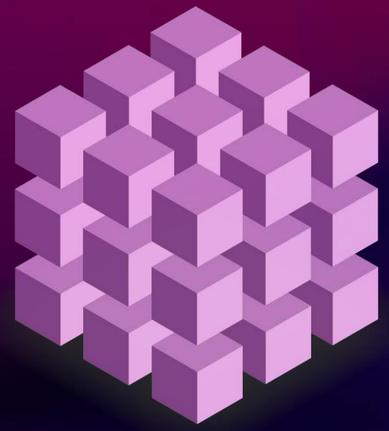
PBL PROJECT PRESENTATION

Allocation and Tracking of Public Funds Using Blockchain



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Problem Statement: Challenges in transparency, efficiency, and accountability in fund management.

1. **Challenges in transparency, efficiency, and accountability in fund management.**
2. **High level of corruption in certain government instituitions**
3. **Public trust in government institutions is at stake due to mismanagement and corruption.**

Objectives of our Project

Primary

Enhance **transparency**: Provide real-time visibility of fund allocation.

Increase **accountability**: Immutable records ensure officials can be held responsible.

Improve **efficiency**: Automate processes with smart contracts to reduce delays.

Secondary

Foster public trust by offering an accessible platform.

Integrate existing systems with blockchain for seamless transitions.

Proposed Solution

Core Features

Blockchain ledger for secure, immutable records of all transactions.

Smart contracts for automated and conditional fund disbursement.

User dashboard to track funds in real-time.

Stakeholder Access

Government officials: Secure and efficient fund management.

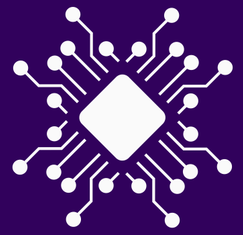
Citizens: Transparency and real-time tracking.

Auditors/NGOs: Easy access to transaction history for oversight.

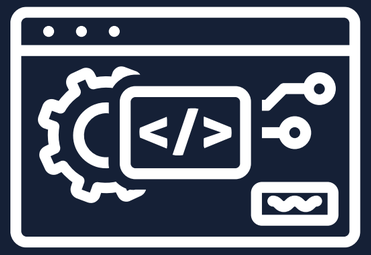
Comparative Analysis

Criteria	Traditional Systems	Blockchain Systems
Transparency	Limited; opaque processes	High; public ledger access
Security	Prone to fraud	Cryptographically secure
Efficiency	Manual, slow processes	Fast via automation
Accountability	Retrospective audits only	Real-time tracking
Cost	High operational costs	Lower long-term costs

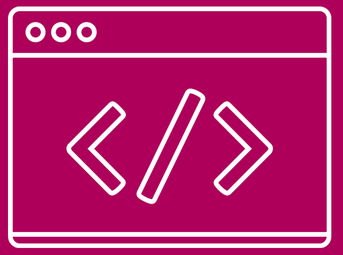
TECH STACK



Blockchain Platform: Ethereum/Hyperledger Fabric.



Backend: Node.js for robust API services.



Frontend: React/Angular for dynamic and responsive UI.

Database: Hybrid storage model (blockchain for transactions, traditional database for metadata)

Deployment: Cloud-hosted on AWS or Azure for scalability.

Smart Contracts: Automating fund disbursement based on predefined criteria

Benefits

Transparency

- Immutable blockchain ledger ensures visibility for all stakeholders.
- Eliminates manual manipulation of financial data.

Efficiency

- Reduces bureaucratic delays with smart contracts.
- Streamlines reporting and auditing processes.

Trust and Engagement

- Builds public confidence in fund allocation.
- Encourages citizens to participate in financial governance.

Why not HyperLedger Fabric??

Hyperledger Fabric, while a robust framework for enterprise blockchain solutions, has some disadvantages. It can be more complex to set up and maintain compared to some other blockchain platforms due to its modularity and the need for specialized knowledge. Designing and implementing smart contracts can also present a steeper learning curve and require significant development effort. Furthermore, compared to public blockchains like Ethereum, Fabric has a smaller ecosystem and community, potentially limiting access to third-party tools and support.

