CIS 4004: Web Based Information Technology Summer 2014

Inside HTML5 – Part 1

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- HTML5 has been created in a way to make it backward compatible with earlier versions of HTML and XHTML.
- HTML5 also tells the browser how it should handle errors caused by incorrect markup implementations. Previously, browsers would interpret the errors themselves, and each browser would have its own quirks.
- HTML5 has been written for developers and not just web page designers.
- The true power of HTML5, as we will see further into the course, is how it addresses the needs for web application developers. Because browsers are so powerful, websites can be created that are very much like applications. They can provide photo sharing, drawing, file editing, and other features.





- Previously, these types of features required layers of JavaScript and a plug-in such as Java or Flash.
- This causes accessibility issues and relies heavily on the stability of third-party software.
- HTML5 provides new standards for how web applications can be created, with powerful APIs for this such as canvas drawing, drag and drop, offline storage, and native video in the browser.
- With specified standards, browsers will be able to handle these things correctly and in a stable fashion over time.
- As a quick review, the basics of an HTML element are shown on the next couple of pages.





• All elements, except for void (empty) elements, consist of three pieces: a start tag, content, and an end tag.



- Empty elements are used primarily to describe pieces of data that don't contain any content.
- For example, some common empty elements in HTML are:

- In XML and HTML, all elements must have a start tag and end tag.
- The XML specification provides a shortcut for writing an empty element using a single tag. This is shown below:

for line break

 for image

 for paragraph

NOTE: The practice of adding the extra space is **not** part of the syntax of either XML or HTML. The reason for the space it to make this code compatible with older versions of Web browsers. Because HTML does not require end tags for these elements, most older browsers do not know how to handle the new empty element syntax. The extra space allows these browsers to interpret the syntax correctly.

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- HTML attributes are pieces of information that help to describe elements. Some elements have required attributes, others are optional and depend on the content that is being marked up.
- Attributes appear in the start tag of an element.
- Attributes are referred to as name-value pairs and have the following syntax: The name of the attribute is on the left, followed by an equal sign, then the value.

name = "value"

• Here are a few examples:

Click here

<img src="/images/pictures.gif" id="Picture of House"



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- HTML5 is not just one technology. It is more of an umbrella term that has been adopted from the inclusion of new and enhanced HTML elements, CSS styles, and JavaScript APIs and events.
- The intersection of these three technologies provides for a wide range of new features to enhance the user experience, make websites more like native applications, and integrate to devices.
- The following page lists just some of the new or enhanced functions available in HTML5:



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New or Enhanced Functions In HTML5

- Improved semantics
- Forms
- Canvas drawing
- Drag and drop
- Local storage
- Page to page messaging
- Desktop notifications
- Video and audio
- Web sockets
- Geolocation (not strictly part of HTML5, but being developed in conjunction with it)
- History
- Microdata





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The HTML5 logo. You can download this one and many other variants at <u>http://w3.org/html/logo</u>





- HTML5 is not just about interactive creations with JavaScript APIs and video/audio coolness. There are more than 20 new elements designed to help you author your webpages, adding semantics to deliver more accessible, reusable content.
- Later on we'll examine new HTML5 form controls and multimedia elements, but for now we'll focus on the basics of creating a basic website template with the new elements.
- The basic page structure as defined by HTML5 appears on the next page.



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Basic Page Structure - New HTML5 Elements



<footer>

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- We'll do a quick review of the basic markup in an HTML5 document and clarify the differences from the older versions and what is and is not required in HTML5.
- The doctype should be the very first line in an HTML document. Called a Document Type Definition (DTD), the doctype is a web standard's requirement and it tells the browser how to process the document, which is why it must be the first thing in HTML document.
- The next page shows the old style XHTML doctype and the new HTML5 doctype.



XHTML Strict 1.0 doctype:

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

HTML5 doctype:

<!doctype html>

Historical Aside

If you go to: <u>http://infomesh.net/html/history/early/</u>, you can see the earliest HTML document that can still be found on the Internet, from November 13, 1990. This document was created by Tim Berners-Lee. The markup is quite simple, and its simplicity is the rationale behind the HTML5 standard. This markup contains a working hyperlink. In fact, if you copy this markup and add the new doctype to the page, it will validate against the HTML5 standard. Check it out!

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- The next thing you should do in all of your HTML documents is declare a language.
- Specifying the language of content is useful for a wide number of applications, from linguistically-sensitive searching to applying language-specific display properties.
- In some cases the potential applications for language information are still waiting for implementations to catch up, whereas in others, such as detection of language by voice browsers, it is a necessity today.
- Declaring a default language is important for applications such as accessibility (more later) and search engines.



