

## HTML 1 - Structure

Open a web browser to [w3.cs.jmu.edu/kirkpams/343/demos/](http://w3.cs.jmu.edu/kirkpams/343/demos/). Use the exercises and the provided solutions to answer the following questions.

1. What happens when you try to put a paragraph inside another paragraph? What happens when you try to put a div inside another div?
2. What happens if you put a paragraph tag inside a heading? Is there a difference between the text in the paragraph and the text in the rest of the header?
3. When aligning text, how does the `<center>` tag behave differently than `<p style="text-align: center">`?
4. What is different about the `<pre>` tag relative to the `<code>` tag? Why might one or both be needed?

## HTML 2 - Lists

1. What is different about `<ul>` vs. `<ol>` lists?
2. What does the type attribute do for lists? Is it different for `<ul>` vs. `<ol>`?
3. If you get rid of the type attributes, what is different about nested `<ul>` vs. `<ol>`?
4. Compare the definition lists with the nested lists that contain `<br>`. What is an advantage of one over the other?

## HTML 3 - Formatting

1. What does the `<marquee>` tag do? Does it work on all browsers? Why do you think this tag is discouraged?
2. When an inline tag is nested inside another, what happens if you close them out of order? (E.g., `<a>some <b>data</a></b>`.)
3. Is there a visible difference between `<strong>`, `<bold>`, and `<span>` tags? Try changing the `font-weight` value to different multiples of 100 and observe the results.
4. How do the `kbd`, `var`, and `samp` tags affect the presentation of the text? What do you think these tags mean?

## General questions

1. Does whitespace (extra spaces, newlines, etc.) matter?
2. Can you put a newline between the `<` and the tag? What about the tag and `>`?
3. Can you eliminate quotes around attributes?
4. Many closing tags can be eliminated (to minimize the content size). Which elements cannot omit their closing tag?

## HTML 4 - Multimedia

1. Given the server root `/cs/www/home`, what is the absolute path to the file `/cs/www/home/kirkpams/images/portrait.png`?
2. From the file `/cs/www/home/kirkpams/343/demos/week1.html`, what would be the relative path to `/cs/www/home/kirkpams/343/images/goat.png`?
3. What purpose does the `alt` text serve if the path is bad (file doesn't exist)?
4. What happens if you add `autoplay` to `<video>` or `<audio>` tags? What if you remove controls?

## HTML 5 - Links

1. What happens if you omit the closing tag on a link?
2. What does the `target="_blank"` attribute do to a link? What if you use `_self` instead?
3. Which attribute is needed to link to a fragment (the part after `#` in a URL) in a page?
4. When you wrap an image in an `<a>` tag, is there any visible clue that a link exists?

## HTML 6 - Tables

1. How do the `<th>` and `<td>` tags differ? What do different values of the `border` attribute do?
2. What does the `cellpadding` attribute control? Try different values for this attribute.
3. What happens when multirow (`rowspan=N`) or multicolumn (`colspan=N`) fields span into other existing fields? (E.g., add another `<th>` to the multicolumn exercise.)
4. When creating tables, you should not use the `border` or `cellpadding` attributes but it is generally okay to use the `rowspan` or `colspan` attributes. Why?

## HTML 7 - Forms

1. If you enter "hello world" (without the quotes) into a form's textbox, how does that get translated into a URL? What if you enter "hello?" instead?
2. How do the text, email, password, and date input types differ in their presentation and behavior?
3. Examine the URL after setting up the input fields. How are the form contents passed to the server? Do you see a potential problem with this approach?
4. For the form validation, how helpful are the messages provided? Would they be generally sufficient for most users or would more guidance be required?

## CSS 1 - Rules

Open a web browser to [w3.cs.jmu.edu/kirkpams/343/demos/](http://w3.cs.jmu.edu/kirkpams/343/demos/). Use the exercises and the provided solutions to answer the following questions.

1. [Inline styles] What is the text color and background color for the word "world"? Where do both of these come from? How could you change the text color to green?
2. [CSS tag rules] Where do the colors for the word "Goodbye" come from? What happens if you add "text-align: center" to the style value? What if you add it to the CSS p rule?
3. [Defining CSS rules] What happens if you add the bold or uline classes to the <p> tag? Does this change if you add "font-weight: normal;" to the CSS p rule?
4. [Using rules in HTML] In the <span> for "amet," what changes (if any) happen if you add the red class? Why is this the case? What if you add the red class but remove the in-line style?

## CSS 2 - Compound Rules

1. [Combining classes] Why does "border" still appear in white text on a green background if the "color" and "bg" classes are not specified? What happens if you change the "bg" class to use "background-color" instead of "background"?
2. [Combining properties] When you combine the font properties, what happens if you change the order of the values in the single line? What if you add "/ 1.5" after the font-size value?
3. [Inherited properties] What happens if you move either the area or edge class to the section? Why is the red box smaller with moving the area class than the edge?

## CSS 3 Rule Conflicts

1. [Multiple definitions] When the border property is overwritten, why are the "solid" and "width" classes ignored? Why are both paragraphs' borders changed instead of just the second paragraph?
2. [~~Specificity conflicts~~] ~~What happens if both the class and id attributes are present? Why does the text on the demos page show up in a sans-serif font, even though the section rule indicates a serif font? What happens to the page if you change the section rule to a p rule (not just in the live output, but elsewhere as well)?~~
3. [Preventing conflicts] What is different if the first .special has an element name compared to when it doesn't? Why might this be? What other approaches could you use to achieve the same goal of distinguishing the three types of text?

