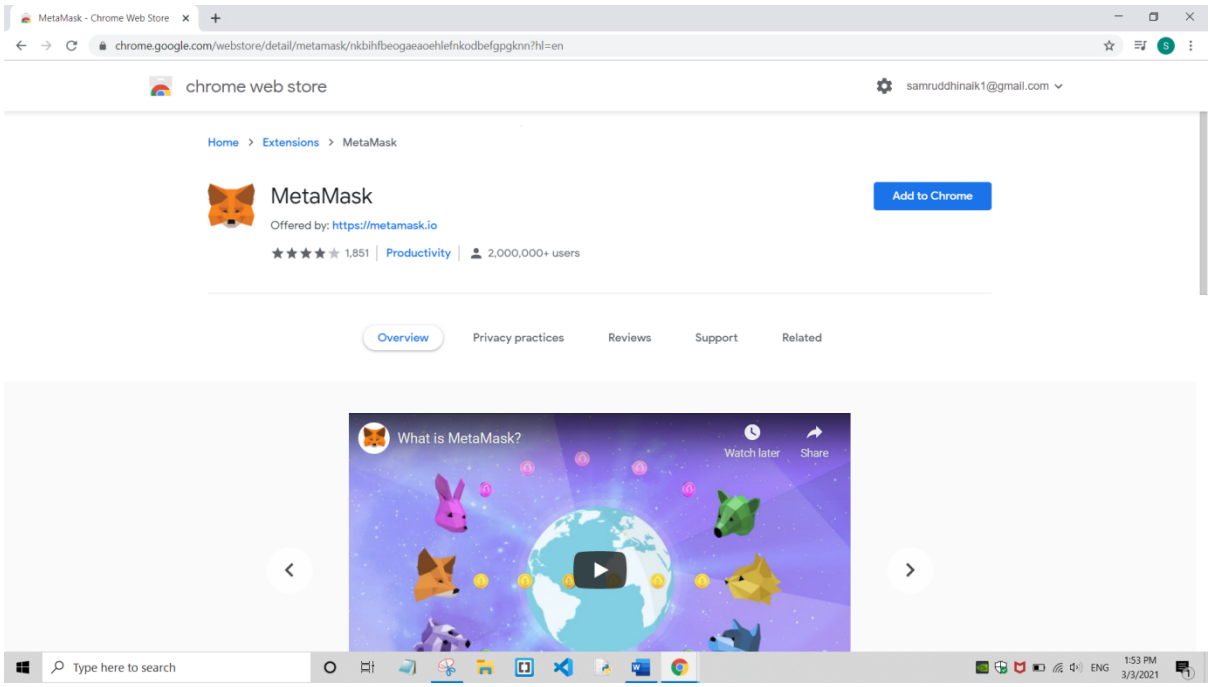
A.2 Write a contract to execute basic addition, subtraction, multiplication and division functions and Simulate on metamask on Ropsten network