Complexity:
Hyperledger Fabric's modular design, while offering flexibility, can make it challenging to set up, configure, and manage, requiring specialized expertise.

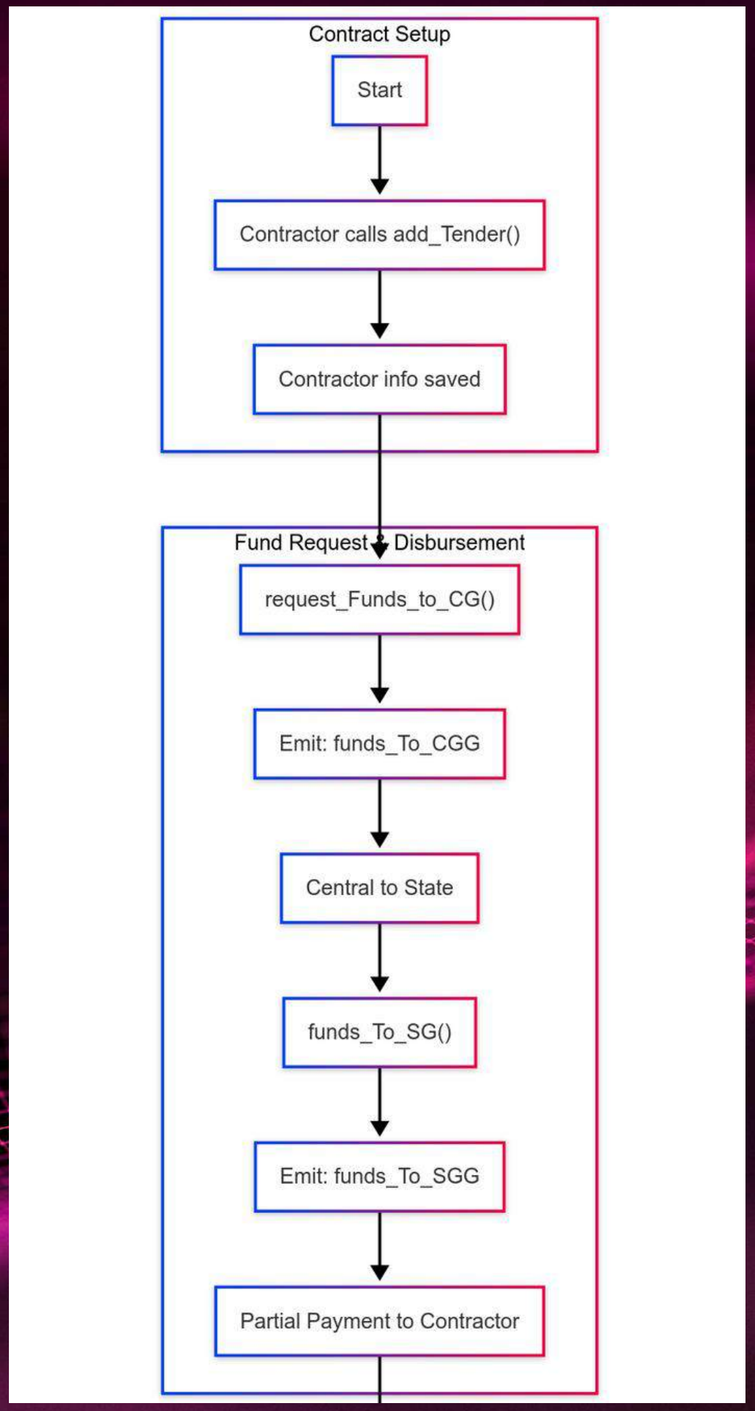
Development Costs:
Developing and implementing smart contracts (chaincode) on Fabric can be a steeper learning curve compared to other platforms, potentially leading to higher development costs and increased project timelines.

