

# CS110 Review Questions for Final Exam

As before, this review is not a “practice test”— it is longer than the exam will be and covers more material. Some of the questions may be harder and/or more time-consuming than the exam questions.

Furthermore, this review is not exhaustive and there may be questions on the test that are not exhibited here. These questions are here for you to think about and to trigger your own thoughtful inquiry into the material. Review the lecture notes and textbook reading in an inquisitive way: not only “*do I understand this,*” but “*can I explain it,*” and “*can I use it*” and even “*what bits of syntax are tricky here?*” In addition to answering these questions, we recommend studying your midterm exam and homework problems, working through past problems and seeking assistance to understand solutions you did not understand the first time around.

Finally, the final exam is cumulative, so don’t forget to review old material, even HTML!

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**Q1:** Fill in the following sentences:

- A. Each line of JavaScript code is called a \_\_\_\_\_.
- B. You can concatenate \_\_\_\_\_ together with the + operator.
- C. All JavaScript statements end with a \_\_\_\_\_.
- D. To link to an external JavaScript file from HTML, you need the \_\_\_\_\_ attribute for the `<script>` element.
- E. OR (`||`) and AND (`&&`) are \_\_\_\_\_ operators.
- F. A parameter acts like a \_\_\_\_\_ in the body of a function.

**Q2:** Why do we need variables in a JavaScript program? Explain how they are used throughout a program.

**Q3:** What does it mean in JavaScript when something is displayed as “undefined” in the console?

**Q4:** Is a relational operator, such as `<=`, used in the same kind of expressions as a logical operator, such as `&&`? Explain

**Q5:** Answer the following questions without using the console. You can use the console to check your value only after you have tried to complete the questions by hand. Show your work.

```
var temp = 81;
var willRain = true;
var humid = (temp > 80 && willRain == true);
```

A. What is the value of humid? \_\_\_\_\_

```
var guess = 6;
var isValid = (guess >= 0 && guess <= 6);
```

B. What is the value of isValid? \_\_\_\_\_

```
var kB = 1287;
var tooBig = (kB > 1000);
var urgent = true;
var sendFile = (urgent == true || tooBig == false);
```

C. What is the value of sendFile? \_\_\_\_\_

**Q6.** Find all the bugs in this JavaScript code:

```
// Test for jokes
var joke = "JavaScript walked into a bar...";
var toldJoke = "false";
var $punchline = "Better watch out for those semi-colons."
var %entage = 20;

var result

if (toldJoke == true) {
    Alert($punchline);
} else
    alert(joke);
}
```

**Q7:** Declare a variable that will store an array of string values. Explain every component of the

syntax that you use.

**Q8:** Write JavaScript code to show examples of a global variable and a local variable.

**Q9:** What is the lifespan of a local variable?

**Q10:** Explain how the following code works:

```
function stillThere () {  
    alert("Are you still there?");  
}  
setInterval(stillThere, 2000);
```

## New Topics

**Q11.** What is the result of using a higher resolution to record a sound? Explain all the effects of the higher resolution on the recording.

**Q12.** You want to make a recording of the *Wellesley Blue Notes* for a web site. You'd like the recording to be as good of quality and as long as possible that you can get without exceeding a file size of 10MB. Explain how you would achieve this goal, and how long the resulting recording would be. Include your calculations.

**Q13.** Decrypt this Caesar code:

UJQY OG VJG OQPGA

**Q14.** Decrypt this Vigenere cipher with the keyword GOT:

CWCZSK OG VUABTU

**Q15:** Are Caesar and Vigenere ciphers examples of private key or public key cryptography? Explain.

**Q16.** Alice and Bob are using public key cryptography. What does Bob need to read messages from Alice?

**Q17.** Charlie steals Alice's private key. What is he now able to do?

**Q18.** Do you think Morse code is analog or digital? Why?

**Q19.** What happens if a digital certificate isn't signed by a recognized authority?

**Q20.** The web site `cheapesttickets.com` presents a form to order tickets for sports and music events. The form asks you to enter your credit card number. How would you determine whether it's safe to do so?