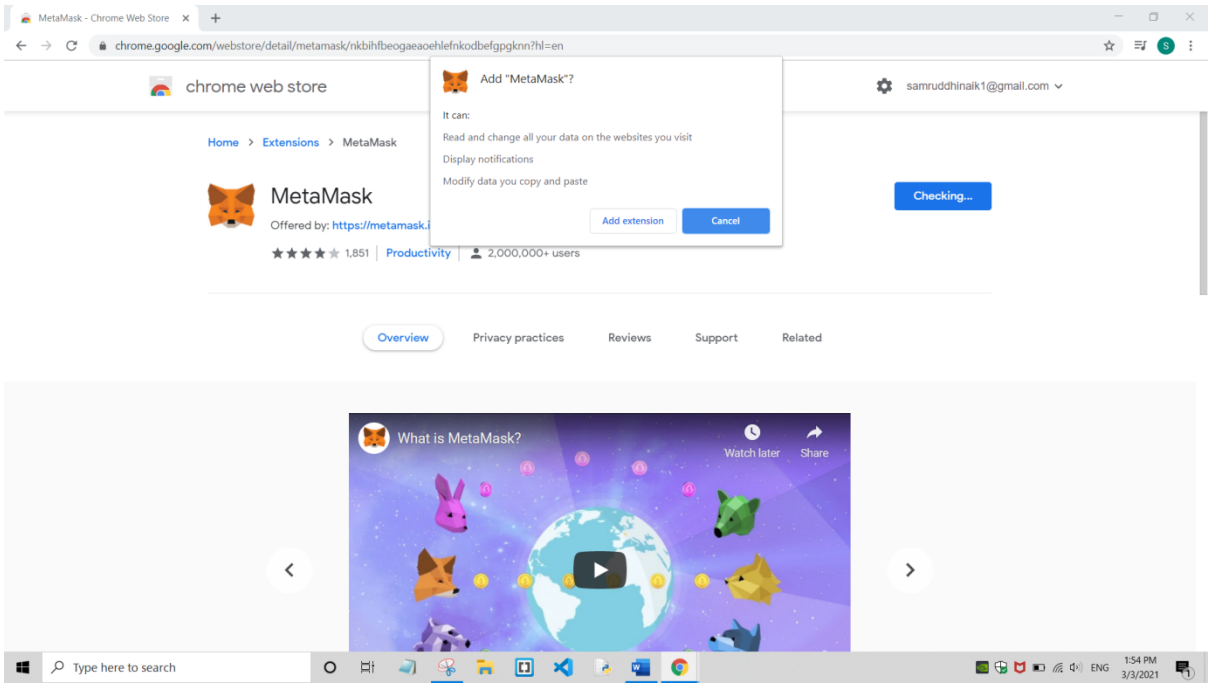
Smart contract

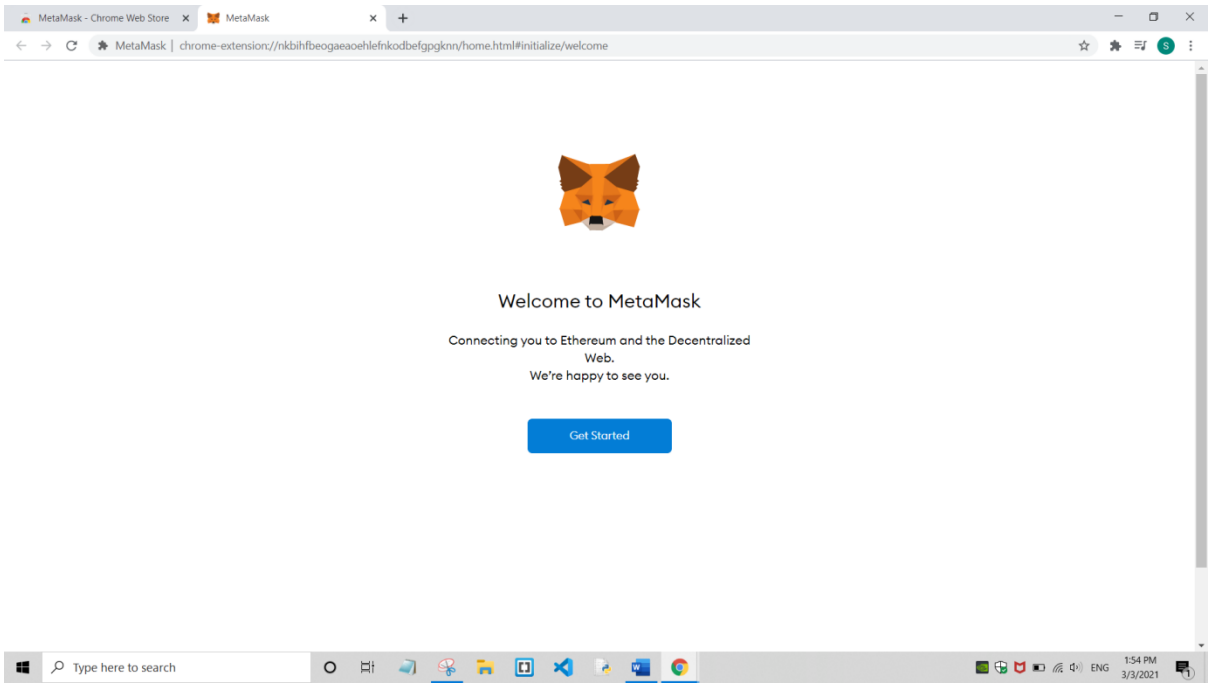
```
pragma solidity ^0.5.17;

contract operations {
   uint n1;
   uint n2;

   function firstNumber(uint a) public {
      n1 = a;
   }

   function secondNumber(uint b) public {
      n2 = b;
   }

   function add() view public returns (uint) {
      return n1 + n2;
   }

   function subtract() view public returns (uint) {
      return n1 - n2;
   }

   function multiply() view public returns (uint) {
      return n1 * n2;
   }

   function divide() view public returns (uint) {
      return n1 / n2;
   }
}
```