## CSS 4 Positioning

1. [Swapping block and inline] What changes (and what doesn't) if you add a width of 10em to the .inline and .block classes? Why?
2. [Swapping block and inline] Uncomment the div + span.block rule. Which element does this apply to? What happens if you change the display to use "none"? How is this different if you add "visibility: hidden;" instead?
3. [Positioning] When you show the solution, where is the "One" div? Why is it not immediately visible? How could you use z-index to change this?
4. [Positioning] If you decrease the values of top in the .inline class, in which direction do the text blocks move? What if you decrease the left values? Why?
5. [Positioning] Remove the left property from the .inline rule. Why does the "One" and "Three" blocks no longer overlap? *[HINT: How do absolute and fixed positioning determine unspecified values?]*
6. [Padding vs. margins] What happens if you use two values (e.g., 5px 10px;) instead of one for the border-radius? What about three values? Four?
7. [Box vs. height/width] Why is the display property required when making the <span> tags 80px wide?
8. [Box vs. height/width] Why are the two types of boxes (width vs. padding) different sizes? What is an advantage of one over the other?

## CSS Flexbox

Complete the following code exercises and discuss the following questions. Each exercise has its own instructions embedded.

- Flexbox alignment
  - Flexbox text positioning
  - Flexbox space filling
  - Flexbox relative sizing
1. [Flexbox alignment] What happens if you set both align-items and justify-content to center? What dimension is each controlling? How does this change if you add flex-direction: column?
  2. [Flexbox text positioning] What does the stretch property do if the items are not centered? What happens if you move the flex-direction from the flex item class (.fi) to the flex container (.fc)?
  3. [Flexbox space filling] What (if any) is the effect of adding 150px to the flex property? Why? What happens if the first flex argument is changed to 0 (i.e., flex: 0 150px;)? What would you need to add to the .fc class to spread the items across the full horizontal space?
  4. [Flexbox relative sizing] What happens if you change the flex-direction to column or column-reverse? Specifically, why is the horizontal space no longer filled? What would you need to change to fill the horizontal space? From the original solution, what happens if you set the .fi class to use flex: 0? Why?

## Javascript 1 Basic Types

1. [Input and output] Replace `console.log` with `alert`. What is the difference between `alert` and `console.log`?
2. [Input and output] What happens if you change the `"let"` to `"const"`?
3. [Input and output] Add `"let"` before `"x = x - 2;"`. What happens and why?
4. [Dynamic typing] Why does `x + y` produce a different result from `x + z`? What specifically caused the `x + z` result?
5. [Dynamic typing] What happens if you make `y` `3.0` instead of `3`? Why?
6. [Dynamic typing] What happens if you remove the quotes in the definition of `guess1` and `guess2`? What if you replace them with double quotes?
7. [Equality tests] Does `x == y`? Why or why not? Does `x === y`? Why or why not?
8. [Equality tests] Does `x == z`? Why or why not? Does `x === z`? Why or why not?
9. [Equality tests] Change `x` to `'5' + 1`, `y` to `51`, and `z` to `'51'`. Now what matches and why?

## Javascript 2 Loops and Strings

1. [Array loops] What happens if you change the loop bounds to go beyond the end of the array?
2. [Array loops] Add three more items to the array: 3, ['d'], and {}. What is printed for these?
3. [Array loops] Keeping the added items, change the console.log to print `typeof(array[i])`. What does this do? Can you explain the number of lines of output?
4. [String splitting] In the original version (before the solution), what happens if you remove the `[i]` from the console.log? What if you also change the for-loop condition to use `i < 1`?
5. [String splitting] What happens if you change the "in" to an "of" in the for-loop? What are these values? (HINT: What happens if you print `array[word]`?)
6. [Array searching and indexing] What happens if you use `indexOf` to search for a string that is not in the array? Why?
7. [Array searching and indexing] Change the `str.splice` to `str.slice`. What changes in the output?
8. [Array searching and indexing] How does `splice(1, 3)` differ from `slice(1, 3)`?

## Javascript 3 Objects

1. [Array and object looping] What happens if you switch the "in" and "of" in the for-loops? Why?
2. [Array and object looping] If using the For...In with an array, how could you produce the same output as the original?
3. [Nested structures] In the inner-most loop, why are the values for each object row treated the same (e.g., by printing each letter individually)?
4. [Nested structures] How could you use typeof to distinguish between the name and vals entries?
5. [Dynamic list groups] What is the return type of the buildItem function? What is the parameter type?
6. [Dynamic list groups] Why does the for-of loop use += on line 18? What would happen if it just used = instead?
7. [Dynamic list groups] Why does line 22 use = instead of +=? What would happen if you switched this?

## Javascript 8 DOM Element Creation

1. [Dynamic list building] Add a background color to the list items. How could you alternate between two colors in this forEach loop? (HINT: Look at the MDN documentation for forEach to see what other arguments can be passed.)
2. [Dynamic list building] Add the 'Lorem' item as a hard-coded list item in the HTML and remove it from the data array. How can you still construct the list?
3. [Dynamic list building] What would be different if you removed 'Amet' from the list instead? How would you get the items in the same order?
4. [Window timeouts] What is the type of div.classList (see the Element reference) and what does the item() function do?
5. [Window timeouts] Why is the recursive call to swapColor necessary? How else could you accomplish the same task?
6. [List extender with fade] Where are the new items inserted into the list? How is that location specifically determined?
7. [List extender with fade] How could the code be changed so that the + always appears at the top?
8. [List extender with fade] What does the transition style do? Change the value and observe the result.