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- The easiest way to specify the language of an HTML document is to add a lang attribute to the root element of the HTML page.
- The root element of an HTML page is always <html>, so to specify a language, you simply do the following:

<html lang="en">

<html lang="en-US"> //US dialect

<html lang="en-GB"> //British dialect

Note that the lang attribute can also be used inline as shown:
 Elise replied

"Bon chance!"





• Note that if you are familiar with XHTML, the xmlns attribute is no longer needed in HTML5.

<html xmlns=http://www.w3.org/1999/xhtml>

• The xmlns attribute was used to inform the browser that all the elements on the page are in the XHTML namespace. However, in HTML5, elements are always in this namespace so it is no longer necessary to specify this attribute.



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- Next up in an HTML document is the head element.
- The first line you should include inside the head of an HTML5 document is the charset declaration, which tells the browser how the document should be interpreted; in this case, you want to send it an HTML document.
- In XHTML, this looked like this:

<meta http-equiv="Content-Type" content="text/html"; charset=utf-8">

• In HTML5, it is again, much simpler, and looks like this:

<meta charset="utf-8" />

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- The next line you should include inside the head of an HTML5 document is the title element, which tells the browser how the document should be titled in the browser header bar.
- This element is the same in HTML5 as it was in XHTML and looks like this:

<title> Name of my page </title>

• Note that this is not a void element as its content is the title.



- HTML5 helps you to reduce the amount of markup from your pages, and calls to JavaScript and CSS links are also reduced in size.
- In XHTML, they looked like this:

<script type="text/javascript" src="myscript.js"> </script>
<link rel="stylesheet" type="text/css" href="mystyles.css" />

• In HTML5, they're again much simpler, and look like this: <script src="myscript.js"></script>

<link rel="stylesheet" href="mystyles.css" />



Syntax Writing Style In HTML5

- You can markup in either lowercase, or uppercase, or a combination of the two.
- You can markup with either quotation marks on attribute values, or omit quotation marks on attribute values, or a combination of the two.
- For void elements, such as a <link> element, you can omit the closing slash or include it.
- All below are equivalent:

<link rel="stylesheet" href="mystyles.css" />
<LINK REL="STYLESHEET" HREF="MYSTYLES.CSS" />

<liNK reL="styleSHEET" href=mystyles.css>

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Syntax Writing Style In HTML5

- For backward compatibility, HTML5 allows web pages to be marked up using either HTML4 or XHTML syntax.
- While it is therefore possible to mark up your documents in HTML5 in either a very loose or rather strict style, I'd recommend using the more strict style. Why?
 - Rules are useful. They enable collaborative working, allowing everyone to conform to a standardized syntax.
 - The rules also make it easier to learn markup.
 - Most importantly, accessibility best practices will often require it. For example, the specification of a language.





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                                                                                      4 F
   1
        <!DOCTYPE html>
   2
      A more complete HTML template
   3