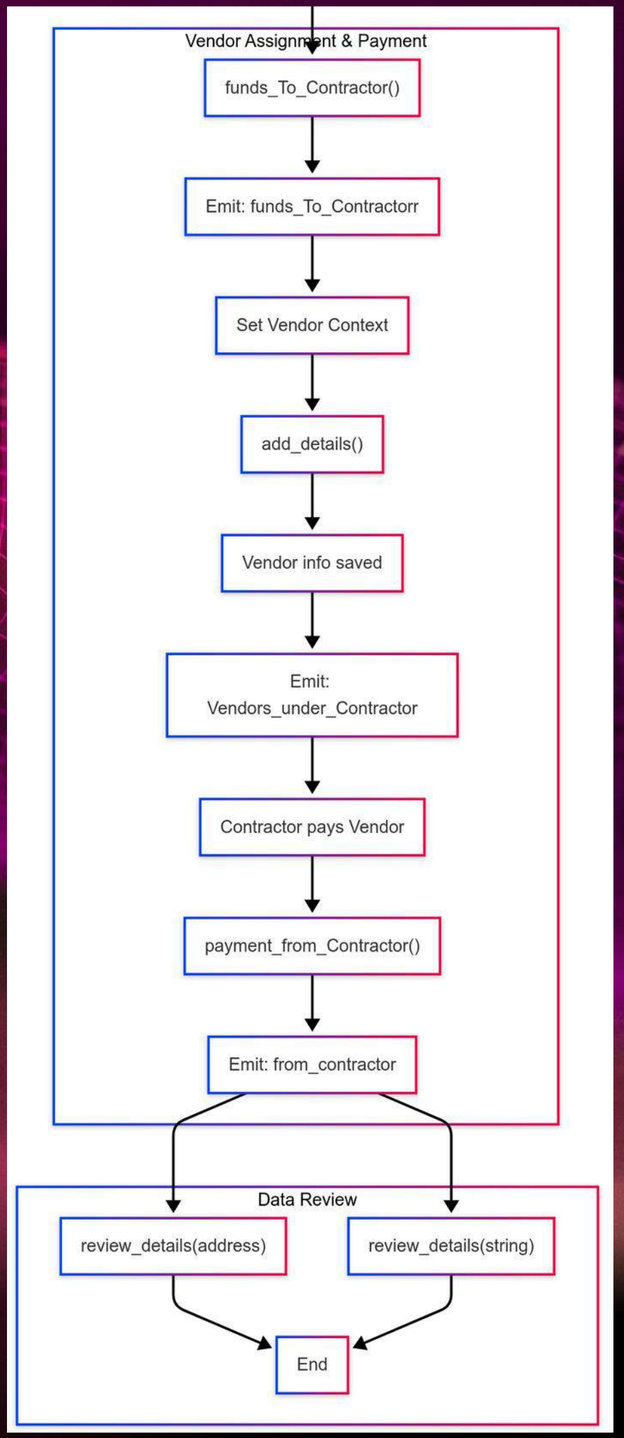
Smaller Ecosystem:
Compared to more established public blockchains like Ethereum, Fabric has a smaller ecosystem and community, potentially limiting the availability of third-party tools, libraries, and support.

Smart Contract Overview

Manage public tender allocation and fund transfers between Government, Contractors, and Vendors using Blockchain for transparency.

👷 Role	🔧 Key Functions	📋 Description
Contractor	add_Tender()	Registers tender with company details & bid
Central Govt	request_Funds_to_CG()	Contractor requests funds → Emits funds_To_CGG
State Govt	funds_To_SG()	Central → State transfer → Emits funds_To_SGG
State Govt	funds_To_Contractor()	Partial payment to contractor → Emits event
Contractor	set_contr_4Vend() + add_details()	Sets vendor context, adds vendor info
Contractor	payment_from_Contractor()	Direct fund transfer to vendor → Emits event


Contract Setup
Start
Contractor calls add_Tender()
Contractor info saved
Fund Request & Disbursement
request_Funds_to_CG()
Emit: funds_To_CGG
Central to State
funds_To_SG()
Emit: funds_To_SGG
Partial Payment to Contractor


Vendor Assignment & Payment
funds_To_Contractor()
Emit: funds_To_Contractorr
Set Vendor Context
add_details()
Vendor info saved
Emit:
Vendors_under_Contractor
Contractor pays Vendor
payment_from_Contractor()
Emit: from_contractor
Data Review
review_details(address)
review_details(string)
End

Challenges & Future Scope

Challenges

Setup Costs: High initial investment for blockchain infrastructure.

