Activity: Blockchain Simulator

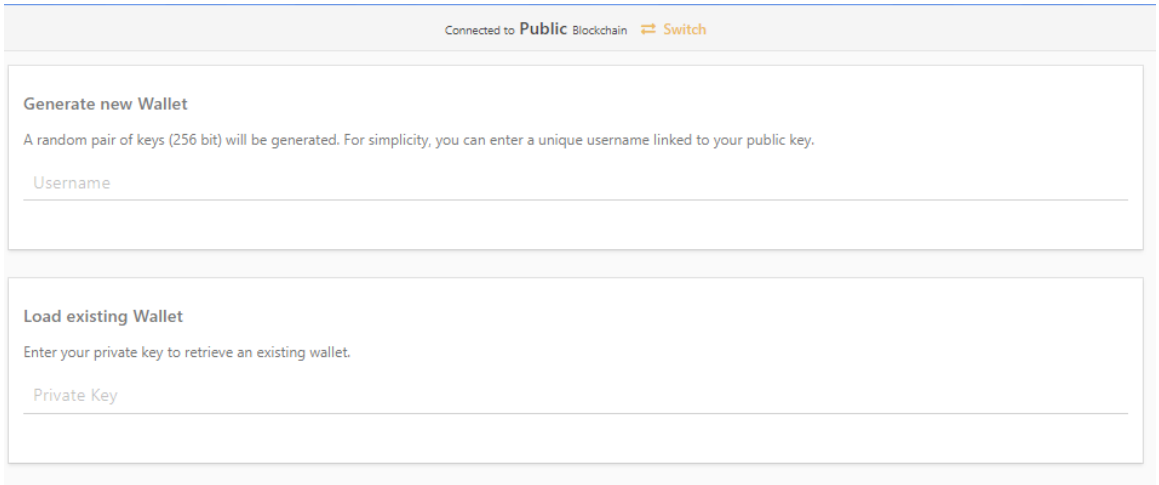
In this exercise you will be running a simulator to create private group chain for a group. Select a group to join, and all the members will share a private group that is only accessible for group members.

Follow the instructions below:

Open the website at: https://www.bitcoinsimulator.tk/blockchain?chain=public

Creating Wallet

Click Create a new Wallet.



Enter a Username and it will generate a private key for your wallet.

joey's Wallet
The private key is a 256bit random number. The public key was calculated using Elliptic Curve Cryptography.

Public Key

946318a6975429259c1fad5fb671beaf00e37349974d0a1fdcf6b9e9555c99

Private Key

268aa989984a838e142fa1add04183b81389dccd17d1e2a4be9bf8d85b2f9da0

Caution: Keep your private key in a secure place. Don't share it with anyone. If you lose this key, all your Bitcoin (in this simulation) are permanently lost. For simplicity, this key is stored in the local storage of your Browser, so you don't have to reenter it every time you reload the page.

What you can do now:

- Mine a block to receive your first Bitcoin as a reward
- Sign transactions and send Bitcoin to other wallets
- Create your own private blockchain and use the simulator with non-public groups or school classes
- Create fake transactions under a false name and try to obtain Bitcoin by fraud
- Perform a 51% attack to subsequently manipulate the blockchain
- Tell other people about it. The more understand how Bitcoin works, the better.

Got it

Click **Got it.** You will be connected to a **public blockchain**

Blockchain | Block Mining | New Transaction

Block 922 7/3/21 18:31:17
Miner: **gfdgfdfgdfgd**
Set as 'Last Block' (only if you know what you do)
longest chain

1 Transaction

New Block Reward	→	gfdgfdfgdfgd 89da9dc418...	6.25 BTC

Hash of the previous Block
00005efb02303b4d03949218ee8d0ace0ccefe88de48ebf19b5ac60979919b7f

Nonce: 33933
Hash
00008254a2ac4b9ef32ef751b83bd72f22d66c4115eb32052f212685746b2fd1

Block 923 9/3/21 22:12:45
Miner: **prueba**
Mining based on this Block
longest chain

