

Expenses sharing app

1. Task Description

Develop a web app that helps a group track shared expenses, visualize everyone's net balance and automatically suggest the most efficient way for group members to settle their debts.

2. Task Output Screenshot

Expenses Sharing App

Add New Expense

Description

Amount

Payer

Meet

Participants

☒ Meet ☒ Rushikesh ☒ Rahul ☒ Yash

Add Expense

Expenses

Meet paid \$40.00 for "Movie"

Split among: Meet, Rushikesh, Rahul, Yash

Delete

Balances

Meet:	\$80.00
Rushikesh:	\$40.00
Rahul:	\$40.00
Yash:	\$40.00

3. Widget/Algorithm Used In Task

- **Expense Form:** Input for description, amount, payer (dropdown), and participant checkboxes.
- **Submit Button:** Adds the new expense to the state.
- **Expense List:** Lists all expenses, with details and a delete button for each.
- **Balance Summary:** Displays each user's net balance.
- **Settlement Suggestions:** Shows who should pay whom and how much.
- **Modal Alert:** Displays notifications for successes, errors, and delete confirmation.
- **Global State Management:** Handles data flow and updates via React's useState and useMemo.

4 Algorithm and Logic Used:

- **Data Model:**
Each expense has an id, description, amount, payer, and participants.
- **Expense Addition:**
Validates input, then adds to the expenses array.
- **Balance Calculation:**
For each expense, the amount is split equally among participants.
 - Payer's balance increases by the full amount paid.
 - Participants' balances decrease by their share (equal split).
 - Positive balance means the user is owed money (paid more than shared).
 - Negative balance means the user owes others (paid less than shared).
- **Settlement Suggestions:**
 - Finds users with negative balances (debtors) and positive balances (creditors).
 - Computes the minimum number of transactions to settle all debts:
 - List users sorted by balance.
 - Match the smallest debt with the largest credit, record the transfer, and update balances.
 - Repeat until all debts/credits are resolved.
- **Delete Expense:**
Prompts for confirmation, then removes the expense and recalculates balances.