

ECE 413/513 – Fall 2019

Exam 1

Friday, September 27, 2019

Name: _____

No booklets, additional paper, textbooks, or other materials may be referenced during this examination with the exception of one 8.5"x11" sheet of paper (front and back). Your only other resources are a pen/pencil, eraser, and this exam.

Submit answers only in space indicated on each page.

1. Multiple Choice Questions (2.5 points each)

(1.1) Which of the following uses HTML tags appropriately for a paragraph with the following text.

Many *adamantly* argue that *Tinker Tailor Soldier Spy* is the *cremé del la créme* of spy novels.

- (a) `<p>Many <em>adamantly</em> argue that <em>Tinker Tailor Soldier Spy</em> is the <em>cremé del la créme</em> of spy novels.</p>`
- (b) `<p>Many <i>adamantly</i> argue that <i>Tinker Tailor Soldier Spy</i> is the <i>cremé del la créme</i> of spy novels.</p>`
- (c) `<p>Many <em>adamantly</em> argue that <cite>Tinker Tailor Soldier Spy</cite> is the <i>cremé del la créme</i> of spy novels.</p>`
- (d) `<p>Many <em>adamantly</em> argue that <cite>Tinker Tailor Soldier Spy</cite> is the <em>cremé del la créme</em> of spy novels.</p>`
- (e) None of the above

(1.2) Which is the correct way to specify a document is an HTML document?

- (a) `<doc type="html">`
- (b) `<doctype html>`
- (c) `<!DOCTYPE html>`
- (d) `<!DOCTYPE="html">`
- (e) None of the above

(1.3) Which of the following correctly includes an external stylesheet named sitestyle.css?

- (a) `<style src="sitestyle.css">`
- (b) `<style href="sitestyle.css" defer>`
- (c) `<link src="sitestyle.css" rel="style">`
- (d) `<link href="sitestyle.css" rel="style">`
- (e) None of the above

(1.4) Which of the following will cause a link to be open in a new tab or window?

- (a) `<link src="http://www.ece.arizona.edu" blank>Link</link>`
- (b) `<link src="http://www.ece.arizona.edu" target="_blank">Link</link>`
- (c) `<a src="http://www.ece.arizona.edu" blank>Link</a>`
- (d) `<a href="http://www.ece.arizona.edu" target="_blank">This is a link</a>`
- (e) None of the above

(1.5) What is the resulting URL if a user enters 8.8.8.8, selects State, and clicks submit on the following form?

```
<form action="https://ip.co/lookup" method="POST">
  <label for="ipVal">IP:</label>
  <input type="text" name="ipVal" id="ip">

  <input type="radio" name="lookupType" value="city" id="city">
  <label for="city">City</label>
  <input type="radio" name="lookupType" value="state" id="state">
  <label for="state">City</label>

  <input type="submit">
</form>
```

- (a) `https://ip.co/lookup`
- (b) `https://ip.co/lookup?ip=8.8.8.8&state`
- (c) `https://ip.co/lookup?ipVal=8.8.8.8&type=state`
- (d) `https://ip.co/lookup?ipVal=8.8.8.8,type=state`
- (e) None of the above

(1.6) Which CSS rule sets the background color to lightblue and sets the text color to white for all <p> elements that are a direct child of a <div> with class Author.

- (a) `div > p { background: lightblue; text: white; }`
- (b) `div p { background-color: lightblue; text-color: white; }`
- (c) `div > p { background-color: lightblue; color: white; }`
- (d) `div p { background: lightblue; color: white; }`
- (e) None of the above

(1.7) Assuming a user enters 20 in an <input> element with ID userInput, what is output by the following code?

```
let finalResult = document.getElementById("userInput").value;
finalResult += 1.0;
finalResult *= 2.0;
finalResult += "5.0";
console.log(finalResult + " is a " + typeof(finalResult));
```

- (a) 65.0 is a string
- (b) 425.0 is a string
- (c) 47 is a number
- (d) 11 is a number
- (e) None of the above

(1.8) Which JavaScript code changes the text of the second <div> tag to "<p>Deleted</p>".