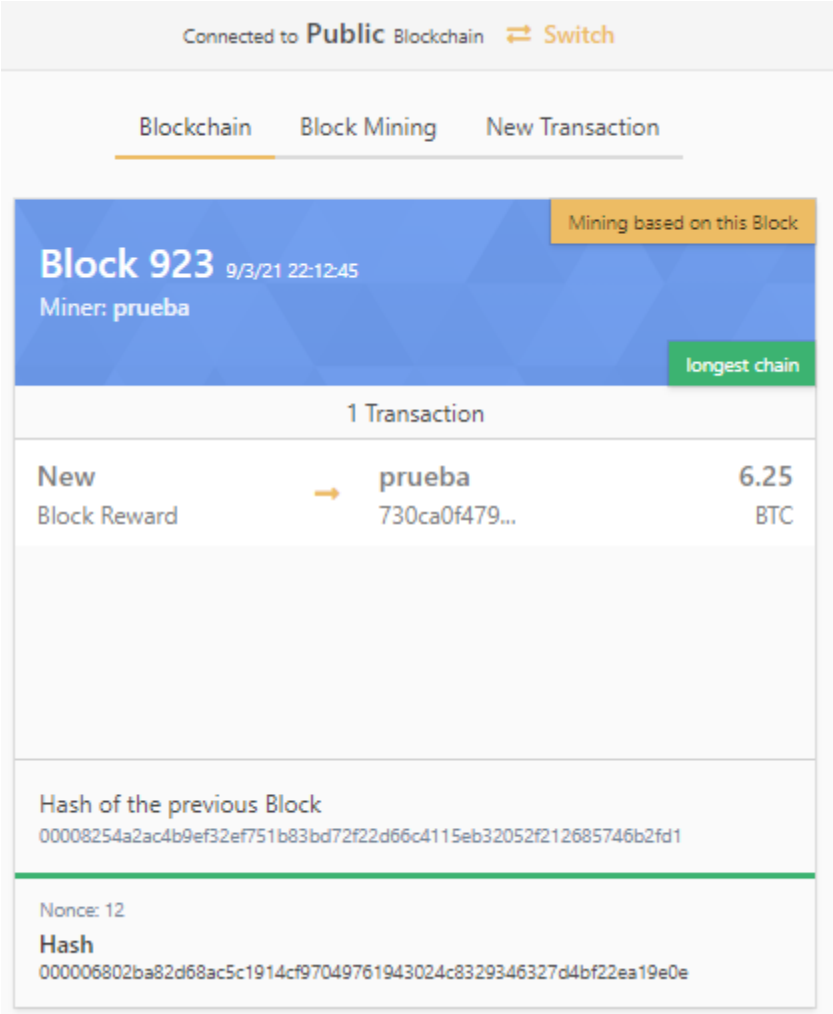
1 Transaction

New Block Reward	→	prueba 730ca0f479...	6.25 BTC

Hash of the previous Block
00008254a2ac4b9ef32ef751b83bd72f22d66c4115eb32052f212685746b2fd1

Nonce: 12
Hash
000006802ba82d68ac5c1914cf97049761943024c8329346327d4bf22ea19e0e

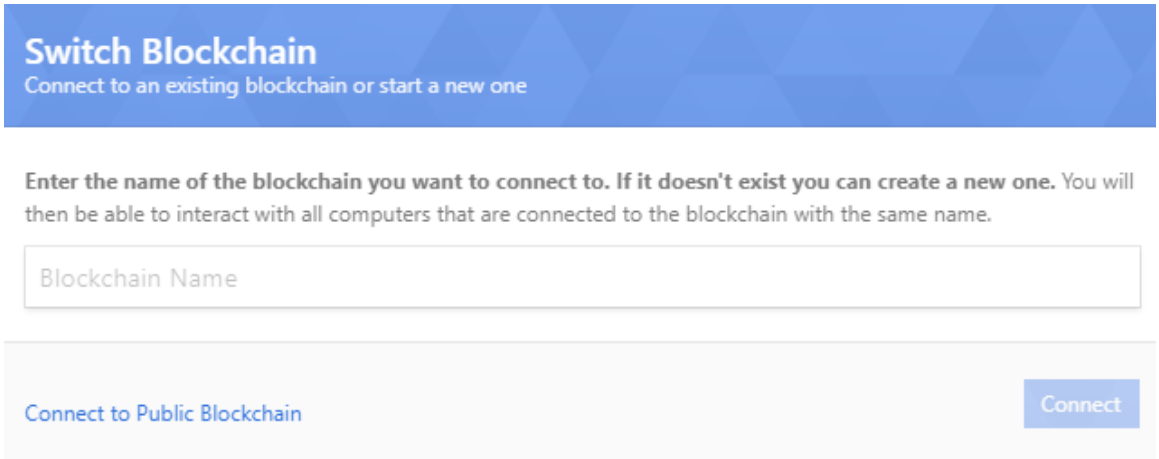
Activity: Blockchain simulation.