## JavaScript

**Q21.** Write a web page which shows the image `winter.gif` from December 1st through March 31st, and `summer.gif` for the rest of the year.

Assume your html code is in `weather.html`, and your JavaScript code is in `weather.js`.

Code for `weather.html`:

Code for `weather.js`:

**Q22.** Write the HTML and JavaScript for a page that randomly displays one of three pictures. Your HTML should be in a file named `splash.html`, and your JavaScript should be in a separate file named `random.js`. The pictures are `image1.gif`, `image2.gif`, and `image3.gif`.

Assume that all files are in the same folder.

Code for `splash.html`:

Code for `random.js`:

**Q23.**

A. A person can be assigned to a category according to their age:

- 0 to 2 is a toddler
- 3 to 11 is a child
- 12 to 17 is an adolescent
- 18+ is an adult

Declare a variable that will store an object of objects. The primary object has a property for each age category, and each of these has as properties the starting and ending ages for that category.

B. (omitted)

**Q24.** Assume your function definition from Q23 is in a file named `age.js`.

Now, write the code for a file named `age.html` in which the function you defined in Q23 will be used.

The page should include a text input with an `id="age"`, which will contain an age value entered by the user. It should also include a button with an `id="find_category"`, which, when clicked, invokes the function and displays the corresponding age category in a div on the page with `id="show_category"`.

Code for `age.html`:

Code to add to `age.js`, if needed (you may use either straight JavaScript, or also use jQuery):

**Q25.** Write a function which, given the two numbers as parameters, returns whether the first is

larger than the second. The returned value will be a boolean.

Code for function definition:

**Q26.** Assume your function definition from Q25 is in a file `compare.js`.

Use the function from Q25 in a page named `compare.html` that has inputs for two numbers and a button that, when clicked, prints the numbers and result on the page as a list item.

Each time the user enters a new pair of numbers in the inputs and clicks the button, the result should be appended to the list of all the values and results that were entered previously.

