not visible.

Also note that the default width of a text input field is 20 characters.

Submit Form Input



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

<h2>The target Attribute</h2>
<p>When submitting this form, the result will be opened in a new
browser tab:</p>

<form action="/action_page.php" target="_blank">
  First name:<br>
  <input type="text" name="firstname" value="John">
  <br>
  Last name:<br>
  <input type="text" name="lastname" value="Smith">
  <br><br>
  <input type="submit" value="Submit">
</form>

</body>
</html>
```

The target Attribute

When submitting this form, the result will be opened in a new browser tab:

First name:

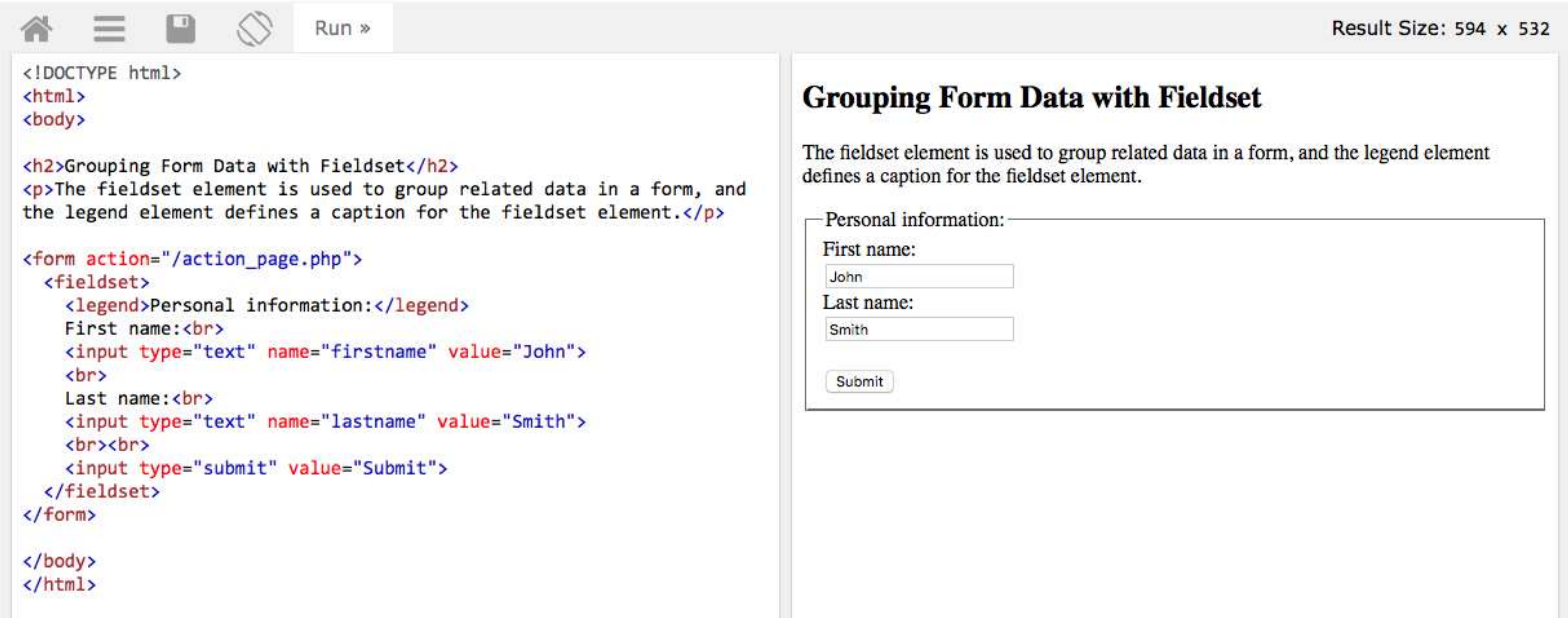
John

Last name:

Smith

Submit

Grouping Form Data



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

<h2>Grouping Form Data with Fieldset</h2>
<p>The fieldset element is used to group related data in a form, and
the legend element defines a caption for the fieldset element.</p>

<form action="/action_page.php">
  <fieldset>
    <legend>Personal information:</legend>
    First name:<br>
    <input type="text" name="firstname" value="John">
    <br>
    Last name:<br>
    <input type="text" name="lastname" value="Smith">
    <br><br>
    <input type="submit" value="Submit">
  </fieldset>
</form>

</body>
</html>
```

Grouping Form Data with Fieldset

The fieldset element is used to group related data in a form, and the legend element defines a caption for the fieldset element.

