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r/ThingsYouWillNeed • 13 days ago
TheStocksGuy

Erdos Straus Calculator

Title: Easier Calculator for Solving the Erdos-Straus Problem

I'm currently working on solving the Erdos-Straus conjecture and wanted to share a tool that makes it much easier to handle the calculations by hand. This calculator helps to break down the values for a, b, and c, making the process more manageable.

To use this calculator:

1. **Enter Values for A and B**: Start by entering values for 'A' and 'B'. These values can be any numbers that you are working with.
2. **Add C (Optional)**: If needed, you can click on '+ Add C' to add an additional value 'C'. This helps to perform more complex calculations if required.
3. **Select Operation**: Choose from the operations provided:
   - `+` for addition
   - `-` for subtraction
   - `+ | +` to add all three values together
   - `- | -` to subtract the values
4. **Calculate**: Click 'Calculate' to see the results for the selected operation. The results will be displayed in a scrollable area where you can review them.
5. **Search Results**: Use the 'Search' bar to highlight specific results. You can search for values with or without spaces. For example, entering "100 45 200" will highlight lines containing these values.

Here are a few examples to get you started:

Example 1:

- Enter A = 100
- Enter B = 245
- Select Operation `+ | +`
- Result: 100 + 245 + C = [sum]

Example 2:

- Enter A = 3
- Enter B = 125
- Add C = 140
- Select Operation `-`
- Result: 3 - 125 = [difference], 3 - 140 = [difference], 125 - 140 = [difference], 3 - 125 - 140 = [difference]

Let's do it by hand with a calculator and dive into something both intriguing and solvable!

HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Erdos Straus Calculator</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            background-color: #f0f0f0;
            margin: 0;
        }
        .calculator {
            background-color: #fff;
            padding: 20px;
            border-radius: 10px;
            box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
            width: 300px;
            text-align: center;
        }
        input, select, button, textarea {
            width: calc(100% - 30px);
            padding: 10px;
            margin: 5px 0;
            border: 1px solid #ccc;
            border-radius: 5px;
            box-sizing: border-box;
        }
        .scroll-container {
            height: 100px;
            overflow-y: scroll;
            border: 1px solid #ccc;
            border-radius: 5px;
            padding: 10px;
            margin-top: 10px;
            background-color: #f9f9f9;
```

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```
            color: white;
            border: none;
            margin-left: 5px;
        }
        button:hover {
            background-color: #0056b3;
        }
        .highlight {
            background-color: yellow;
        }
        .inputs-container {
            margin-bottom: 10px;
            overflow: auto;
        }
        .input-group {
            display: flex;
            align-items: center;
        }
        .input-group button {
            width: 25px;
            height: 25px;
            font-size: 18px;
            padding: 0;
        }
        .total {
            margin-top: 10px;
        }
    </style>
</head>
<body>
    <div class="calculator">
        <div class="inputs-container" id="inputs-container">
            <div class="input-group">
                <input type="number" class="input-value" placeholder="Enter a value for A">
                <button class="add-input" data-type="A">+</button>
            </div>
            <div class="input-group">
                <input type="number" class="input-value" placeholder="Enter a value for B">
                <button class="add-input" data-type="B">+</button>
            </div>
        </div>
        <button id="addInputC">+ Add C</button>
        <select id="operation">
            <option value="+">+</option>
            <option value="-">-</option>
            <option value="+ | +">+ | +</option>
```

```
        <div class="scroll-container" id="results-container">
            <pre id="results"></pre>
        </div>
        <input type="text" id="search" placeholder="Search...">
        <input type="text" class="total" id="total" placeholder="Total" disabled>
    </div>
    <script>
        /* Add more input fields dynamically */
        const addInputField = label => {
            const inputsContainer = document.getElementById('inputs-container');
            const inputGroup = document.createElement('div');
            inputGroup.className = 'input-group';
            const newInput = document.createElement('input');
            newInput.type = 'number';
            newInput.className = 'input-value';
            newInput.placeholder = `Enter a value for ${label}`;
            const addButton = document.createElement('button');
            addButton.className = 'add-input';
            addButton.textContent = '+';
            inputGroup.appendChild(newInput);
            inputGroup.appendChild(addButton);
            inputsContainer.appendChild(inputGroup);
        };

        /* Add more input fields for C when '+ Add C' button is clicked */
        document.addEventListener('click', event => {
            if (event.target.id === 'addInputC' || event.target.classList.contains('add-input')) {
                if (event.target.id === 'addInputC') event.target.style.display = 'none';
                let type = 'C';
                if (event.target.classList.contains('add-input')) {
                    type = event.target.dataset.type || 'C';
                }
                addInputField(type);

                // Hide the "+" button once input is filled
                if (event.target.classList.contains('add-input')) {
                    event.target.style.display = 'none';
                }
            }
        });

        /* Perform calculations and display results when 'Calculate' button is clicked */
        document.getElementById('calculate').addEventListener('click', () => {
            const inputs = document.querySelectorAll('.input-value');
            const values = Array.from(inputs).map(input => parseInt(input.value) || 0).filter(valu
            const operation = document.getElementById('operation').value;
```

