Blockchain Example Project Tutorial

Step 1: Create a Replit Account

Go to https://replit.com and sign up for a free account if you don't already have one.

Step 2: Create a New Node.js Repl

Click 'Create App', type a name (e.g., Blockchain with Node.js), then click 'Start building'. When prompted, select the Node.js template.

Step 3: Add the Blockchain Code

In the index.js file, paste the following code:

```javascript
const sha256 = require('js-sha256');
class Block {
  constructor(index, timestamp, data, prevHash) {
    this.index = index;
    this.timestamp = timestamp;
    this.data = data;
    this.prevHash = prevHash;
    this.thisHash = sha256(this.index + this.timestamp + this.data + this.prevHash);
  }
}


const createGenesisBlock = () => new Block(0, Date.now(), 'Genesis Block', '0');
const nextBlock = (lastBlock, data) => new Block(lastBlock.index + 1, Date.now(), data, lastBlock.thisHash);
const createBlockChain = num => {
  const blockchain = [createGenesisBlock()];
  let previousBlock = blockchain[0];
  for (let i = 1; i < num; i++) {
    const blockToAdd = nextBlock(previousBlock, `This is block #${i}`);
    blockchain.push(blockToAdd);
    previousBlock = blockToAdd;
```

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```
  }
  console.log(blockchain);
};


const lengthToCreate = 20;
createBlockChain(lengthToCreate);
```

Step 4: Install js-sha256 Package

Click the Packages icon in the sidebar, search for 'js-sha256', and click the plus icon to install.

Step 5: Run Your Project

Click the green 'Run' button. You should see an array of 20 blockchain blocks in the console output.

Step 6: Share Your Repl

Click your project name at the top, then copy the URL from the browser address bar. That is your shareable link (e.g., https://replit.com/@yourusername/BlockchainDemonstrator).

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During the tutorial process, we encountered several challenges due to changes in the Replit interface. These are important to note if you're using the most recent version of Replit:

1. The traditional '+ new repl' button was removed from the dashboard. Instead, users must type a project name into the prompt that says 'Hi [Your Name], what do you want to make?' and then click 'Start building'.

2. Template selection is hidden until you begin typing your project idea. After clicking 'Start building', you can then select the Node.js template.

3. If the wrong template is selected (like Nix), Replit may not recognize Node.js commands. This resulted in the error:
'bash: node: command not found'
To fix this, a new Repl was created using the correct Node.js template.

4. In the Node.js template, the .replit file was not needed because Replit automatically knew how to run the file.

5. The Share button has moved. Users now click the project name at the top, and copy the URL from the browser address bar to share their work.

By documenting these issues and solutions, future users can better navigate the newer Replit environment.