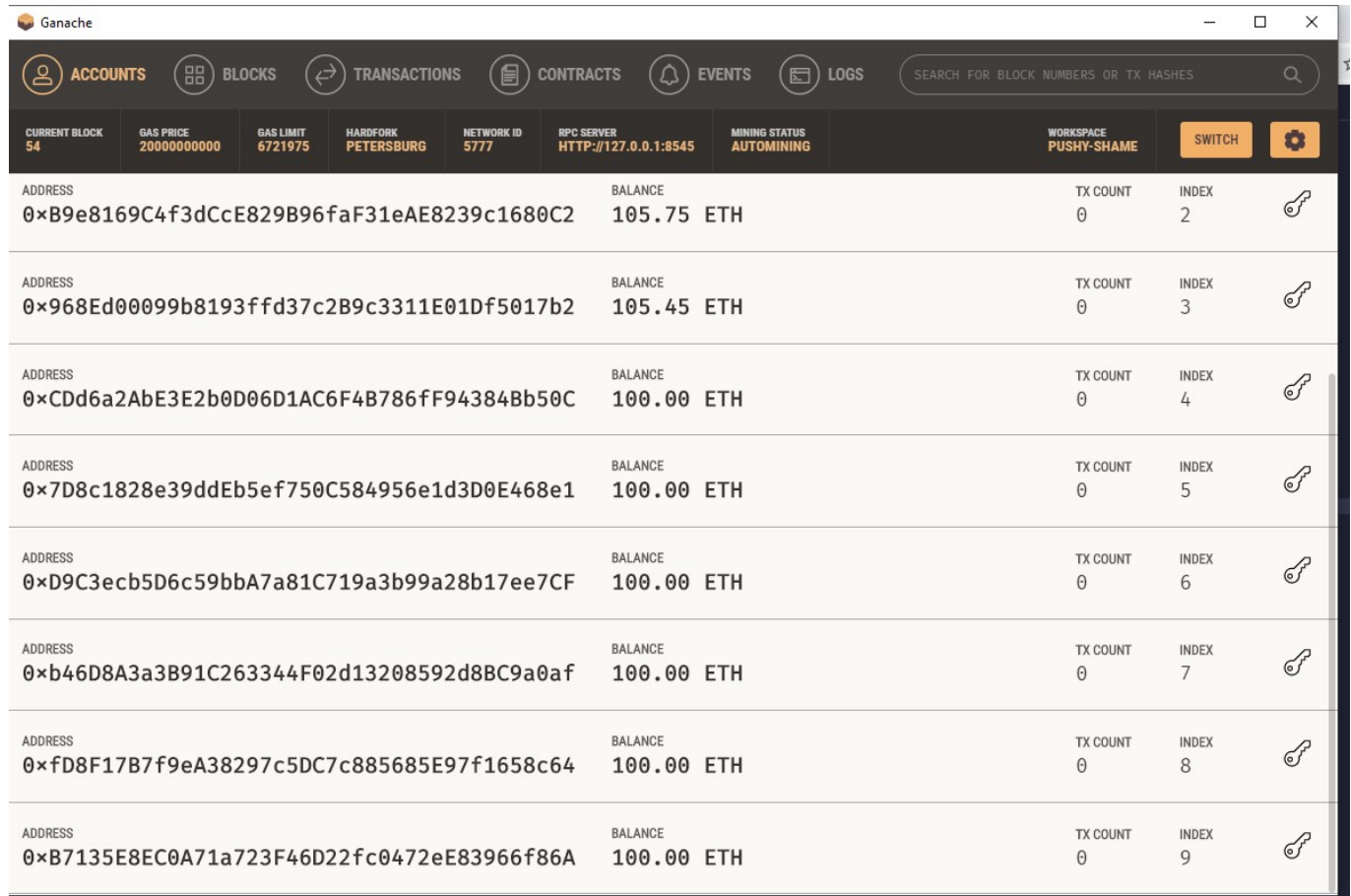


# Smart Contract

## Preliminary Steps

1. Open the Ganache



Ganache					
ACCOUNTS   BLOCKS   TRANSACTIONS   CONTRACTS   EVENTS   LOGS <input type="text" value="SEARCH FOR BLOCK NUMBERS OR TX HASHES"/>					
CURRENT BLOCK 54		GAS PRICE 20000000000		GAS LIMIT 6721975	
HARDFORK PETERSBURG		NETWORK ID 5777		RPC SERVER HTTP://127.0.0.1:8545	
MINING STATUS AUTOMINING		WORKSPACE PUSHY-SHAME		<input type="button" value="SWITCH"/> <input type="button" value="Settings"/>	
ADDRESS	BALANCE	TX COUNT	INDEX		
0xB9e8169C4f3dCcE829B96faF31eAE8239c1680C2	105.75 ETH	0	2		
ADDRESS	BALANCE	TX COUNT	INDEX		
0x968Ed00099b8193ffd37c2B9c3311E01Df5017b2	105.45 ETH	0	3		
ADDRESS	BALANCE	TX COUNT	INDEX		
0xCDD6a2AbE3E2b0D06D1AC6F4B786fF94384Bb50C	100.00 ETH	0	4		
ADDRESS	BALANCE	TX COUNT	INDEX		
0x7D8c1828e39ddEb5ef750C584956e1d3D0E468e1	100.00 ETH	0	5		
ADDRESS	BALANCE	TX COUNT	INDEX		
0xD9C3ecb5D6c59bbA7a81C719a3b99a28b17ee7CF	100.00 ETH	0	6		
ADDRESS	BALANCE	TX COUNT	INDEX		
0xb46D8A3a3B91C263344F02d13208592d8BC9a0af	100.00 ETH	0	7		
ADDRESS	BALANCE	TX COUNT	INDEX		
0xfD8F17B7f9eA38297c5DC7c885685E97f1658c64	100.00 ETH	0	8		
ADDRESS	BALANCE	TX COUNT	INDEX		
0xB7135E8EC0A71a723F46D22fc0472eE83966f86A	100.00 ETH	0	9		

2. Open the Remix and connect it with meta mask, make sure it is connected with testnet network
3. Deploy the three solidity contracts (Level1 , Level 2 and Level 3)

## Level 1 Solidity Contract

- The name of the contract is AssociateProfitSplitter.sol
- This will allows to deposite the ether into the contract and distrubute the ether among the employees i.e one, two and three.