Personal information:

First name:

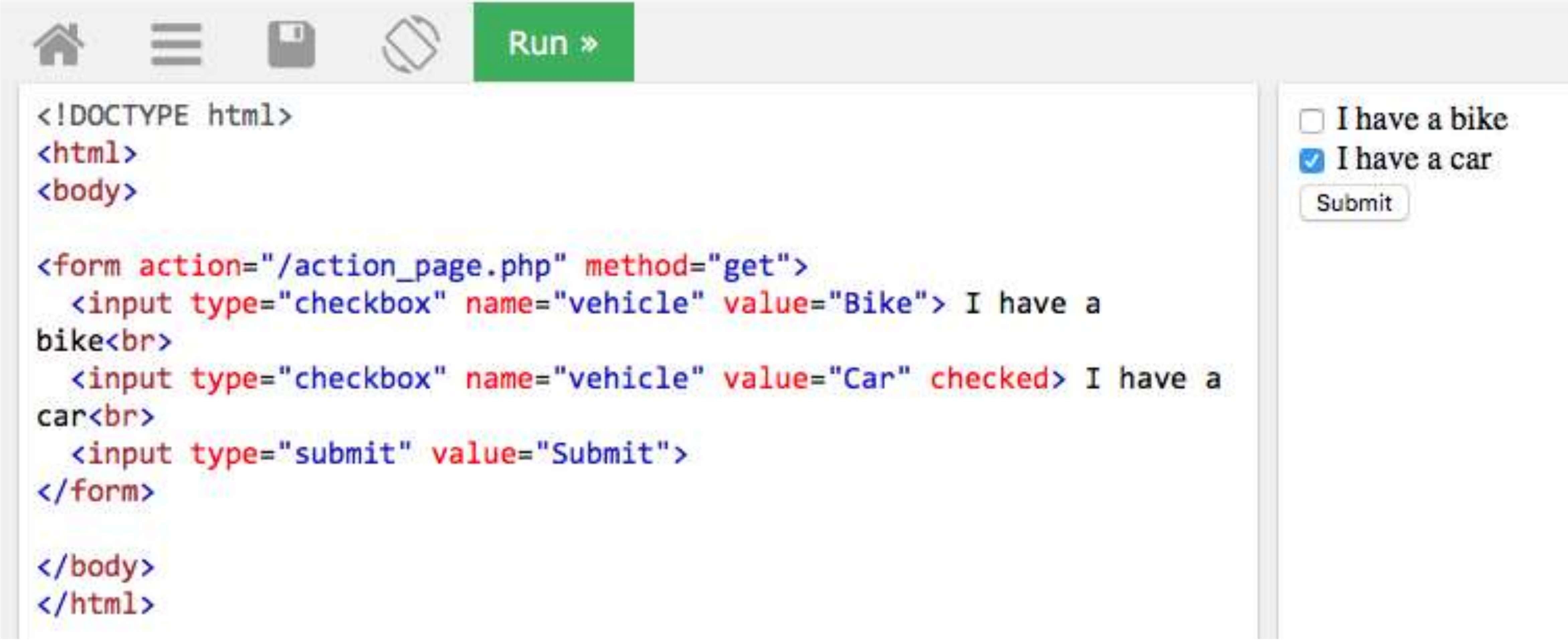
John

Last name:

Smith

Submit

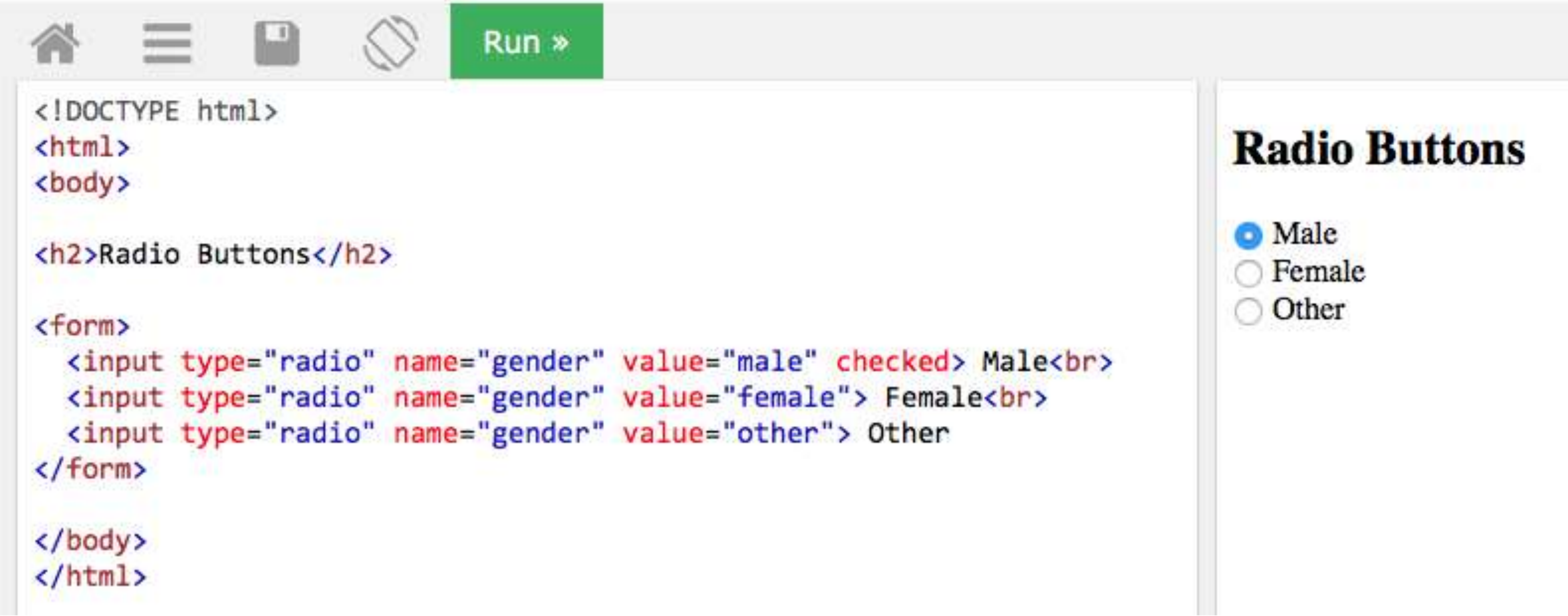
Checkbox



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

<form action="/action_page.php" method="get">
  <input type="checkbox" name="vehicle" value="Bike"> I have a
bike<br>
  <input type="checkbox" name="vehicle" value="Car" checked> I have a
car<br>
  <input type="submit" value="Submit">
</form>

</body>
</html>
```

□ I have a bike
☑ I have a car
Submit

Radio Button

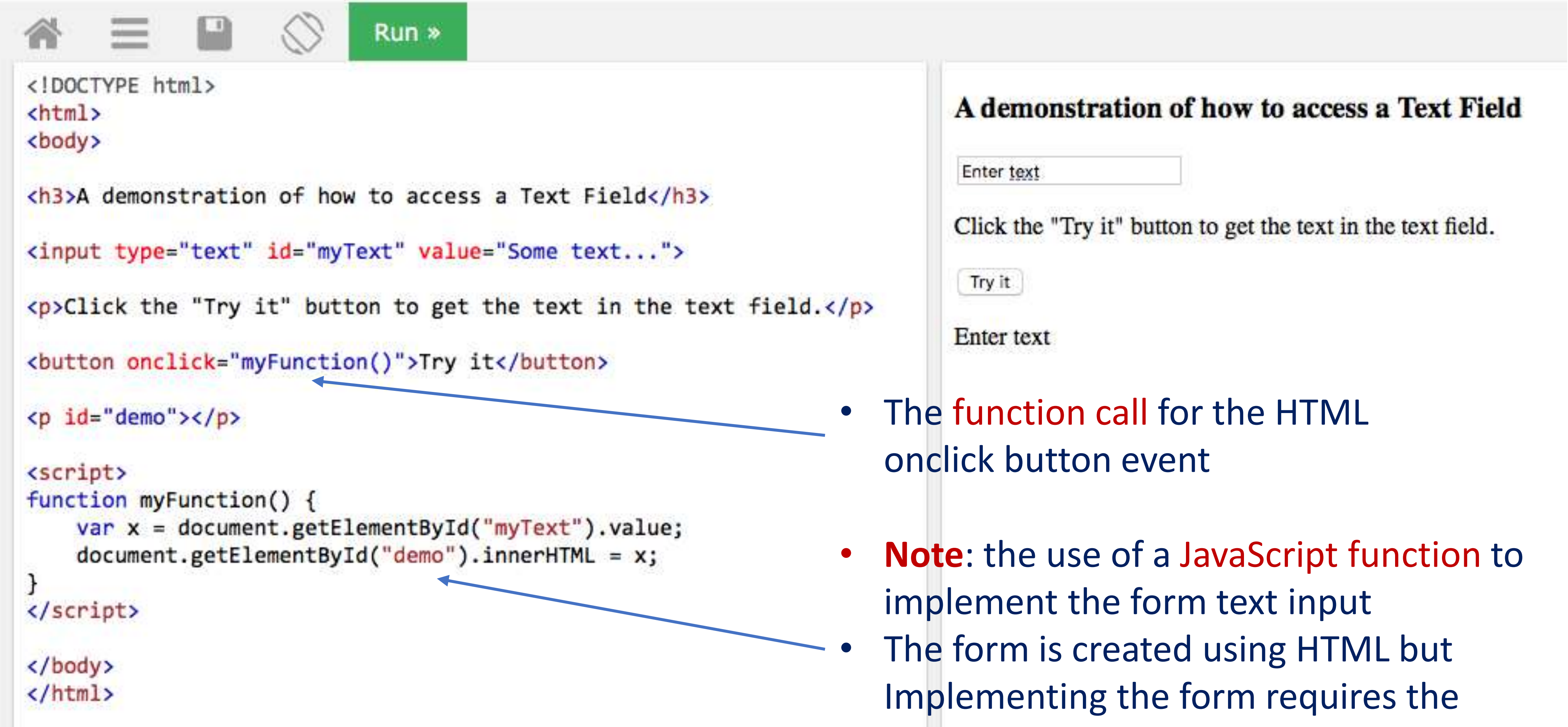


```
<!DOCTYPE html>
<html>
<body>

<h2>Radio Buttons</h2>

<form>
  <input type="radio" name="gender" value="male" checked> Male<br>
  <input type="radio" name="gender" value="female"> Female<br>
  <input type="radio" name="gender" value="other"> Other
</form>

</body>
</html>
```

Radio Buttons

● Male
○ Female
○ Other

Accessing a Text Field



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

<h3>A demonstration of how to access a Text Field</h3>

<input type="text" id="myText" value="Some text...">

<p>Click the "Try it" button to get the text in the text field.</p>

<button onclick="myFunction()">Try it</button>

<p id="demo"></p>

<script>
function myFunction() {
    var x = document.getElementById("myText").value;
    document.getElementById("demo").innerHTML = x;
}
</script>

</body>
</html>
```

A demonstration of how to access a Text Field

Enter text

Click the "Try it" button to get the text in the text field.