head>

   4
            <meta charset="utf-8" />
   5
            <title> Page Title </title>
   6
            <link rel="stylesheet" href="mystylefile.css" />
   7
       </head>
   8
      ⊟<body>
   9
            <!-- page content goes here -->
  10
            <header>
  11
                 <!-- header content goes here -->
  12
            </header>
  13
            < nav >
  14
                 <!-- navigational elements goes here -->
  15
            </nav>
            <article>
  16
  17
                <!-- main article content goes here -->
  18
                <section>
  19
                     <!-- sectional content goes here - possibly several -->
  20
                 </section>
  21
            </article>
  22
            <aside>
                 <!-- supplemental content goes here -->
  23
  24
            </aside>
  25
            <footer>
  26
                 < --- footer content goes here -->
  27
            </footer>
  28
       </body>
       </html>
  29
length: 620 lines: 29
                     Ln:1 Col:1 Sel:0|0
                                                       Dos\Windows
                                                                     ANSLas UTE-8
                                                                                    INS
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                                                Page 23
                                                             © Dr. Mark Llewellyn
```

- In 2005, Google analyzed more than 1 billion web pages to find out what class names were being used by developers and web authors. This provided the basis for the new elements in HTML5.
- The following are the 20 most popular class names at the time:

footer	menu	Title	Small	Text
Content	Header	Nav	Copyright	Button
Main	Search	Msonormal	Date	Smalltext
Body	Style1	Тор	White	link

• Although several of these items are presentational (for example, white, style1, msnormal), the others make up the elements included in the HTML5 specification.



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- So why use these new elements?
- HTML5 allows you to give your content semantic meaning, so, for example, if you have navigation on your page, you can use the nav element because that element provides meaning to its content.
- As an example, let's start at the top of a "typical" web page. The header element is often the first thing on a web page, and it usually contains things like a logo, the website name, or the main site navigation.
- Things like a search form or a table of contents are also often included in the header element.



- The HTML5 specification states that the <header> element can contain navigation aids, but it is also possible for the navigation aids to be placed outside of the <header>.
- You are also not restricted to just a single <header> elements per page, and it does not have to be at the top of a page.
- You cannot place a <header> inside a <footer>, <address>, or another <header> element.
- The markup example on the next page illustrates this concept.

CAUTION!!

Do not confuse the <header> element with the <head> element. There can only be one <head> element in each HTML5 document.

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http://localhost:8081/exa	CGS 2545 Lecture Notes 🗙	🖺 file:///C:/Users/Mark%20 🗙	Using Multiple Headers C 🗙	+			
← → C III [] file:///C:/COURSES/CIS%204004%20-%20Web%20Based%20Information%20Technology/code/Basic%20HTML/m III ♥							
<u>Chapter 1</u>							
5.12.2014							

This is the text for the first chapter. It could go on for a long way.

Chapter 2

5.11.2014

This is the text for the second chapter. It too, could go on for a long way.

Chapter 3

5.12.2014

This is the text for the third chapter.

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Grouping Headings With The <hgroup> Element

- The <hgroup> element allows you to add further information to your <header> elements.
- This element is used to group more than one related h1-6 headings. It can contain only <h1>...<h6> elements. If your site has a subheading or a tagline, you would use this element to group them together.
- Although it is a useful grouping option, the <hgroup> element is primarily intended to tell the document outline (we'll learn about this later) which of the headings is the most important. In the example, on the next page, the document outline will exclude all headings within the hgroup except the highest one, which in this case, is the h1 heading.
- As you can see in the markup, the h2 heading is relevant to the h1 heading, and so on, so the use of the hgroup makes sense. If you have a single heading element, there would be no need to use the hgroup.







- The <nav> element, as you might expect from it name, is for navigational content. It is used to link to other pages within the site or to other parts of the page, like a table of contents, for example.
- The most common use of a <nav> element is for the main navigation on a website. It is common practice to use an unordered list to code navigation content.
- The following page illustrates both the traditional way of marking up navigation and the way to do this in HTML5. Notice that there isn't much difference between the two, but it is profound from a semantic point of view.



```
        <a href="#">Home</a> 
        <a href="#">About</a> 
        <a href="#">News</a> 
        <a href="#">Contact Us</a>
```

Traditional Way of Marking Up Navigational Content

