Build & Mine Your Own Mini DApp 🏦

🎯 Goal

Each group will design a small decentralized app (DApp) and simulate blockchain operations manually, including transactions, block creation, and mining, to understand how blockchain works step-by-step.

⏱ Duration

Total time: 30 minutes
• 5 min - Team setup & explanation
• 20 min - Build & simulate
• 5 min - Presentation & judging

👥 Team Setup

Groups of 3 students. Each group acts as a mini blockchain network.

🧩 Task Overview

1. Propose a mini DApp idea (1–2 lines). Write main smart contracts and how you will connect to frontend. (mention tags too).
Example: Voting DApp, Token reward system, or Mini supply chain tracker.

2. Simulate transactions manually (write on paper).

3. Mine blocks using a simple hash rule:

Hash = (Block Number + Transactions + Nonce) % 7 == 0.

4. Add blocks to a chain table (Block #, Transactions, Nonce, Hash, Previous Hash).

5. Present their DApp, explain mining and blockchain feature demonstrated.

🏁 Judging Criteria (10 Points Total)

Criteria	Points
DApp creativity	3
Correct blockchain simulation	3
Explanation of process	2
Team collaboration	2

🏆 Bonus Round (Optional)

Add a '51% Attack Challenge' , one group tries to alter a previous block and explain what happens when others reject it.

📦 Materials Needed

• Paper for each group
• Calculator or laptop

📘 Example Solution

DApp Idea: Classroom Reward Token System, students earn tokens for correct answers.

Transactions:
1. Ali → Sara: 5 tokens
2. Sara → Ahmed: 3 tokens
3. Ahmed → Ali: 2 tokens

Block Simulation:

Block #	Transactions	Nonce	Hash	Previous Hash
1	Ali→Sara:5; Sara→Ahmed:3; Ahmed→Ali:2	5	0	—
2	Sara→Ali:1; Ali→Ahmed:2	3	0	0

Each group can show how they calculated the nonce manually to make the hash divisible by 7.