Try it

Enter text

- The function call for the HTML onclick button event
- **Note**: the use of a JavaScript function to implement the form text input
- The form is created using HTML but Implementing the form requires the JavaScript function

Forms and Data Input

Forms and Data Input

- When considering the creation of forms and data input and processing we must consider:
  - Usability
  - Security
  - We will explore the usability / security ‘trade-off’ later
- Forms are used to collect data and information from users
- The data which may be collected includes:
  - email, personal information, text input
  - The processing of the information (requires JavaScript and PHP)
- In considering data input and processing there are 2 methods:
  - There are 2 methods for managing data input: ***GET*** and ***POST***

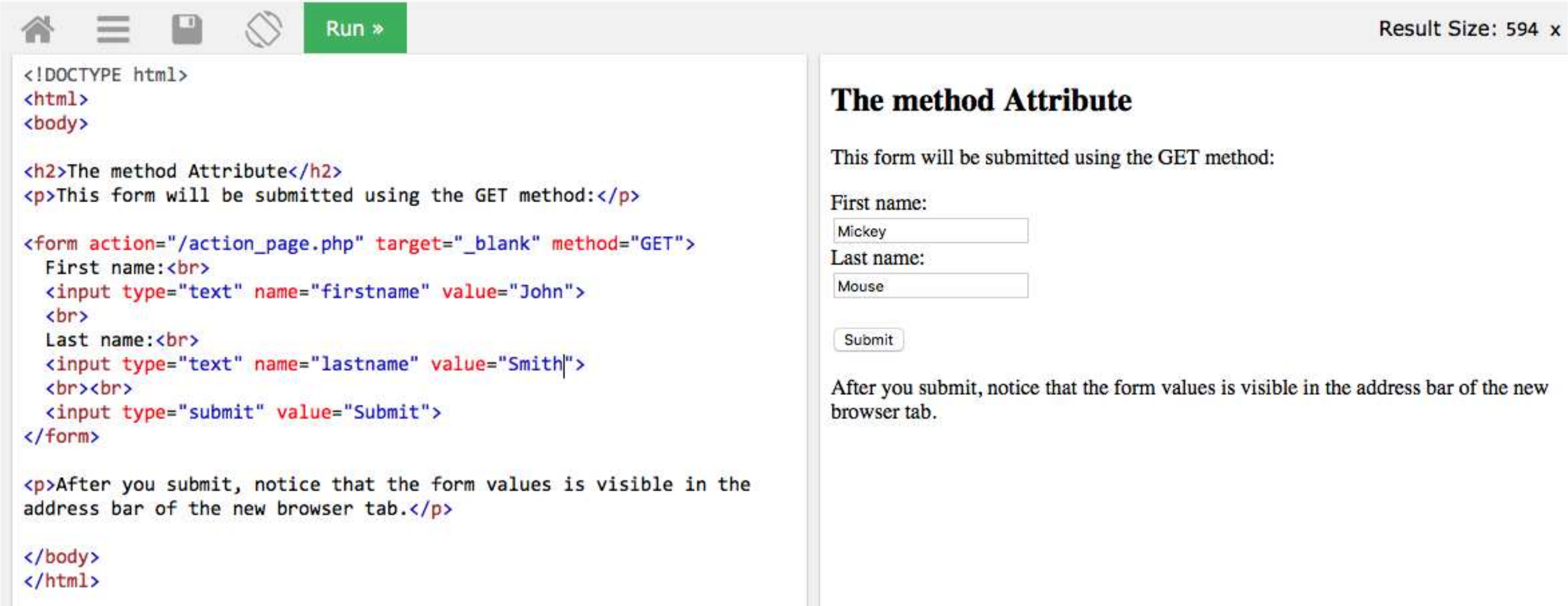
Why use GET (or) POST

- ***GET*** and ***POST*** are HTTP methods
- The motivation for selecting GET method (or) POST method
  - Essentially relates to Internet security
- The default input method is ***GET***
  - However there are significant security implications for users if GET input method is used
- The alternative input method is ***POST***
  - Where data security and sensitive personal information is entered and processed
  - The ***POST*** input method achieves improved security
- An overview of HTTP request and input methods can be found in the course resources

GET Input

- The ***GET*** input method is the ***default*** method for data submission to an HTML 5 form
- When the ***GET*** method is used:
  - The form data submitted form data will be visible in the web-page address field
  - The form-data is appended to the URL in name/value pairs
  - The length of a URL is limited (approximately 3000 characters)
- In summary the ***GET*** method it is:
  - Never used for sensitive data (it will be visible in the URL)
  - Useful for form submission for bookmarking
  - Restricted to non-secure data (such as query strings)

GET Example



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

<h2>The method Attribute</h2>
<p>This form will be submitted using the GET method:</p>

<form action="/action_page.php" target="_blank" method="GET">
  First name:<br>
  <input type="text" name="firstname" value="John">
  <br>
  Last name:<br>
  <input type="text" name="lastname" value="Smith">
  <br><br>
  <input type="submit" value="Submit">
</form>