```
<nav>

<a href="#">Home</a> 
<a href="#">About</a> 
<a href="#">News</a> 
<a href="#">Contact Us</a> 
<a href="#">Contact Us</a>
```

Navigational Content Markup In HTML5 Using <nav> Element



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- As the example on the next page illustrates, the <nav> element can also be placed in the <header> element. In HTML5 the <header> element allows for introductory and navigational content.
- Navigational content does not have to be placed in a <header> element, and sometimes its placement might depend more on styling issues.
- It is quite common to see a navigation menu in the footer of a page, sometimes duplicating the main site navigation.





- There is a big accessibility win when using the <nav> element. Assistive technologies such as screen readers, will be able to search and immediately use groups of navigation rather than waiting for them to appear on screen.
- Traditionally, developers have used "skip" or "jump" links of the very first things in an HTML document, and they are usually links to other main navigation or main content.
- However, using the <nav> element means that developers will be able to drop such "skip" menus.
- The only problem at the moment is that most assistive technologies have limited support for HTML5 elements.. However, they will soon catch up.



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The New <article> Element

- The <article> element and the <section> element (discussed later) are arguably the two most important new HTML5 structural elements. However, they are also two of the more confusing new elements.
- The <article> element is an independent block of content; it is content that could exist in its own right and content that is reusable.
- Consider content you see in an RSS feed; the content is nearly always individual articles. You could take them out of the feed, and they make sense on their own.
- The HTML5 specification suggests some examples of how an article element can be used, such as a forum post, a magazine or newspaper article, a blog entry, or a user-submitted comment.

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The New <section> Element

- The <section> element is an area of content or an area of a page that nearly always requires a heading. It should be used to group an entire "section" of content. A section can be broken down into further sections if required.
- It is **not** to be used as a general wrapper for styling purposes (i.e., a <div> element).
- A <section> element can contain <article> elements, and <article> elements can have their content split into multiple <section> elements.
- Before we look at an example using these new elements, we'll consider a couple of related new structural element, the <aside> element and the <footer> element.



The <aside> Element

- The <aside> element is for a group of content that is "tangentially" related to its surrounding content, such as a list of most popular posts, blog categories, or recent comments. This type of content is related to the main page content, but it is also separate from it.
- In current web development, it is common for there to be a "sidebar" on the page. This does not necessarily mean that it is physically on the side of the page, but it often contains things such as related links or a list of categories.
- The correct use of the <aside> element depends on where you put it. If it is inside an article, the <aside> content should tangentially relate to the article content, such as a glossary. If the <aside> is is outside of an article or section, its content must be related to the page, such as related links, the site owner's Twitter feed, etc.

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The <footer> Element

- The <footer> element, as its name suggests, is typically located at the bottom of the page. However, that is not always the case, although the it will often be found there.
- The <footer> element is intended for content about its section, including information about the author or site owner, copyright data, and site terms and conditions.
- If a <footer> element is inside an <article> or <section>, it could contain the date the article was published, tags, categories, and other metadata.
- The HTML5 specification suggests a solution to a very common web element: the copyright notice on a page:

<footer> <small>© Copyright MJL 2012</small> </footer>



The <footer> Element

- The previous example of the copyright would most likely be located just before the closing </body> tag. Notice how the use of the <small> tag is recommended.
- Like the <header> element, you can use a <footer> element more than once per page.
- You can put a <footer> element inside an <article> element.
- The following example builds a page with many aspects of the <article>, <section>, <aside>, and <footer> elements utilized.



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<	<body> article> <header></header></body>		
	<nav></nav>		
	<section></section>		
	<section></section>	<aside></aside>	An HTML5 page illustrating the use of header, nav,
	<footer></footer>		section, aside, and footer
<	article>		elements.
	<header></header>		
	<nav></nav>		
	<section></section>		
	<section></section>	<aside></aside>	
	<footer></footer>		

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A Big Example

- The next few pages present an example webpage that utilizes all of the new HTML5 structural elements that were presented in this set of notes.
- The page that is created represents a layout for a news page. It includes some basic CSS to position the various elements, but I didn't include anything too advanced as far as the CSS is concerned; we'll get more into that later.
- Since the markup is fairly long, I've abbreviated some of the more repetitive parts here. The full markup is available on the course website.

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```
*C:\Courses\CIS 4004 - Web Based Information Technology\code\Basic HTML\newssite - notes version.html - Notepad++
    Edit Search View Encoding Language Settings Macro Run Plugins Window ?
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File
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                                                                                                            4 F
😑 multiple headers on one page.html 🗵 📋 hgroup example.html 🗵 🔚 newssite - notes version.html 🗵 🔚 navigation inside header.html 🗵
      ection id="entertainment">
  61
                                                                                                              Α