Technical Expertise: Requires skilled developers for implementation.

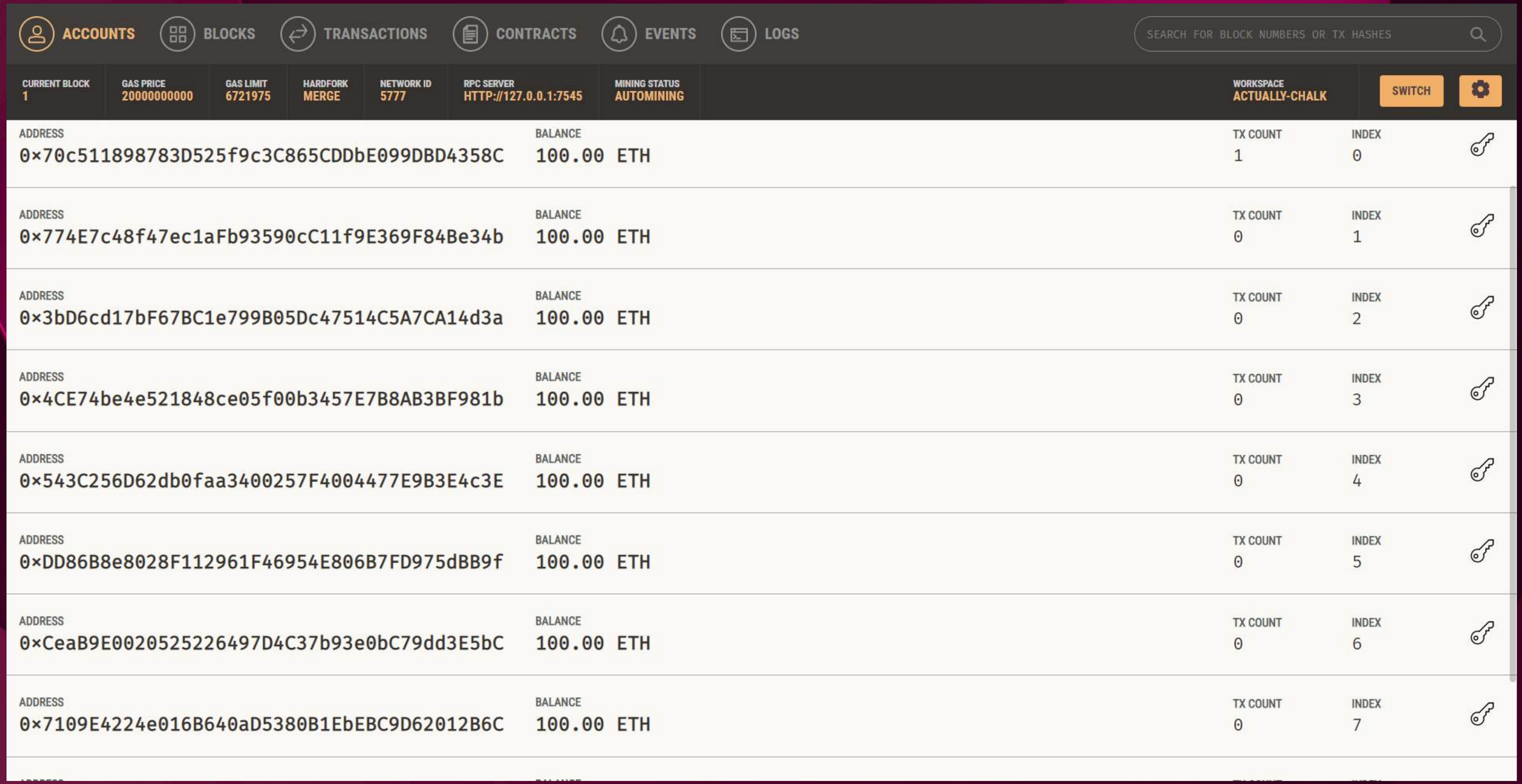
Adoption: Resistance from stakeholders used to traditional systems.

