

E lance software engineer written test (updated January 2012)

Please submit answers to as many problems as you can. It is strongly suggested you use PHP to solve the programming questions. You may not be able to complete all of the questions, but we encourage you to still submit your answers for consideration. Efficiency and clean coding are key to making your answers stand out.

1) Largest repeated subset. Find the longest repeated subset of array elements in given array. For example, for array('b','r','o','w','n','f','o','x','h','u','n','t','e','r','n','f','o','x','r','y','h','u','n') the longest repeated subset will be array('n','f','o','x').

2) Javascript calendar. Using HTML, CSS, MooTools, and Javascript, create an interactive calendar webpage that:

- Shows one month at a time
- Allows the user to navigate to another month in any year
- Allows the user to add an “event” to any date that will then be highlighted in some way to show the user that there is an event on that date. An “event” is just a short string associated with a date.
- If the webpage is refreshed, the events should be forgotten (i.e., you only need to save the events in the javascript, you do not need to save them persistently)
- You should incorporate MooTools javascript library to create as interesting of a user interaction as possible (e.g., using animation is a good start)

This is a very open-ended, creative question that will test your ability to be creative, constructive, and efficient with your HTML, CSS, and Javascript.

MooTools: <http://mootools.net/>

3) Truncation with HTML. Write a function that truncates a string after the closest whole word, but also safely retains HTML code. The string should be appended with ellipsis (...) at the end of the truncation. For example, “*This is my bold string!*” with a truncation length of 12 should return “*This is my bold...*”.

4) SQL. The following SQL tables contain user data, category data, and jobs that the user is working on with the category of the job. Each table’s columns are listed in parenthesis, with jobs.user_id having a foreign key relationship to users.id and jobs.cat_id having a foreign key relationship with categories.id.

users (id, first_name, last_name)

categories (id, category_name)

jobs (id, user_id, cat_id, job_name)

Please write SQL queries to retrieve:

- a) For user_id = 94, the number of jobs in each category the user is working on (display category name and count)
- b) Find the category name with the most number of jobs.

Also specify if you are using Oracle or MySQL-specific elements in your queries.

5) Create an Elance store. Use the files included to build a small webapp that simulates a dynamic front end for an elance store.

Requirements:

- The store has two categories, with two items in each category. (use the sample data)
- Changing the category changes the items available in the item dropdown. The list must be retrieved via ajax call to processAHR.php
- Selecting an item in the dropdown changes the photo, item name, and description.
- Item information must be retrieved via ajax call to the same processAHR.php
- Clicking "Add to Cart" updates the shopping cart and updates total
- Clicking "Remove" will remove an item from cart and updates total
- Checkout doesn't need to do anything in this example

The layout should match the mockup provided (mockup.png). The core Mootools javascript library is included. Use the included files to build your application, no additional files are necessary. Sample data is included in processAHR.php.

6) Sudoku Verifier. Write the shortest, cleanest, and most elegant PHP class you can that will verify whether a 9x9 2D array of integers is a valid Sudoku solution.

Wikipedia "Sudoku" - <http://en.wikipedia.org/wiki/Sudoku>