  62
            <h1>Entertainment news</h1>
            <article><!-- (x3) separate articles in this section -->
  63
  64
                <header>
  65
                <h2><a href="#">Entertainment headline 1</a></h2>
  66
                12th May 2014
                </header>
  67
                "Neighbors" beats "Spider-Man 2" at the box office this week.
  68
  69
            </article>
 70
       </section>
 71
 72
      ection id="tech">
 73
            <h1>Tech news</h1>
            <article> <!-- (x3) separate articles in this section -->
 74
 75
                <header>
                <h2><a href="#">Tech headline 1</a></h2>
 76
                12th May 2014
 77
 78
                </header>
 79
                Linux gets fix for execution flaw unpatched since 2009.
 80
            </article>
 81
       </section>
 82
      aside>
 83
            <a href="#"><img alt="Snazzy advert" src="images/the-letter-m.jpg" height="128" width="128"
 84
 85
            <a href="#"><img alt="Snazzy advert" src="images/the-letter-a.jpg" height="128" width="128"</pre>
            <a href="#"><img alt="Snazzy advert" src="images/the-letter-r.jpg" height="128" width="128"
 86
 87
            <a href="#"><img alt="Snazzy advert" src="images/the-letter-k.jpg" height="128" width="128" >
<
                                                                                                            >
Hyper Text Markup Language file
                        length: 2891 lines: 98
                                                Ln:13 Col:13 Sel:0|0
                                                                               Dos\Windows
                                                                                            ANSI as UTF-8
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```

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Home Sports news Entertainment news Tech news About Contact							
Headline article							
This is our most important article							
1st January 2014							
Chris Froome targets win in 2014 Tour de France.							
Sports news	Entertainment news	Tech news					
<u>Sports headline 1</u>	Entertainment headline 1	Tech headline 1					
11th May 2014	12th May 2014	12th May 2014					
Marianne Vos wins inaugural Women's Tour.	"Neighbors" tops "Spider-Man 2" in US box office this week.	Linux gets code execution fix unpatched since 2009.					
<u>Sports headline 2</u>	Entertainment headline 2	<u>Tech headline 2</u>					
11th May 2014	12th May 2014	12th May 2014					
Florida and UCF will play in same WCWS Regional in Gainesville.	Beyonce's sister in fight with Jay-Z.	Glacier melt in Antartica will ensure ocean level rise.					
Sports headline 3	Entertainment headline 3	<u>Tech headline 3</u>					
11th May 2014	12th May 2014	12th May 2014					
Louis Hamilton wins Spanish Grand Prix.	Wilmore to succeed Colbert.	Facebook removes apps Poke and Camera from circulation.					
Site powered by a <u>Server With No Name</u>							
Site hosted by a <u>Host With No Name</u> The photos on this site are all owned by the photographer							
Copyright MJL 2014							

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Using The HTML5 Outliner To Ensure Correct Structure

- With the new HTML5 structural elements, you have the opportunity to make your content flow in a logical manner and to allow people to navigate through the content using a hierarchy (using screen readers, for example), rather like a table of contents.
- Testing against the outline will allow you to check that you are using headings and sections correctly.
- There are various browser extensions and websites at your disposal, but here I'll show you how to get and use a Google Chrome extension.
- Download the Chrome extension at: <u>http://code.google.com/p/h5o</u>.
- Once the extension is installed, you'll get an icon in the address bar as shown on the next page.





Using The HTML5 Outliner To Ensure Correct Structure



There's a new way to work together, from wherever



Using The HTML5 Outliner To Ensure Correct Structure

- When you select this tool, you will see displayed data that looks like a table of contents, usually with the content indented.
- If you have organized the content properly, you should have a structured and logical table of contents.
- You want to avoid "Untitled section/article." If that message is displayed, chances are that you have used the wrong markup, and you should reexamine your markup and correct the issues.
- Note, however, that nav and aside are allowed to have "Untitled section."
- The next three pages illustrate the use of the outliner tool. The last of these pages shows the outline of our big example news page.



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		– 🗆 🗙				
CNN.com - Breaking New 🗙						
Apps 🕼 Zimbra Web Client L	1. About that kiss					
The second secon	<u>Celebration kiss draws praise and outrage</u>					
You've selected the U.S. Ed	1. THE LATEST 2. MORE TOP STORIES	Ê de la constante de				
	3. OPINION					
	4. IN CASE YOU MISSED IT	Si				
SET ED	5. <u>AVIATION NEWS</u> 6. <u>READ THIS, WATCH THAT</u>					
TV: CNN	7. LIVE TV					
	8. <u>CNN Newsroom</u> 9. Weather	POU				
	10. <u>Markets</u>					
Home TV & Video CNN Treng	11. <u>U.S.</u>	∦ Opinion iReport Money∍				
	12. <u>World</u> 13. <u>Politics</u>					
	14. Around the Web	-				
	15. <u>Tech</u> 16. <u>Business</u>					
	17. Opinion					
	18. Healthination					
	19. <u>Entertainment</u> 20. Travel	Business				
	21. Living					
	22. <u>Sponsored links</u> 23. Health	St				
	24. Photography	k together,				
	25. Sports					
	26. <u>HLNtv</u> 27. Healthgrades					
	28. Indeed.com Job Search					
	29. <u>Play CNN Games!</u> 30. TV Programs					
	CNN Weekdays Anderson Cooper 360 Chicagoland CNN Newsroom					
updated 2:50 PM EDT, Mon May 12, 201	Crossfire Early Start Erin Burnett OutFront The Lead with Jake Tapper	Make CNN Yc				
	<u>New Day The Situation Room Unguarded with Rachel Nichols CNN</u> Weekends Anthony Bourdain Parts Unknown Death Row Stories	and the second sec				
CNN TRENDS Michael Sa	Fareed Zakaria GPS Inside Man Inside Politics Reliable Sources Sanjay	ere weather • Ukraine • Sin City				
	Gupta MD State of the Union Your Money Other CNN CNN Films CNN Heroes CNN Student News In America HLN Dr. Drew On					
	Call Jane Velez-Mitchell Morning Express with Robin Meade Nancy Grace					
AD	TV & Video	\mathbf{C} I				
	31. <u>CNN Newsroom</u> 32. <u>Must Watch TV</u>	Goode-				
	33. Trending Video	>				
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