Future Scope

Scalability: Expand the system for nationwide implementation.

Improved Interfaces: Make dashboards more intuitive for non-technical users.

Integration: Incorporate AI for predictive analytics in fund allocation.

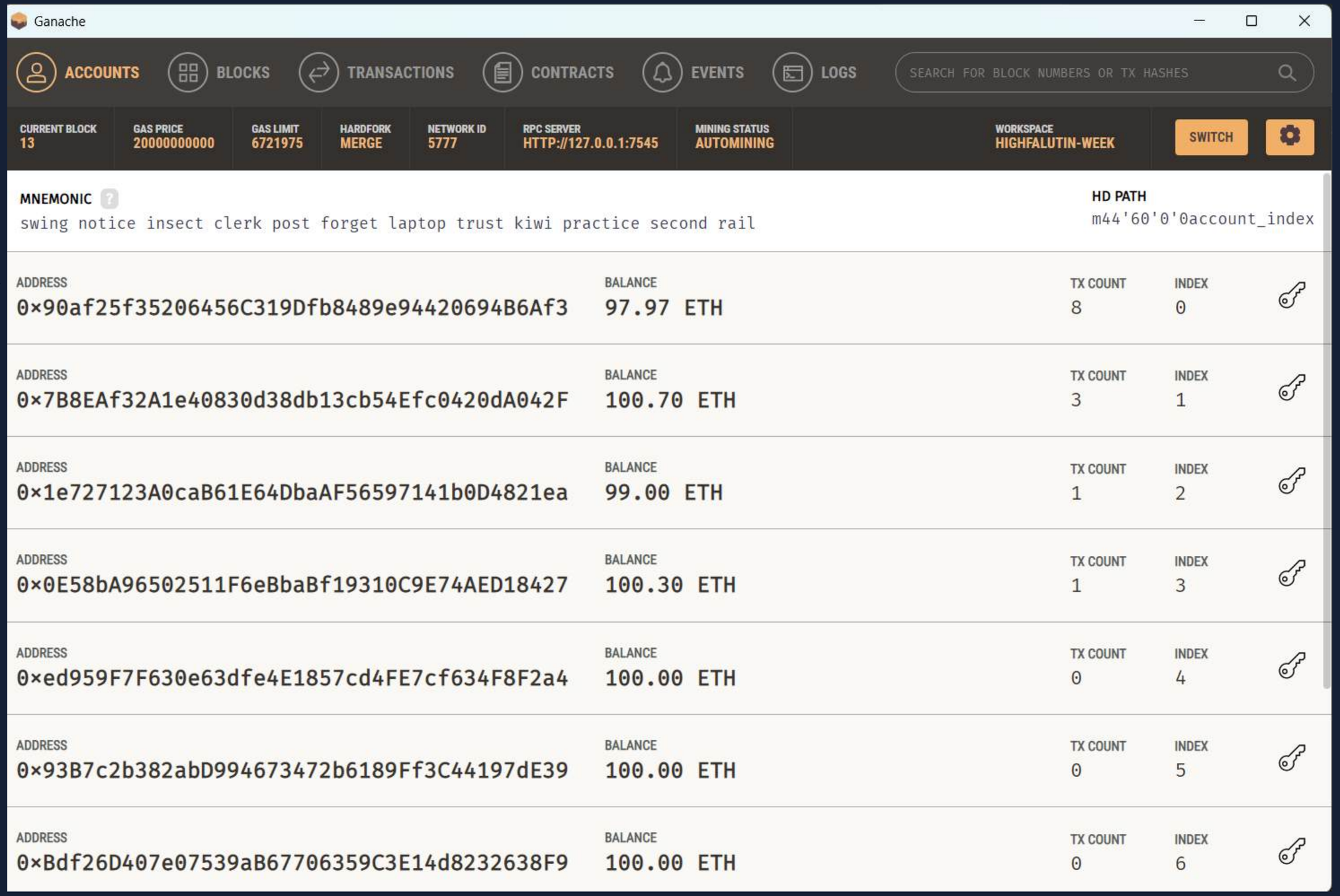

ACCOUNTS
BLOCKS
TRANSACTIONS
CONTRACTS
EVENTS
LOGS
SEARCH FOR BLOCK NUMBERS OR TX HASHES
CURRENT BLOCK 1
GAS PRICE 20000000000
GAS LIMIT 6721975
HARDFORK MERGE
NETWORK ID 5777
RPC SERVER HTTP://127.0.0.1:7545
MINING STATUS AUTOMINING
WORKSPACE ACTUALLY-CHALK
SWITCH
ADDRESS 0x70c511898783D525f9c3C865CDDbE099DBD4358C BALANCE 100.00 ETH TX COUNT 1 INDEX 0
ADDRESS 0x774E7c48f47ec1aFb93590cC11f9E369F84Be34b BALANCE 100.00 ETH TX COUNT 0 INDEX 1
ADDRESS 0x3bD6cd17bF67BC1e799B05Dc47514C5A7CA14d3a BALANCE 100.00 ETH TX COUNT 0 INDEX 2
ADDRESS 0x4CE74be4e521848ce05f00b3457E7B8AB3BF981b BALANCE 100.00 ETH TX COUNT 0 INDEX 3
ADDRESS 0x543C256D62db0faa3400257F4004477E9B3E4c3E BALANCE 100.00 ETH TX COUNT 0 INDEX 4
ADDRESS 0xDD86B8e8028F112961F46954E806B7FD975dBB9f BALANCE 100.00 ETH TX COUNT 0 INDEX 5
ADDRESS 0xCeaB9E0020525226497D4C37b93e0bC79dd3E5bC BALANCE 100.00 ETH TX COUNT 0 INDEX 6
ADDRESS 0x7109E4224e016B640aD5380B1EbEBC9D62012B6C BALANCE 100.00 ETH TX COUNT 0 INDEX 7

```
C:\Users\Gautam\Desktop\New folder\h>truffle test
