

Assignment: Simulate a Peer-to-Peer Blockchain Network

File Structure:



Purpose :

File	Purpose
blockchain.js	Blockchain core logic and data structures
node.js	Node server, REST API, serves frontend
public/index.html	Web UI for interacting with the node
public/app.js	Frontend JS: handles UI logic and API calls

Working:

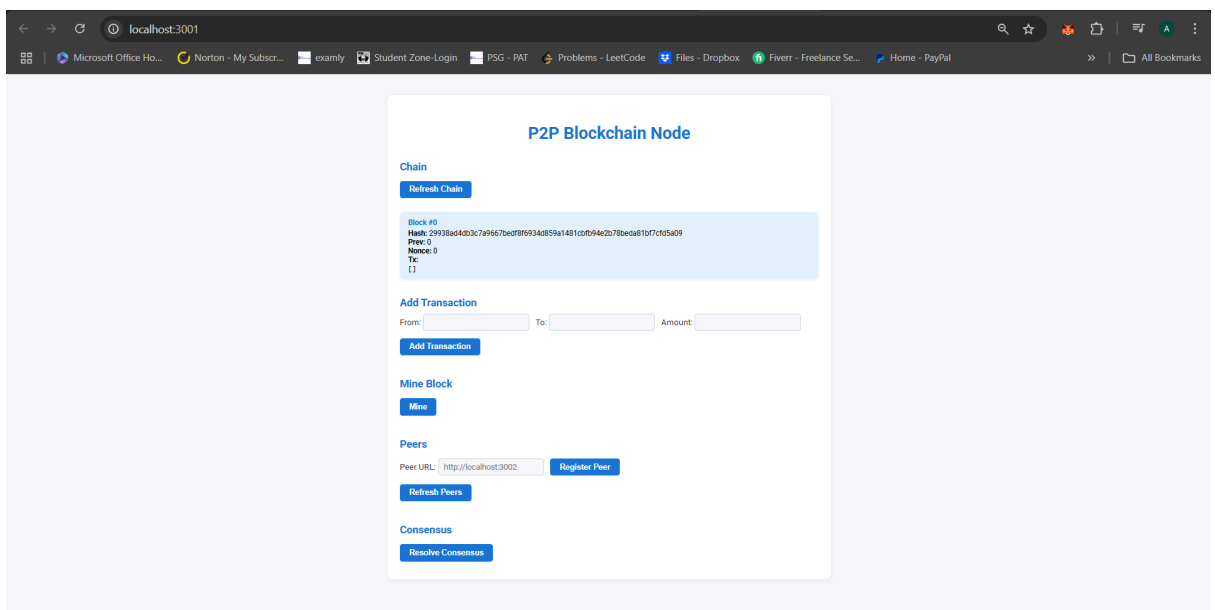
- 1) Start multiple nodes in different ports

```
PS C:\Users\abhir\Downloads\P2P-Blockchain> $env:PORT=3001
>> node node.js
Node running on port 3001
Use /register to add peers.
█
```

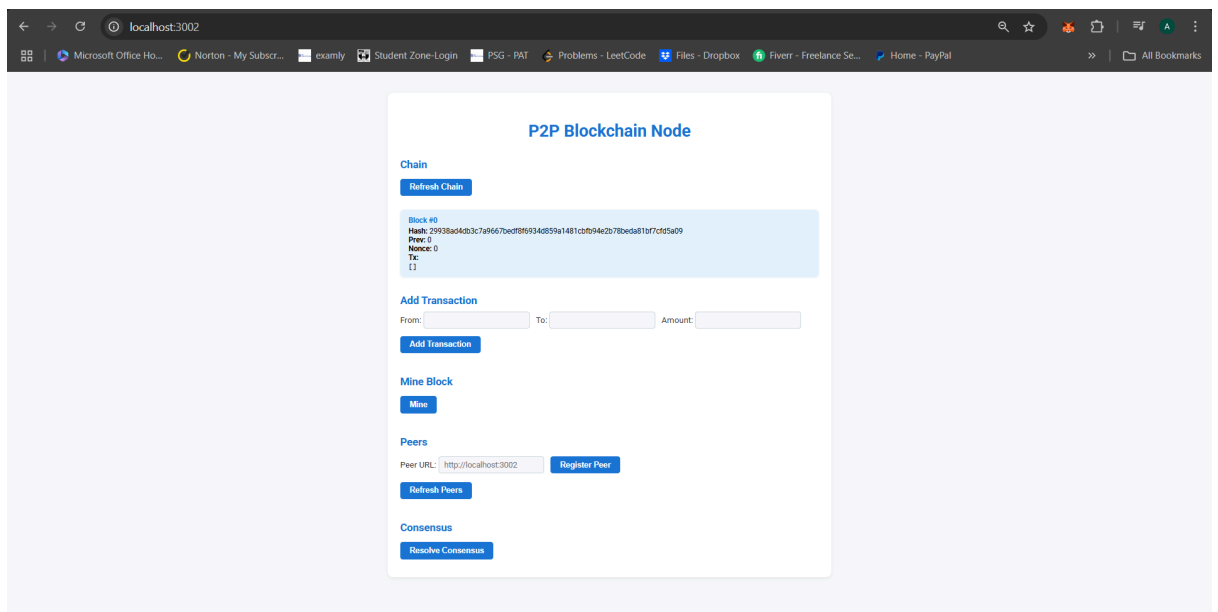
```
PS C:\Users\abhir\Downloads\P2P-Blockchain> $env:PORT=3002
>> node node.js
Node running on port 3002
Use /register to add peers.
█
```