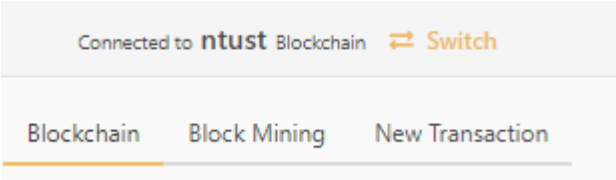
Creating Private Blockchain

Click **Switch.** So that you can create a private blockchain.

IMPORTANT: Only of your group members will create this private blockchain. So let only one create first, then the rest follow by typing the same name after it has been created!!



After creating a private blockchain and joining, you will see: (depends on your blockchain name)



Mining Coins

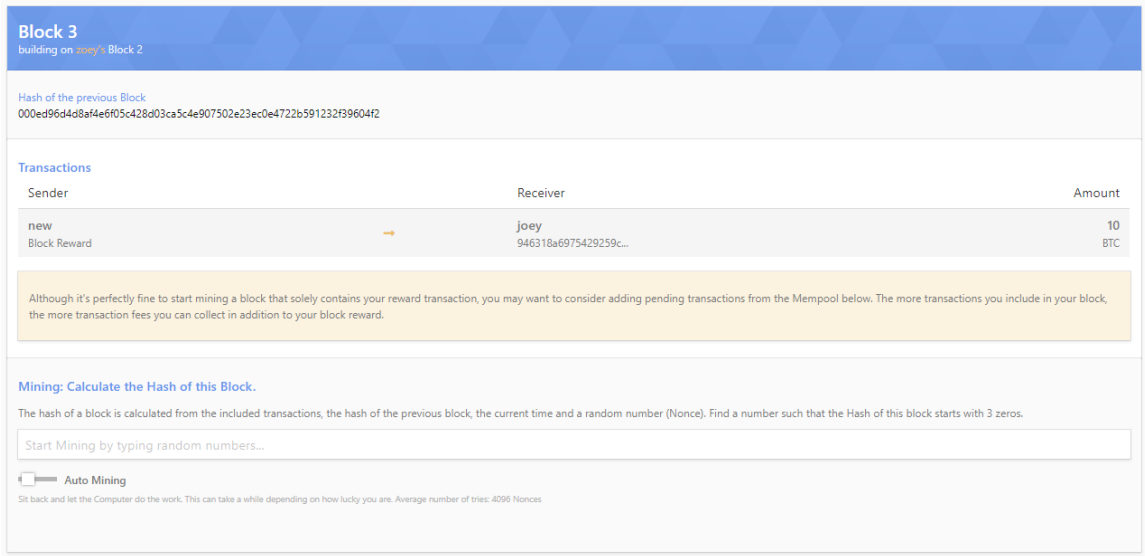
Click on Mining: Auto Mining

The mining operations looks at hashing operations that results in a number of zeroes in front of the hash digest.

So the mining operation is going by brute force testing all the nonce (random number) with the transactions that will generate the hash with the correct number of zeros.

Each time you succeed, you will earn a coin. This is called **mining**.

The mempool stores the current transactions that has yet to be validated and included into the blockchain.



Sending Coin and Creating a new transaction

Click on New Transaction

Observe what happens to the mempool on your computer and on your group members mempool.

Some Questions

What is the purpose of the mempool?
When is the transaction added to the blockchain?
What is the real purpose of mining? Why do we need it?
Why do we use the hash puzzle for mining?
How do we ensure all the copies of blockchain are the same?
How do we ensure that each block has the same transactions?