Using network 'development'.


Compiling your contracts...
===========================
> Compiling .\contracts\Migrations.sol
> Compiling .\contracts\Transactions.sol
> Artifacts written to C:\Users\Gautam\AppData\Local\Temp\test--35728-F5rji7BLVF1Z
> Compiled successfully using:
   - solc: 0.8.3+commit.8d00100c.Emscripten.clang


  Contract: Transactions
    ✓ should deploy the contract
    ✓ should allow a contractor to add a tender (103ms)
    ✓ should emit and store fund request to state government (44ms)
    ✓ should transfer funds from state to contractor (41ms)
    ✓ should add vendor under a contractor and emit event (124ms)
    ✓ should allow payment from contractor to vendor


  6 passing (719ms)
```



Central Govt/ Admin

Contractor

State Govt

Vendor

TX HASH
0×582949b372ff354ced7516e7d4138f39ab4aca2fe75d8c35ca17da306387bd7d

CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×7B8EAf32A1e40830d38db13cb54Efc0420dA042F	0×898D719f7D40bEA9b57Dac99B55372fAfC89e778	33294	300000000000000000

TX HASH
0×d88fddbb00affee532aaab8e1fdf003f5290d0e7e12b82465fa8c0ef57cc4744

CONTRACT CREATION

FROM ADDRESS	CREATED CONTRACT ADDRESS	GAS USED	VALUE
0×90af25f35206456C319Dfb8489e94420694B6Af3	0×898D719f7D40bEA9b57Dac99B55372fAfC89e778	1353460	0