- 2) Check the ports if the nodes are running

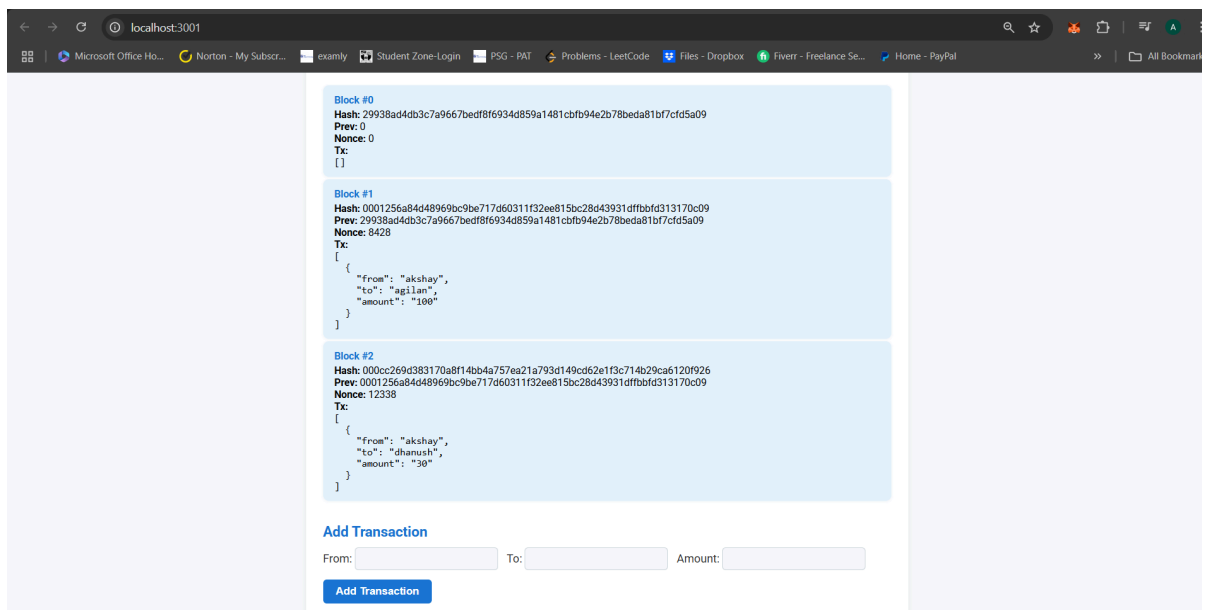
(port:3001)



(port:3002)



3) Add 2 transactions and mine (port:3001)



4) Add transactions and mine (port:3001)

Chain

Refresh Chain

Block #0
Hash: 29938ad4db3c7a9667bedf8f6934d859a1481cbfb94e2b78beda81bf7cfd5a09
Prev: 0
Nonce: 0
Tx:
[]

Block #1
Hash: 000db01d48cd12eaccab72b4e612f6d6e157db30091ff48040416cd1e1cc6d0
Prev: 29938ad4db3c7a9667bedf8f6934d859a1481cbfb94e2b78beda81bf7cfd5a09
Nonce: 13981
Tx:
[
 {
 "from": "dhanush",
 "to": "agilan",
 "amount": "1000"
 }
]

Add Transaction

From: To: Amount:

Add Transaction

Mine Block

Mine

5) Register peers(port:3001):

Peers

Peer URL:

Register Peer

Refresh Peers

Peers

Peer URL:

Register Peer

Refresh Peers

http://localhost:3002

6) Click resolve consensus button :

(before)

Chain

Refresh Chain

Block #0
Hash: 29938ad4db3c7a9667bedf8f6934d859a1481cbfb94e2b78beda81bf7cfd5a09
Prev: 0
Nonce: 0
Tx:
[]

Block #1
Hash: 000db01d48cd12eacccab72b4e612f6d6e157db30091ff48040416cd1e1cc6d0
Prev: 29938ad4db3c7a9667bedf8f6934d859a1481cbfb94e2b78beda81bf7cfd5a09
Nonce: 13981
Tx:
[
 {
 "from": "dhanush",
 "to": "agilan",
 "amount": "1000"
 }
]

Add Transaction

From: To: Amount:

Add Transaction

Mine Block

Mine

(after)

P2P Blockchain Node

Chain

Refresh Chain

Block #0
Hash: 29938ad4db3c7a9667bedf8f6934d859a1481cbfb94e2b78beda81bf7cfd5a09
Prev: 0
Nonce: 0
Tx:
[]

Block #1
Hash: 0001256a84d48969bc9be717d60311f32ee815bc2843931dffb6fd313170c09
Prev: 29938ad4db3c7a9667bedf8f6934d859a1481cbfb94e2b78beda81bf7cfd5a09
Nonce: 8428
Tx:
[
 {
 "from": "akshay",
 "to": "agilan",
 "amount": "100"
 }
]

Block #2
Hash: 000cc269d383170a8f14bb4a75ea21a793d149cd62e1f3c714b29ca6120f926
Prev: 0001256a84d48969bc9be717d60311f32ee815bc2843931dffb6fd313170c09
Nonce: 12338
Tx:
[
 {
 "from": "akshay",
 "to": "dhanush",
 "amount": "30"
 }
]