<p>After you submit, notice that the form values is visible in the
address bar of the new browser tab.</p>

</body>
</html>
```

The method Attribute

This form will be submitted using the GET method:

First name:

Mickey

Last name:

Mouse

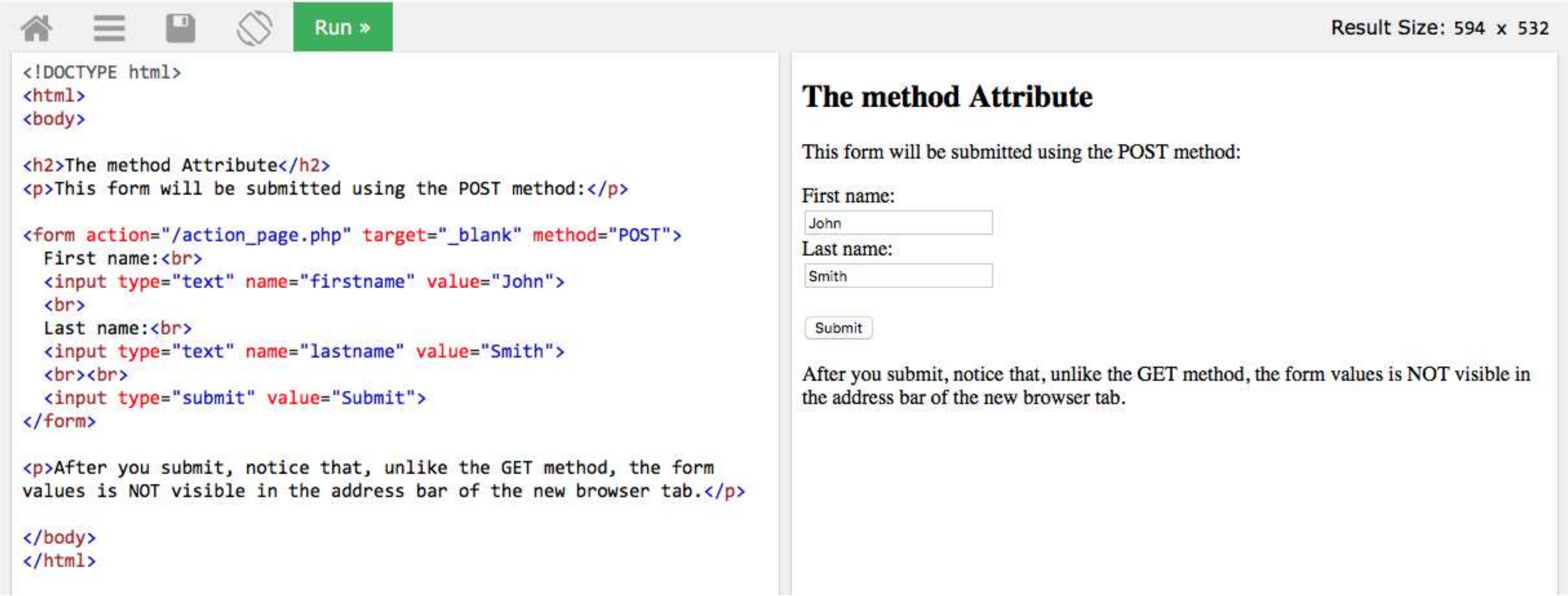
Submit

After you submit, notice that the form values is visible in the address bar of the new browser tab.

The POST Input Method

- The ***POST*** input method is the:
  - Preferred input method where data and information security is important
  - The form data contains sensitive or personal information.
- The ***POST*** input method:
  - Does not display the submitted form data in the page address field
  - Can be used to send large amounts of data
  - Form submissions using ***POST*** cannot be bookmarked with certainty

POST Example



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

<h2>The method Attribute</h2>
<p>This form will be submitted using the POST method:</p>

<form action="/action_page.php" target="_blank" method="POST">
  First name:<br>
  <input type="text" name="firstname" value="John">
  <br>
  Last name:<br>
  <input type="text" name="lastname" value="Smith">
  <br><br>
  <input type="submit" value="Submit">
</form>

<p>After you submit, notice that, unlike the GET method, the form
values is NOT visible in the address bar of the new browser tab.</p>

</body>
</html>
```

The method Attribute

This form will be submitted using the POST method:

First name:

John

Last name:

Smith

After you submit, notice that, unlike the GET method, the form values is NOT visible in the address bar of the new browser tab.