Metamask extension

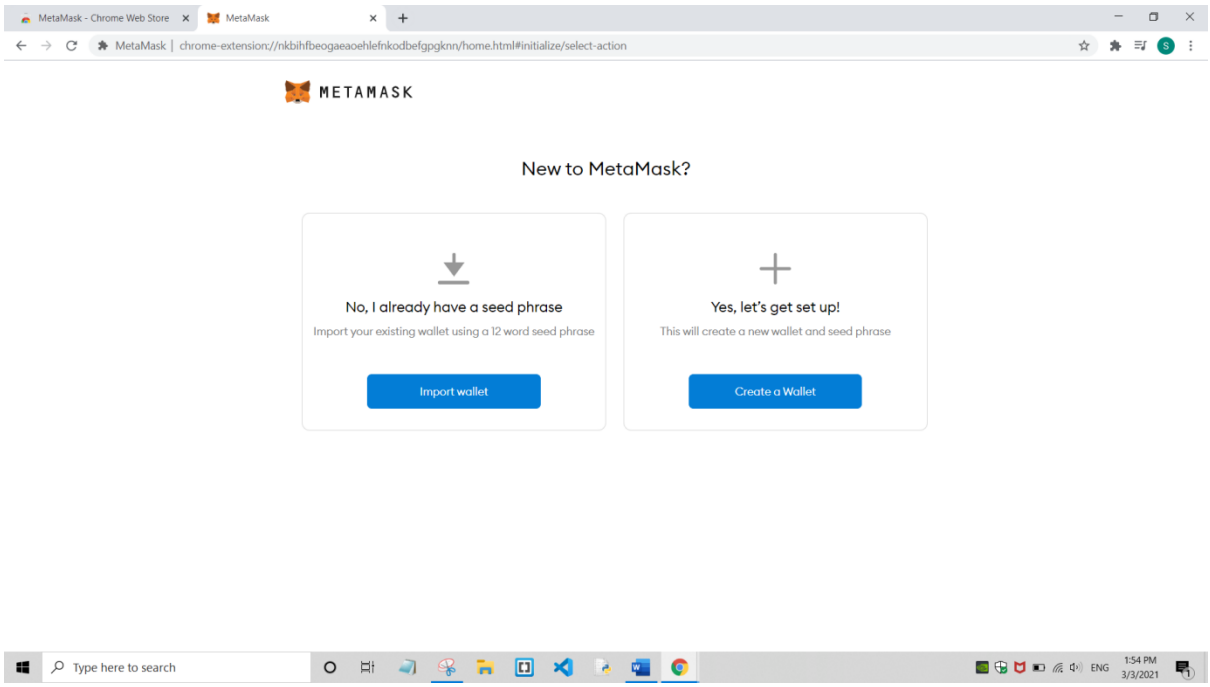


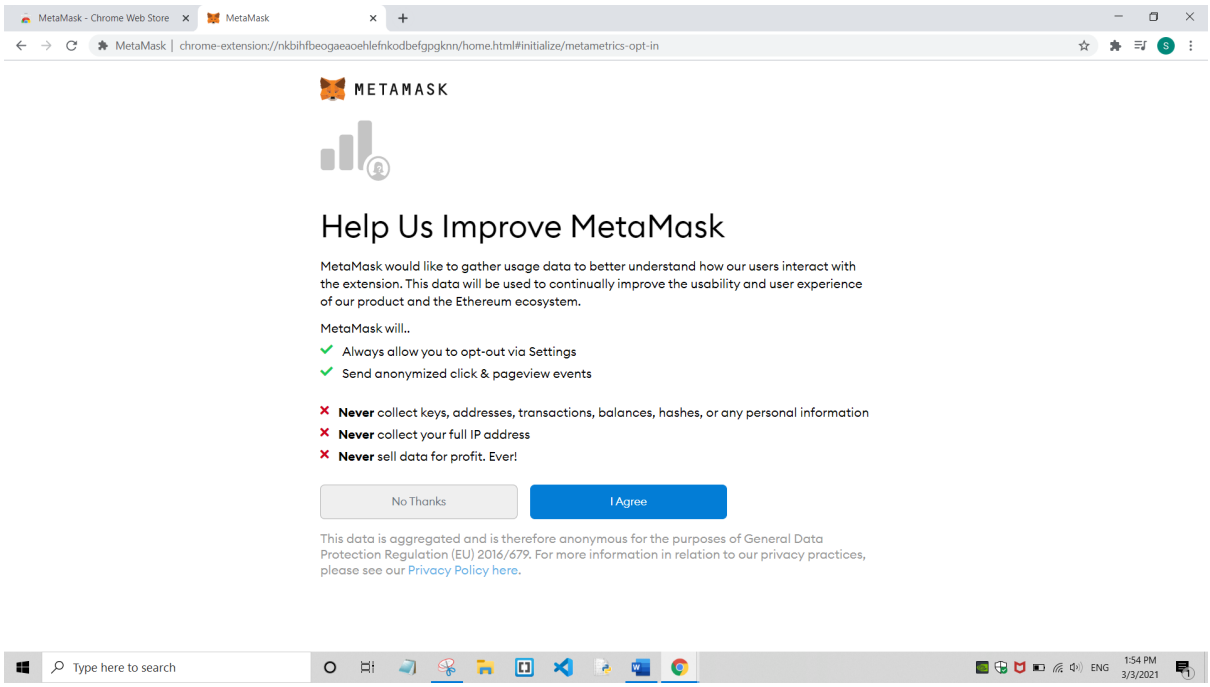
Add extension

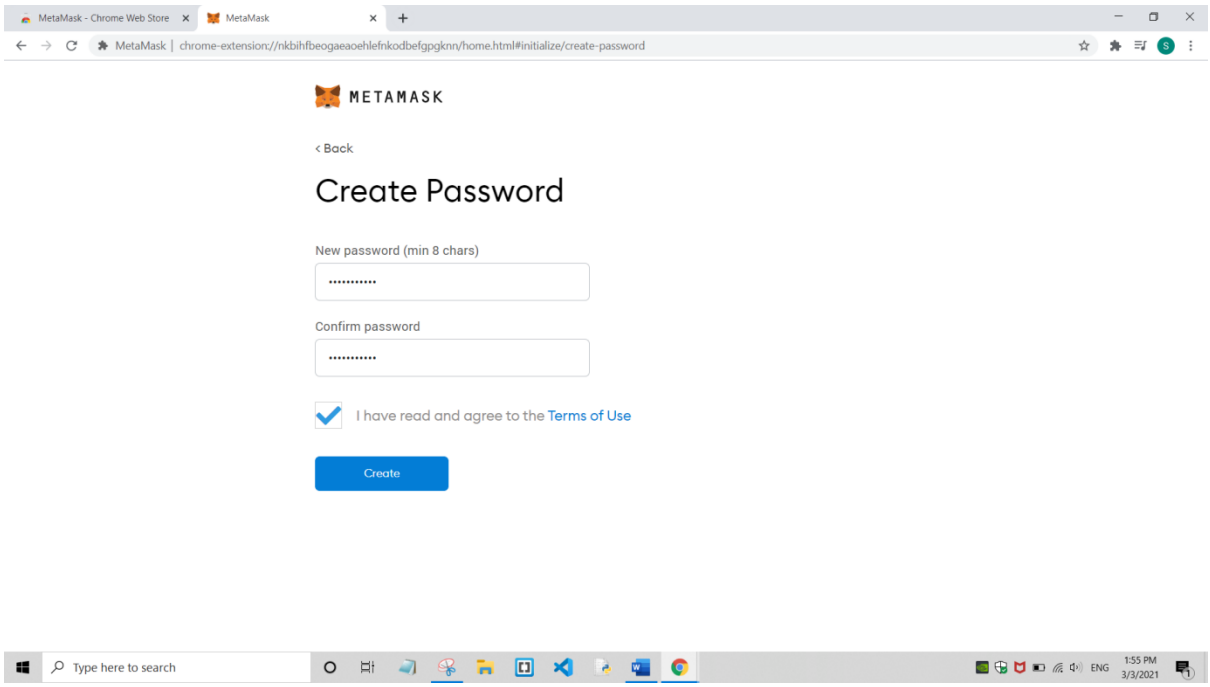


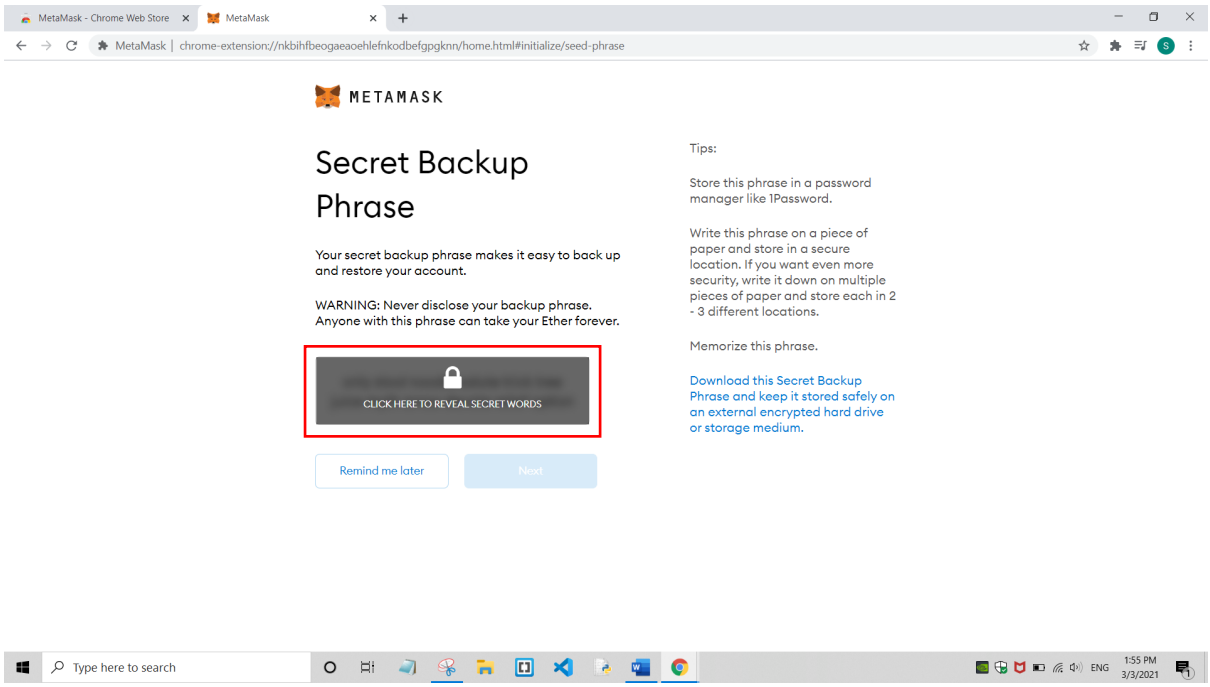


Create a Wallet



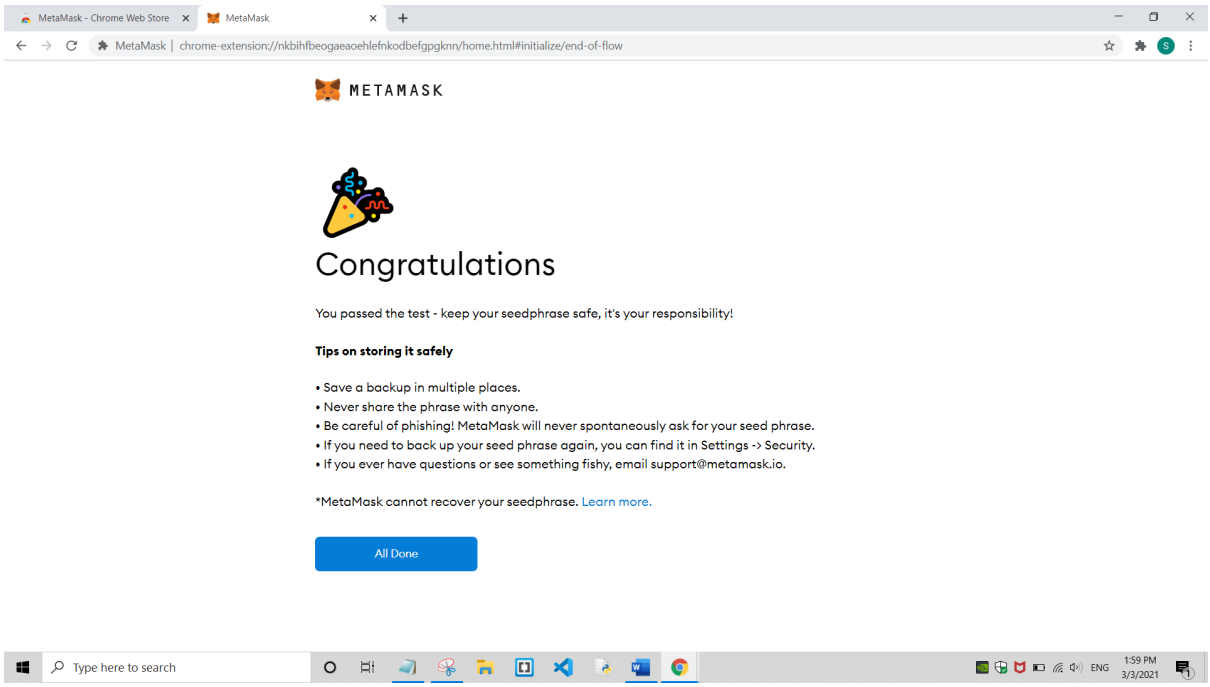

MetaMask - Chrome Web Store
MetaMask
MetaMask | chrome-extension://nkbihfbeogaeaoehlefnkodbefgpgknn/home.html#initialize/metametrics-opt-in