TX HASH
0×0581e8c86d0afb79be986aff6eabe7e603cf86b0f13a307347fc08a2283b0780

CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×0E58bA96502511F6eBbaBf19310C9E74AED18427	0×815aa291A2cb1960aFDa316ea878DD42c03598D0	123049	0

TX HASH
0×a8dfcbfe90ef4ca71683aad1be6771fb4fa8c88226193889a26c59590e3293a2

CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×7B8EAf32A1e40830d38db13cb54Efc0420dA042F	0×815aa291A2cb1960aFDa316ea878DD42c03598D0	45170	0

TX HASH
0×7fc678bdad9d7ef5378d3b49546efa9c1b81685ea275592922862ef52b3aff47

CONTRACT CREATION

TX HASH
0×8805489de83268844763b5902c05ce88b3d585fd5193e912a320b9043da43b68

CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×1e727123A0caB61E64DbaAF56597141b0D4821ea	0×dc373323bEF9B2cF9Fb76EE4f65E156f6f397CC3	55711	1000000000000000000

TX HASH
0×0b08bf0f01319d30e2e26cfde0a898129211ba8eab6f2c3c735310779fb1b464

CONTRACT CREATION

FROM ADDRESS	CREATED CONTRACT ADDRESS	GAS USED	VALUE
0×90af25f35206456C319Dfb8489e94420694B6Af3	0×dc373323bEF9B2cF9Fb76EE4f65E156f6f397CC3	1353460	0

TX HASH
0×66e437669f23c8e747f2d272a6177ea4fb3a014ca1faa02a1b2e243f5e5e1c66

CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×90af25f35206456C319Dfb8489e94420694B6Af3	0×28e2cB3379376ac9CF8cdb7391013dDE0406FAA1	68249	2000000000000000000

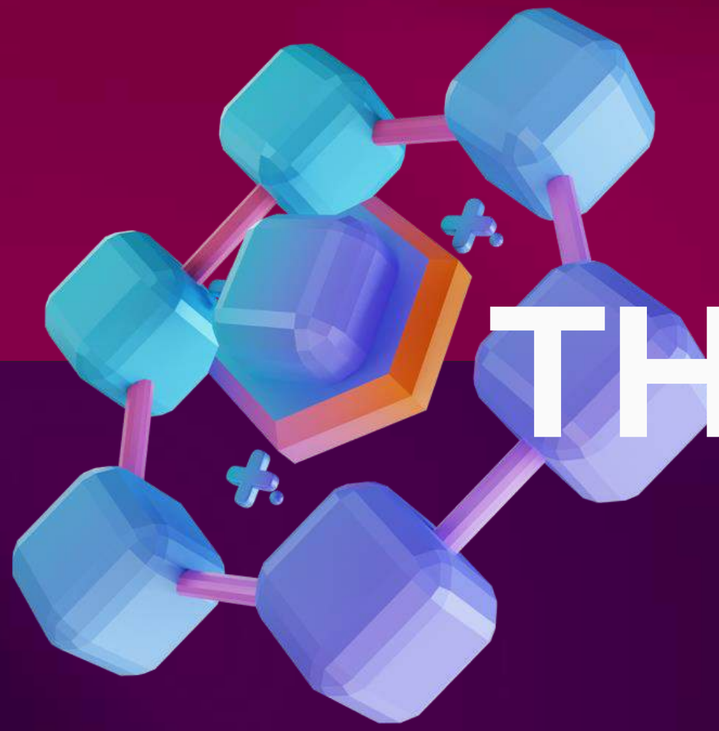
TX HASH
0×f6c0de901fc730c368308bdd8cf3815b741fe5ed3bc9767ea27336f36fbde696

CONTRACT CREATION

FROM ADDRESS	CREATED CONTRACT ADDRESS	GAS USED	VALUE
0×90af25f35206456C319Dfb8489e94420694B6Af3	0×28e2cB3379376ac9CF8cdb7391013dDE0406FAA1	1353460	0

TX HASH
0×08893fa0d9f555aa463cb7be5e3925aca492cf58c28d45f58a0bdec3209bb910

CONTRACT CALL



THANK YOU