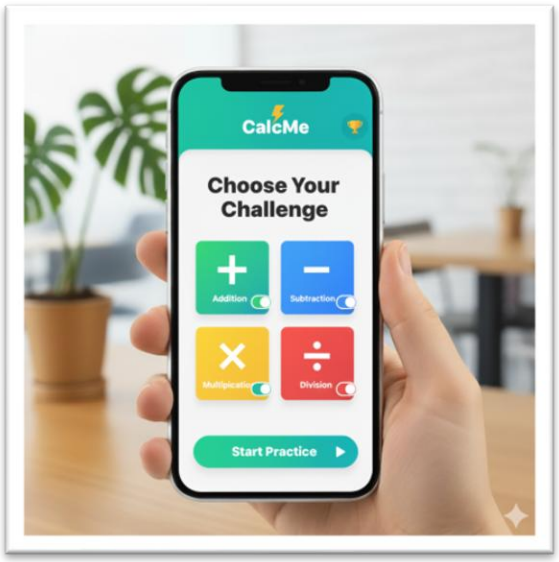
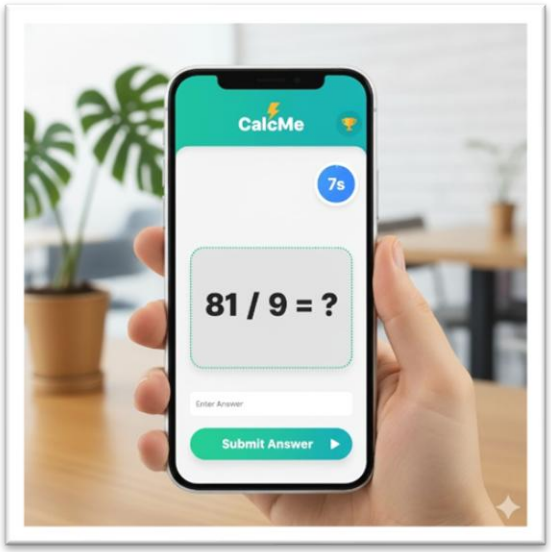
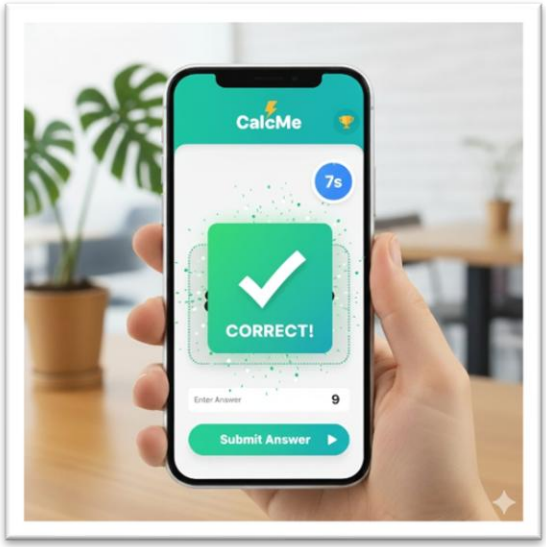
Project Overview: “CalcMe”







Genre: Educational Math Game
Goal: Players solve arithmetic problems (addition, subtraction, multiplication, division) to progress through rounds.
Unique Feature: An **ML model** evaluates player performance — accuracy, speed, and consistency — to determine if they are "worthy" to advance.

⚙️ Tech Stack Plan

Phase 1 — Core Web Version

- **Frontend:** React
    - Handles the game UI (questions, timer, scores).
    - Connects to FastAPI to fetch problems and submit results.
- **Backend:** Python + FastAPI
    - Serves math questions dynamically.
    - Stores player data (score, speed, etc.).
    - Sends this data to your ML model for analysis.
- **ML Model:**
    - Input: performance stats (time per question, accuracy, streaks).
    - Output: player "worthiness" score (0–1 or a rank).
    - Could start simple with a rule-based system, then move to a trained model later.

📱 Phase 2 — Mobile Expansion

Once your web app is solid:

- **Flutter App:**
    - Recreate the front-end experience for Android/iOS.
    - Connects to the same FastAPI backend.
    - You could even reuse your API endpoints and ML logic — just adjust for mobile performance.

🧩 Game Logic Ideas

- Levels increase difficulty with faster timers or trickier equations.
- ML model evaluates:

    - 🧠 **Accuracy:** Correct answers ratio.
    - ⚡ **Speed:** Average time per question.
    - 🔁 **Consistency:** How steady their performance is.
- Add a **Leaderboard** for competition and motivation.
- Optional **Achievement badges** (e.g., "Lightning Thinker" for <2s per question).

🧠 Machine Learning Part (Suggestion)

Start simple, then evolve:

1. **Stage 1:** Use simple conditions (if accuracy > 80% and avg time < 5s → next round).
2. **Stage 2:** Collect data → train a model (e.g., Decision Tree or Logistic Regression) to predict "worthy" or "not worthy."
3. **Stage 3:** Use a neural network to make it more adaptive and intelligent.

```
CalcMe/
│
├── frontend/                # React app
│   ├── src/
│   │   ├── components/
│   │   │   ├── HomePage.jsx
│   │   │   ├── GamePage.jsx
│   │   │   ├── ResultPage.jsx
│   │   │   ├── Navbar.jsx
│   │   │   └── Loader.jsx
│   │   ├── App.jsx
│   │   ├── main.jsx
│   │   └── index.css
│   └── package.json
│
├── backend/                 # FastAPI backend
│   ├── main.py
│   ├── ml_model.py
│   ├── utils.py
│   ├── models.py
│   └── requirements.txt
│
└── README.md
```

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