Adding Multimedia

Adding Images and Multimedia

- We have shown how to add images to a web page in week #1
- We can combine frames with images by inserting an image within a frame
- We can also insert multimedia files Into web pages using frames
- Here we show how to display multimedia files in a web page and consider browser support

Multimedia

- Multimedia forms a central role in modern Internet applications
- In the early days of the Internet users were restricted to viewing text and static images
- In the current Internet users may
  - Access multimedia (video and sound files)
  - Interact with web sites and add / change / delete content
    - These developments are often termed Web 2.0
- Multimedia has many formats as it can be almost anything you can hear or see.
  - Examples include sound, videos, and animations, etc
- In this course we will limit our study to adding and viewing multimedia files

Web Browser Support

- The early web browsers were limited in the support to text and colour rendering
- Later web browsers improved support for colours, fonts, and images
- Current web browsers support multimedia however
  - Audio, video, and animation have been handled differently by the major browsers
  - Different formats have been supported, and some formats require extra helper programs (plug-ins) to work.
- A motivation for the development of HTML 5 is to enable improvements in the accessing and viewing of multimedia

Digital Formats

- Multimedia is stored in a digital format in media files.
- To identify the type of multimedia file
  - See the file extension
  - For example a Windows notepad file (a text file) has a .txt extension
- Multimedia files have formats and different extensions
  - .swf, .wav, .mp3, .mp4, .mpg , .wmv (a Windows media player specific file), .avi. Etc

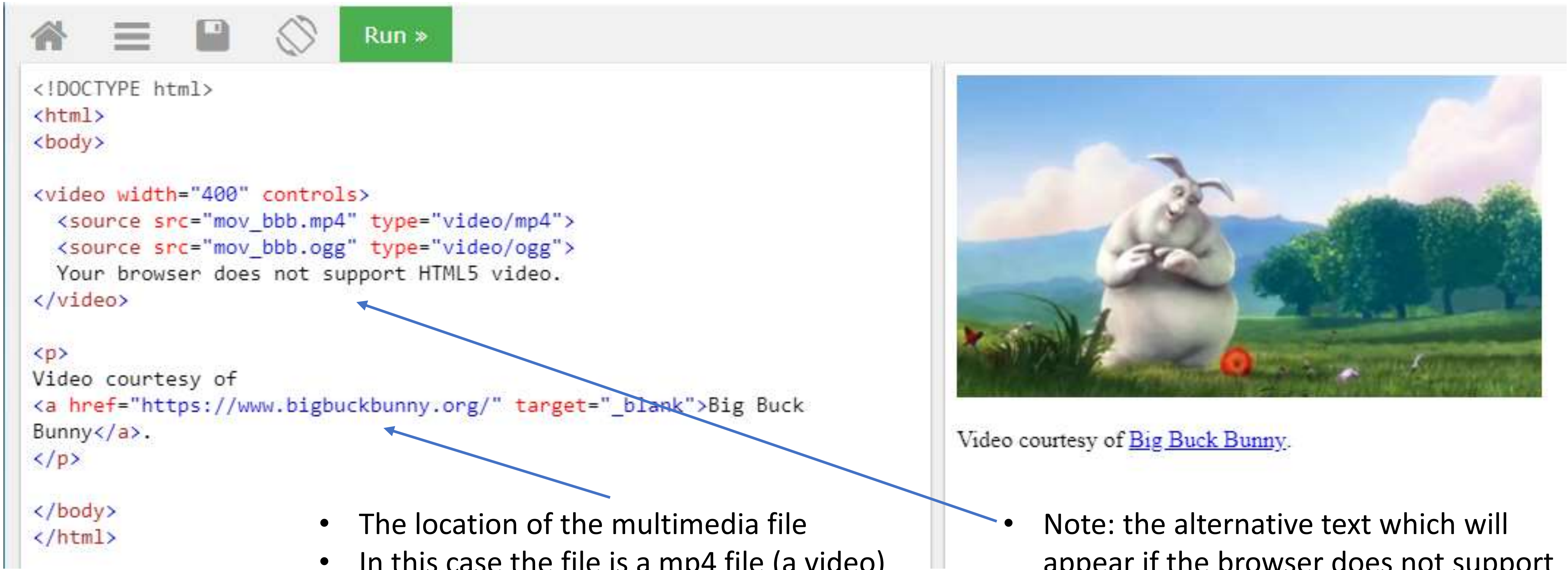
Multimedia Formats

- Common video formats:
  - .mp4 is the current video format for the Internet
  - .mp4 is supported by “YouTube”, ”Flash Players”, and HTML 5
- A full list of multimedia file types may be found at:
  - https://blog.filestack.com/thoughts-and-knowledge/complete-list-audio-video-file-formats/
- Only MP4, WebM, and Ogg video are supported by the HTML5 standard.

Typical Multimedia HTML

```
<!DOCTYPE html>
<html>
<body>
<video width="400" controls>
  <source src="mov_bbb.mp4" type="video/mp4">
  <source src="mov_bbb.ogg" type="video/ogg">
  Your browser does not support HTML5 video.
</video>
<p>
Video courtesy of
<a href="https://www.bigbuckbunny.org/" target="_blank">Big Buck Bunny</a>.
</p>
</body>
</html>
```

Multimedia Example



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

<video width="400" controls>
  <source src="mov_bbb.mp4" type="video/mp4">
  <source src="mov_bbb.ogg" type="video/ogg">
  Your browser does not support HTML5 video.
</video>

<p>
Video courtesy of
<a href="https://www.bigbuckbunny.org/" target="_blank">Big Buck
Bunny</a>.
</p>