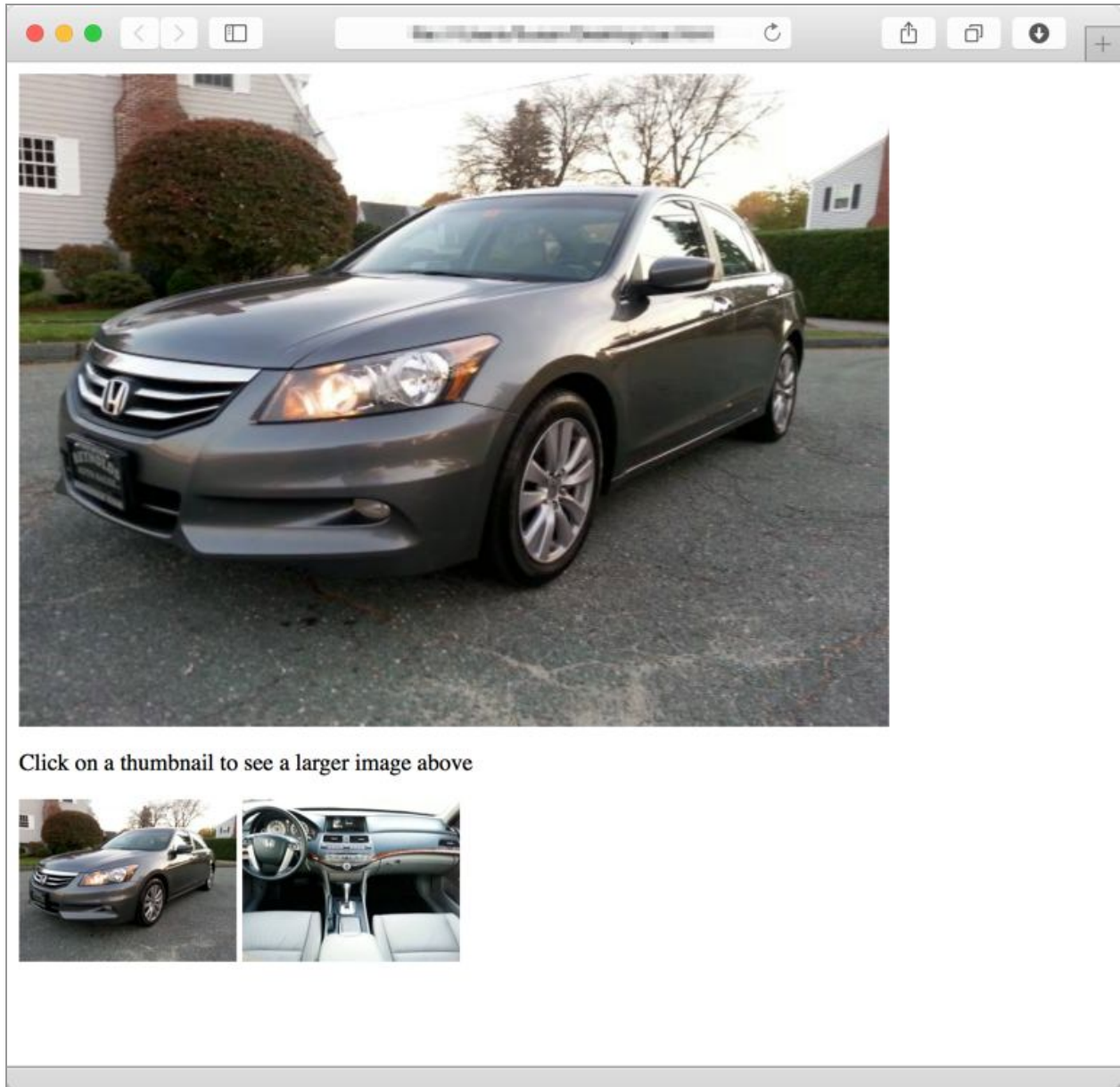
Assume there are no IDs used on the page.

Code for `compare.html`:

Code to add to `compare.js`:

**Q27.** Jamie wants to sell her car online. She has taken a couple of pictures of her car and she wants to provide a page where people can take a look at her car.

Here is what her page looks like.



And this is the relevant part of her code so far:

```
<p>  
    
</p>
```

```
<p>  
  Click on a thumbnail to see a larger image above.<br>  
  <img src='exterior_small.jpg' class='thumb' data-big="exterior_large.jpg">  
  <img src='interior_small.jpg' class='thumb' data-big="interior_large.jpg">
```

</p>

Complete Jamie's code so that if someone clicks on the small thumbnail of the *exterior* shot, the large exterior shot gets displayed in the big image at the top of the image (i.e. the image with the id 'car').

Similarly, if the small thumbnail of the *interior* shot is clicked, the larger interior shot gets displayed in the big image at the top of the page.

Assume jQuery is used, and that the code is defined in a file `car.js`.

Code for `car.js`:

## CSS

**Q28.** By default, text hyperlinks are blue and underlined. How would you overwrite this default style so that hyperlinks were black and *not* underlined, irrelevant of whether the links have been visited or not?

**Q29.** How would you make hyperlinks in a nav bar red and without underlines, without affecting any of the other hyperlinks on the page?

**Q30.** What properties can have the value `clear`? Why do you sometimes need to use it?

**Q31.** What's wrong with this code?

```
<div id="outer" style="width:300px; border:10px solid red;">
  <div id="inner"
    style="width:300px; margin:20px; background-color:yellow">
    Stuff with a yellow background, a red border, and some space
    between the yellow background and the border. The whole thing,
    measuring to the outside of the red borders, is 300 px
    horizontally.
  </div>
</div>
```

**Q32.** Write a rule for a class which uses white text in a green background.  
Also write a class for a rule that uses green text in a white background.



**Q33.** Write JavaScript code with jQuery to use the first class from Q32 on a page on even days, and the second class on odd days.