- (a) `document.getElementsByTagName("div") = "<p>Deleted</p>";`
- (b) `document.getElementsByTagName("div").innerHTML = "<p>Deleted</p>";`
- (c) `document.getElementsByTagName("div")[1] = "<p>Deleted</p>";`
- (d) `document.getElementsByTagName("div")[1].innerHTML = "<p>Deleted</p>";`
- (e) None of the above

2. JavaScript Arrays and Objects (5 points)

Given an array `auctionList` of objects containing properties `year`, `make`, `model`, and `askingPrice`, write JavaScript code that assigns `cheapestCar` with the object with the lowest asking price. An example for the auctions lists array is provided below.

```
let carAuctions = [
  {
    askingPrice: 50000,
    year: 2017,
    make: "BMW",
    model: "M2"
  },
  {
    askingPrice: 20000,
    year: 1969,
    make: "Datsun",
    model: "510"
  },
  {
    askingPrice: 500,
    year: 1988,
    make: "Toyota",
    model: "Corolla"
  }
];
```

3. CSS and Box Model (10 points)

Render the provided HTML and CSS by drawing a wireframe in the provided box. Annotate the width, margins, and padding for each div and table.

HTML:

```
<body>
  <div class="card">
    <p>Top 3 Cities (2019)</p>
    <table>
      <tr><th>City</th><th>Population</th></tr>
      <tr><td>Tokyo</td><td>37,435,191</td></tr>
      <tr><td>Delhi</td><td>29,399,141</td></tr>
      <tr><td>Shanghai</td><td>26,317,104</td></tr>
    </table>
  </div>

  <div class="card">
    <p>Top 3 Cities (2018)</p>
    <table>
      <tr><th>City</th><th>Population</th></tr>
      <tr><td>Tokyo</td><td>37,468,302</td></tr>
      <tr><td>Delhi</td><td>28,513,682</td></tr>
      <tr><td>Shanghai</td><td>25,582,138</td></tr>
    </table>
  </div>
</body>
</html>
```

CSS:

```
body {
  text-align: center;
}

div.card {
  display: inline-block;
  width: 40%;
  border: 1px solid black;
  text-align: center;
}

div.card p {
  background: lightgray;
  text-align: center;
  padding-top: 10px;
  padding-bottom: 10px;
  margin: 0px;
  font-weight: bold;
}

.card table {
  width: 70%;
  margin-left: 15%;
  margin-right: 15%;
  margin-top: 10px;
  margin-bottom: 10px;
  border: 1px dashed black;
}

.card table th {
  border-bottom: 1px solid;
}

.card table td:nth-child(2) {
  text-align: right;
}
```

Render Web Page:

4. JavaScript updating the DOM (10 points total)

```
<div class="Converter">
  <label for="eurosInput">Euros</label>
  <input type="text" id="eurosInput" name="eurosInput">
  <label for="usdOutput">Euros</label>
  <input type="text" id="usdOutput" name="usdOutput" readonly>

  <input type="radio" name="conversionType" value="dollarsOnly" id="dollarsOnly" checked>
  <label for="dollarsOnly">Dollars Only</label>
  <input type="radio" name="conversionType" value="dollarsAndCents" id="dollarsAndCents">
  <label for="dollarsAndCents">Dollars and Cents</label>

  <button id="convert">Convert</button>
</div>
```

(4.1) (3 points) Given the HTML above, write the JavaScript code that when the HTML document is loaded will register a click event listener for the convert button that calls the function `convertToUSD()`.

(4.2) (7 points) Write the `convertToUSD()` function to convert the user-entered Euros from the `<input>` element with ID `eurosInput` to US dollars using the equation $USD = 1.10178 * \text{Euros}$ and displays the result in the `<input>` element with ID `usdOutput`. If the “Dollars Only” radio button is selected, the output should be rounded down and displayed with no decimal digits. Ex: \$125. If the “Dollars and Cents” radio button is selected, the output should be displayed as dollars and cents with exactly two digits to the right of the decimal for the cents. Ex: \$523.50

Extra Credit (1 point each)

(EC.1) Which CSS selector selects all <h1> and <h2> elements contained anywhere within a <div>?

- (a) `div h1, h2`
- (b) `div > h1, div > h2`
- (c) `div h1, div h2`
- (d) `div h1 + h2`
- (e) None of the above

(EC.2) Which of the following regular expression matches either a ZIP code containing 5 digits (e.g., 85721) or 5 digits followed by a hyphen and 4 digits (e.g., 82721-1234).

- (a) `\d+-\d+`
- (b) `\d+(-\d+)?`
- (c) `\d{5}(-\d{4})?`
- (d) `\d{1,5}?(-\d{4})`
- (e) None of the above