</body>
</html>
```

Video courtesy of Big Buck Bunny.

- The location of the multimedia file
- In this case the file is a mp4 file (a video)

- Note: the alternative text which will appear if the browser does not support the HTML 5 video (old browsers)

Video and Audio on the Internet

- In earlier versions of HTML (such as HTML versions 1 – 4)
  - Audio and video files were only playable in a web-browser with a “plug-in” (a software application) such as “Adobe Flash”
- In HTML 5
  - The <audio> and <video> elements provide a common standard which specifies how to embed video and audio files into a web-page
- HTML5 defines DOM methods / properties / events for the <audio> and <video> elements to manage the
  - loading /starting/ playing / pausing / stopping / volume / duration
- For the full DOM reference see w3schools.com

The World Wide Web
and
The Future

The World Wide Web (WWW)

- Original HTML (termed Web 1.0) only allowed users to view a web page
- The Web has entered a new phase of evolution:
  - The new phase is often termed Web 2.0
  - There has been much debate over a term for the new phase
  - Some prefer to not name it all while others suggest continuing to calling it Web 2.0
  - However the new phase of evolution has quite a different focus from what Web 2.0 has come to mean

Web 2.0

- Developments in the WWW (termed Web 2.0):
  - Provide a basis upon which users could interact with web sites
  - For example: interactions in social media platforms
- While there is no generally agreed definition of the term Web 2.0:
  - There is agreement that Web 2.0 focuses on several major themes including: AJAX, social networking, folksonomies (*a classification system in which end users apply public tags to online items*), lightweight collaboration, social bookmarking, interactive interactions, and media sharing

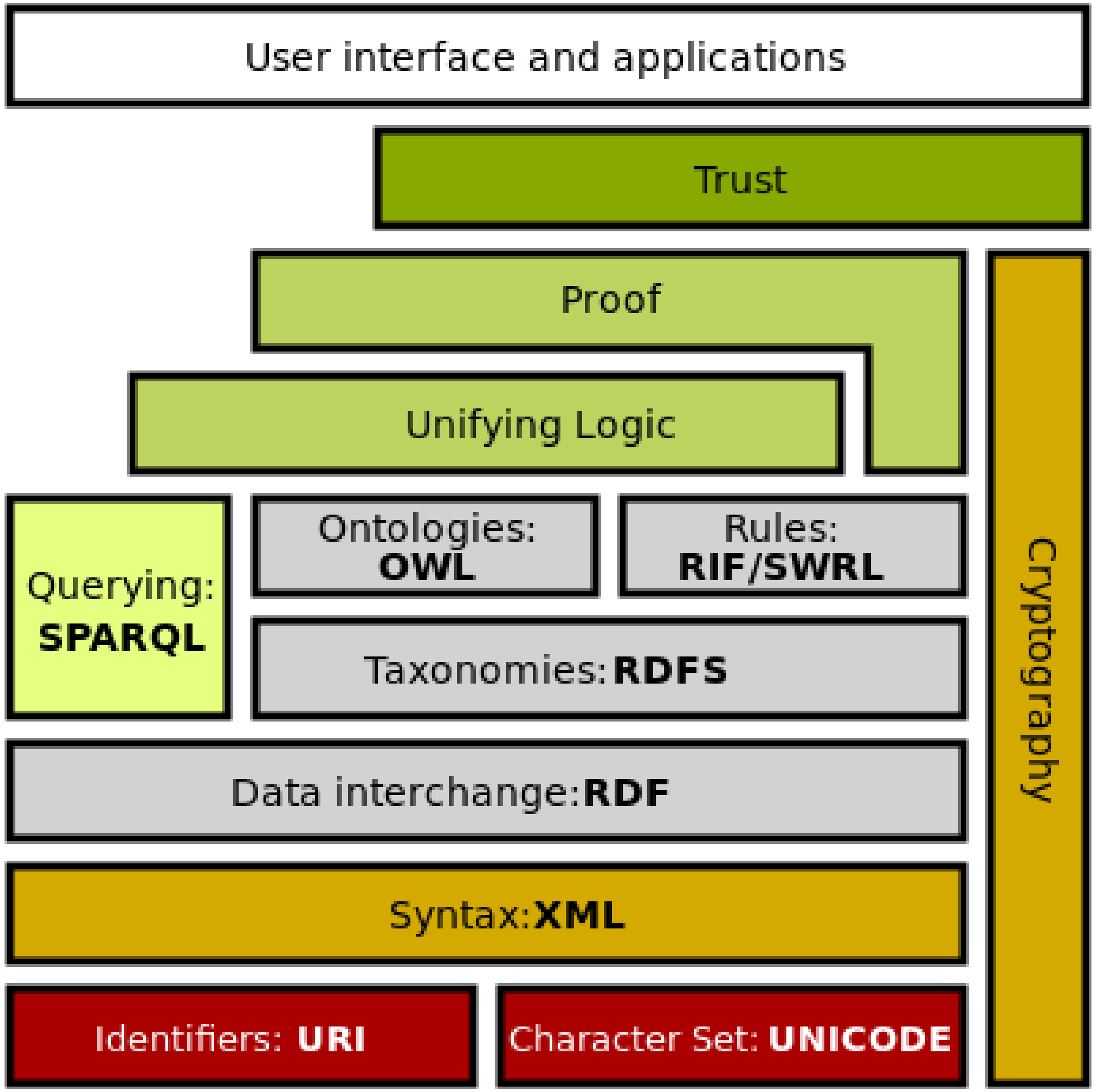
Web 3.0

- Web 3.0 is Coming!
  - Web 3.0 is the third generation of internet services for websites and applications
- Web 3.0 focuses on:
  - Using a machine-based understanding of data to provide data-driven and *semantic web* based applications and services
- The ultimate goal of Web 3.0:
  - Is to create more intelligent, connected and open websites

The Semantic Web

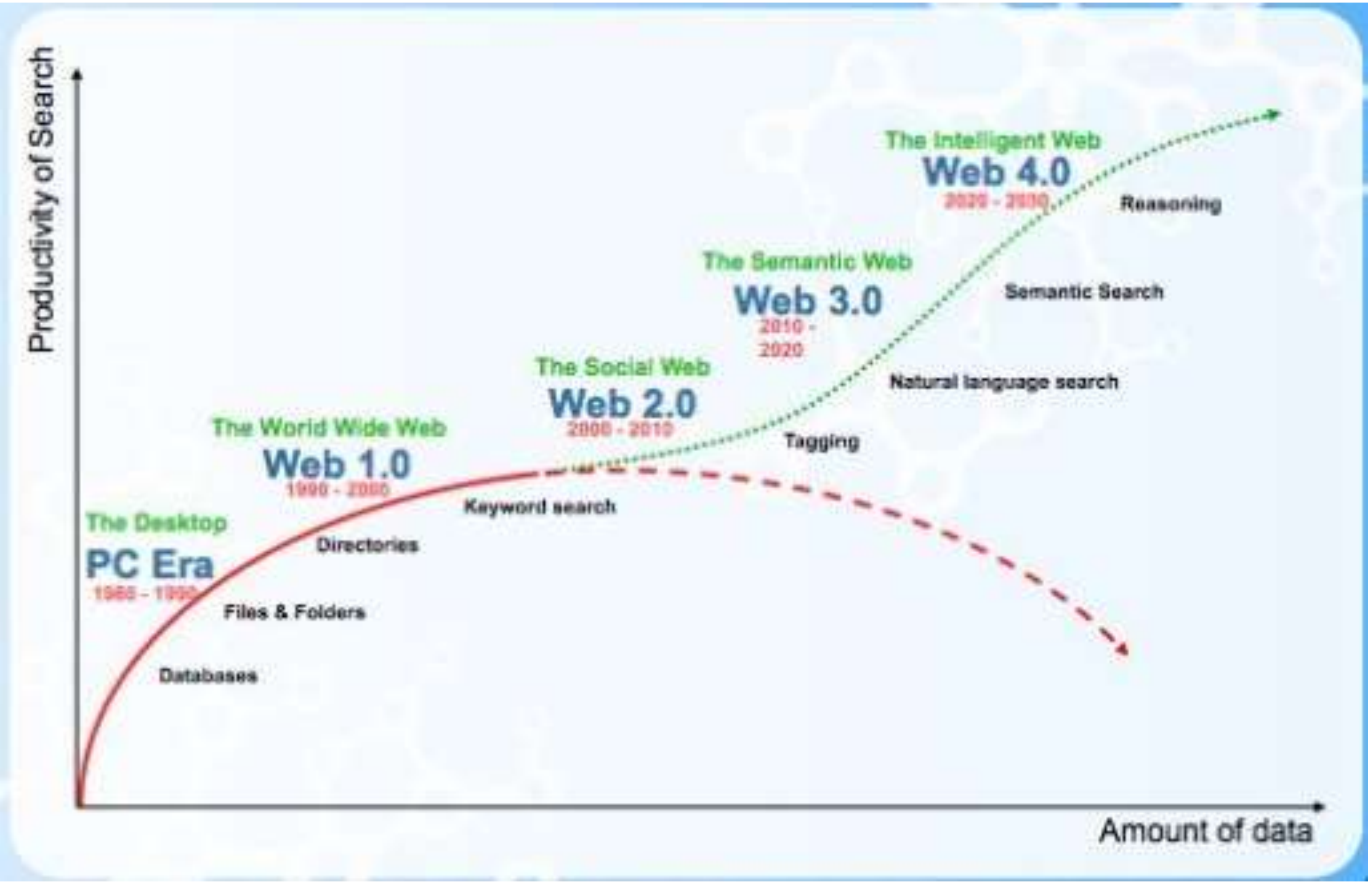
- The Semantic Web is an extension of the World Wide Web through standards set by the World Wide Web Consortium (W3C).
  - The goal of the *Semantic Web* is to make Internet data *machine-readable*
- To enable the encoding of semantics (including linguistics with qualitative and quantitative metrics) with the data:
  - Technologies such as *Resource Description Framework* (RDF) and the *Web Ontology Language* (OWL) are used

The Semantic Web Stack



The Future

The Semantic Web



Conclusion

- In this session we have introduced:
  - The creation of frames and inline <iframe> frames with their uses
  - Introduced forms and data input methods including the GET and POST
  - Introduced adding multimedia
- In considering HTML:
  - We have very briefly considered the current state of the WWW and how it may develop in the future to realise intelligent semantic systems
  - Future development with Web 3.0 (and Web 4.0) remain uncertain but will result in existential socio-technical change which must be reflected in our approach to web systems and services design