## Steps

- Compile the contract
- Deploy the contract, make sure the Remix is connected to Injected Web3

- Once the contract is deployed, put the amount and click on Deposit

## Level 2 Solidity Contract

- The name of the contract is TieredProfitSplitter.sol
- This contract basically divides the ether amount based on the designation level of employee. In the contract employee one, two and three receives 60%, 25% and 15% of ether amount respectively.

- The method of compilation and deployment is same as of level 1 contract
- Once the contract is deploy, hit on deposit to distribute the ether

The screenshot shows the Remix IDE interface. On the left, the 'DEPLOY & RUN TRANSACTIONS' panel is active, showing the 'Injected Web3' environment and the 'Kovan (42) network'. The 'TIEREDPROFITSPLITTER' contract is selected, and the 'Deploy' button is highlighted. The main editor displays the Solidity code for 'TieredProfitSplitter.sol', which includes a constructor and a 'deposit' function. The right panel shows the 'CONTRACT DEPLOYMENT' details, including the gas fee (0.002857 ETH) and the total amount (0.002857 ETH). The 'Confirm' button is visible at the bottom right.

- Confirm the distribution in the Ganache

The screenshot shows the Ganache application interface. The top bar displays various network settings, including the current block (54), gas price (20000000000), gas limit (6721975), hardfork (PETERSBURG), network ID (5777), RPC server (HTTP://127.0.0.1:8545), mining status (AUTOMINING), and workspace (PUSHY-SHAME). The main area shows a list of accounts with their addresses, balances, and transaction counts. The accounts are listed in a table format:

ADDRESS	BALANCE	TX COUNT	INDEX
0xDe751001593B0429f2F18Db6acdD51D6Fd30DACf	81.55 ETH	54	0
0xd28fEf65A200aC522FAe94a4fa28f3a5FEaB7285	106.80 ETH	0	1
0xB9e8169C4f3dCcE829B96faF31eAE8239c1680C2	105.75 ETH	0	2
0x968Ed00099b8193ffd37c2B9c3311E01Df5017b2	105.45 ETH	0	3
0xCd6a2AbE3E2b0D06D1AC6F4B786ff94384Bb50C	100.00 ETH	0	4
0x7D8c1828e39ddEb5ef750C584956e1d3D0E468e1	100.00 ETH	0	5
0xD9C3ecb5D6c59bbA7a81C719a3b99a28b17ee7CF	100.00 ETH	0	6

## Level 3 Solidity Contract

- The name of the contract is DeferredEquityPlan.sol
- This contract determines how many the number of years a employee served in the company and based on it the number of company share is given to them. In our contract for each year spend the number of

shares should given as 250 from total awarded share of 1000.

- The process of compilation and deployment is same

The screenshot displays the Remix IDE interface with the Solidity code for a deferred equity plan. The code is as follows:

```

1 pragma solidity ^0.5.0;
2
3 // Lvl 3: equity plan
4 contract DeferredEquityPlan {
5     address human_resources;
6
7     address payable employee; // bob
8     bool active = true; // this employee is active at the start of the contract
9
10    // @1000: Set the total shares and annual distribution
11    // Your code here!
12
13    uint total_shares = 1000;
14    uint annual_distribution = 250;
15
16
17
18    uint start_time = now; // permanently store the time this contract was initialized
19
20    // @1000: Set the 'unlock_time' to be 365 days from now
21    // Your code here!
22
23    uint unlock_time = start_time + 365 days;
24
25    uint public distributed_shares; // starts at 0
26
27    constructor(address payable _employee) public {
28        human_resources = msg.sender;
29        employee = _employee;
30    }
31
32    function distribute() public {
33        require(msg.sender == human_resources || msg.sender == employee, "You are not authorized to execute this contract.");
34        require(active == true, "Contract not active.");
35
36        // @1000: Add "require" statements to enforce that:
37        // 1: 'unlock_time' is less than or equal to 'now'
38        // 2: 'distributed_shares' is less than the 'total_shares'
39        // Your code here!
40
41        require(unlock_time <= now || distributed_shares < total_shares, "Error message");
42
43        // @1000: Add 365 days to the 'unlock_time'
44        // Your code here!
45
46        unlock_time = unlock_time + 365 days;
47
48        // @1000: Calculate the shares distributed by using the function (now - start_time) / 365 days * the annual distribution
49        // Make sure to include the parenthesis around (now - start_time) to get accurate results!
50        // Your code here!
51    }
52
53 }

```

The MetaMask notification window shows the transaction details for the 'DISTRIBUTE' function. The gas fee is 0.000388 ETH, and the total amount is 0.000388 ETH. The transaction is confirmed on the Kovan Test Network.

- distribute will distribute the shares to the specified address and deactivate will deferred the share back to the company if the employee the firm before 4 years