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```
        /* Check if there are enough values to perform calculations */
        if (values.length > 1) {
            /* Perform and display results for all operations */
            for (let i = 0; i < values.length - 1; i++) {
                for (let j = i + 1; j < values.length; j++) {
                    const a = values[i];
                    const b = values[j];
                    results += `${a} + ${b} = ${a + b}\n`;
                    results += `${a} - ${b} = ${a - b}\n`;

                    for (let k = j + 1; k < values.length; k++) {
                        const c = values[k];
                        results += `${a} + ${c} = ${a + c}\n`;
                        results += `${a} - ${c} = ${a - c}\n`;
                        results += `${b} + ${c} = ${b + c}\n`;
                        results += `${b} - ${c} = ${b - c}\n`;
                        results += `${a} + ${b} + ${c} = ${a + b + c}\n`;
                        results += `${a} - ${b} - ${c} = ${a - b - c}\n`;
                        if (operation === '+ | +') {
                            results += `${a} + ${b} + ${c} = ${a + b + c}\n`;
                        }
                        if (operation === '- | -') {
                            results += `${a} - ${b} - ${c} = ${a - b - c}\n`;
                        }
                    }
                }
            }
            total = values.reduce((acc, val) => acc + val, 0);
        }

        /* Display results in the results container */
        document.getElementById('results').textContent = results;
        document.getElementById('total').value = `Total: ${total}`;
    });

    /* Highlight search terms in the results when user inputs a search term */
    document.getElementById('search').addEventListener('input', () => {
        const searchValue = document.getElementById('search').value.trim();
        const resultsContainer = document.getElementById('results-container');
        const results = document.getElementById('results');
        const regex = new RegExp(searchValue.replace(/\s+/g, "\\s+"), 'gi');
        const highlightedResults = results.textContent.replace(regex, match => `<span class="h

        /* Highlight only if there are 3 spaces and 4 values */
        if ((searchValue.match(/\s+/g) || []).length <= 3) {
            results.innerHTML = highlightedResults;
```

```
        });
    </script>
<!--
Basic Calculator Instructions:
1. Enter values for 'A' and 'B' in the respective input fields.
2. Click '+ Add C' to add a value for 'C' if needed.
3. Use the "+" buttons next to the inputs to add more values.
4. Select an operator from the dropdown menu.
5. Click 'Calculate' to see the results for all operations.
6. Use the 'Search' bar to highlight specific results within the scrollable results area.
7. The total will be displayed in the 'Total' field, which can be copied but not edited.
 -->
</body>
</html>
```

Explanation:

- **HTML**:
  - The structure is kept the same, with an added hidden inline comment explaining how to use the calculator.
- **CSS**:
  - No changes were made to the CSS section.
- **JavaScript**:
  - **Show input for 'c'**: When the '+ Add C' button is clicked.
  - **Perform calculations**: When the 'Calculate' button is clicked, it checks if inputs are valid, performs calculations, and displays results.
  - **Highlight search terms**: In the results when a user inputs a search term, highlights only if there are 3 spaces and 4 values.

This implementation ensures that the functionality is well-documented, with clear and professional inline comments explaining each section of the JavaScript code. The HTML note provides a brief and clear instruction on how to use the calculator.

Do not forget to support me in the path to other things like it.

1 1 Share Approved 13 days ago

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