Senior Full Stack Software Engineer (Remote)

RedCAT Systems

Coding Exercise

Write a PHP web application that can do the following:

1. Allow the user to upload a csv file. Assume the csv file has column headers in the first row.
2. Display the uploaded csv as a table in the browser (you may want to use Bootstrap and DataTables).
3. Allow the user to define new columns in the table based on applying operations to existing columns.
    - To add a new column, the user provides a column name and a formula which can consist of operations on existing columns (example below).
    - To simplify the scope of this exercise, assume all the data in the csv are either numeric or string (i.e., don't worry about parsing text formatting), and the only operations you need to handle are arithmetic (+ - * /) and concatenate (&). Assume column headers in the csv have no spaces; and require that user-defined column names have no spaces.
4. Example of how this works:
    - User uploads a csv with the following contents. Display the contents as a table in the browser:

city	product	units	price
San Diego	apple	2	5
Austin	apple	5	5
Seattle	apple	6	5
Portland	orange	none	10
New York	orange	8	10

   - User defines a new column, with column name "sales", and the following formula:
     - units * price
   - Display updated table in the browser, calculating the contents of the new column according to the formula provided. If the operation is invalid for a row (e.g., applying arithmetic operator to non-numeric value) display NA.

city	product	units	price	sales
San Diego	apple	2	5	10
Austin	apple	5	5	25
Seattle	apple	6	5	30
Portland	orange	none	10	NA
New York	orange	8	10	80

- ○ User defines a new column, with column name "city_sales", and the following formula (& represents concatenate operator):
    - ■ product & " sales in " & city & " were " & sales
- ○ Display updated table in the browser:

city	product	units	price	sales	city_sales
San Diego	apple	2	5	10	apple sales in San Diego were 10
Austin	apple	5	5	25	apple sales in Austin were 25
Seattle	apple	6	5	30	apple sales in Seattle were 30
Portland	orange	none	10	NA	orange sales in Portland were NA
New York	orange	8	10	80	orange sales in New York were 80

- ○ Make sure the application fails elegantly, e.g. helpful error messages if the formula is invalid.