METAMASK
Help Us Improve MetaMask
MetaMask would like to gather usage data to better understand how our users interact with the extension. This data will be used to continually improve the usability and user experience of our product and the Ethereum ecosystem.
MetaMask will..
Always allow you to opt-out via Settings
Send anonymized click & pageview events
Never collect keys, addresses, transactions, balances, hashes, or any personal information
Never collect your full IP address
Never sell data for profit. Ever!
No Thanks
I Agree
This data is aggregated and is therefore anonymous for the purposes of General Data Protection Regulation (EU) 2016/679. For more information in relation to our privacy practices, please see our Privacy Policy here.
Type here to search
ENG
1:54 PM
3/3/2021

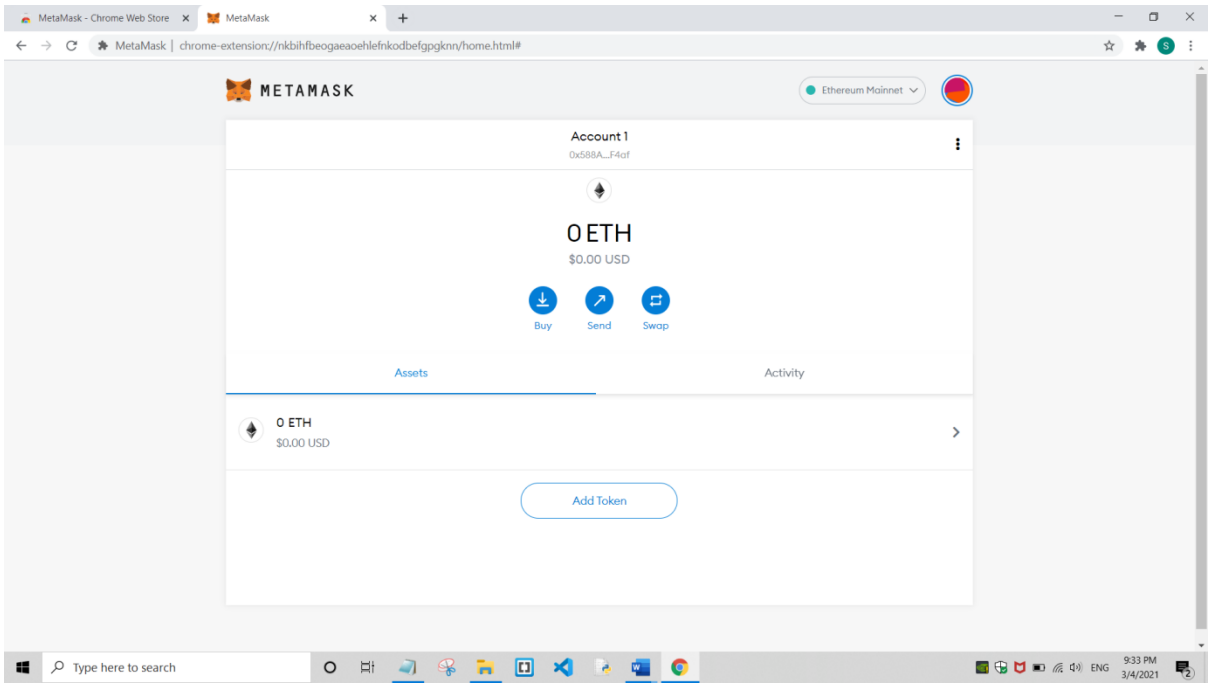

MetaMask - Chrome Web Store
MetaMask
MetaMask | chrome-extension://nkbihfbeogaeaoehlefnkodbefgpgknn/home.html#initialize/create-password
METAMASK
< Back
Create Password
New password (min 8 chars)
Confirm password
I have read and agree to the Terms of Use
Create
Type here to search
ENG
1:55 PM
3/3/2021



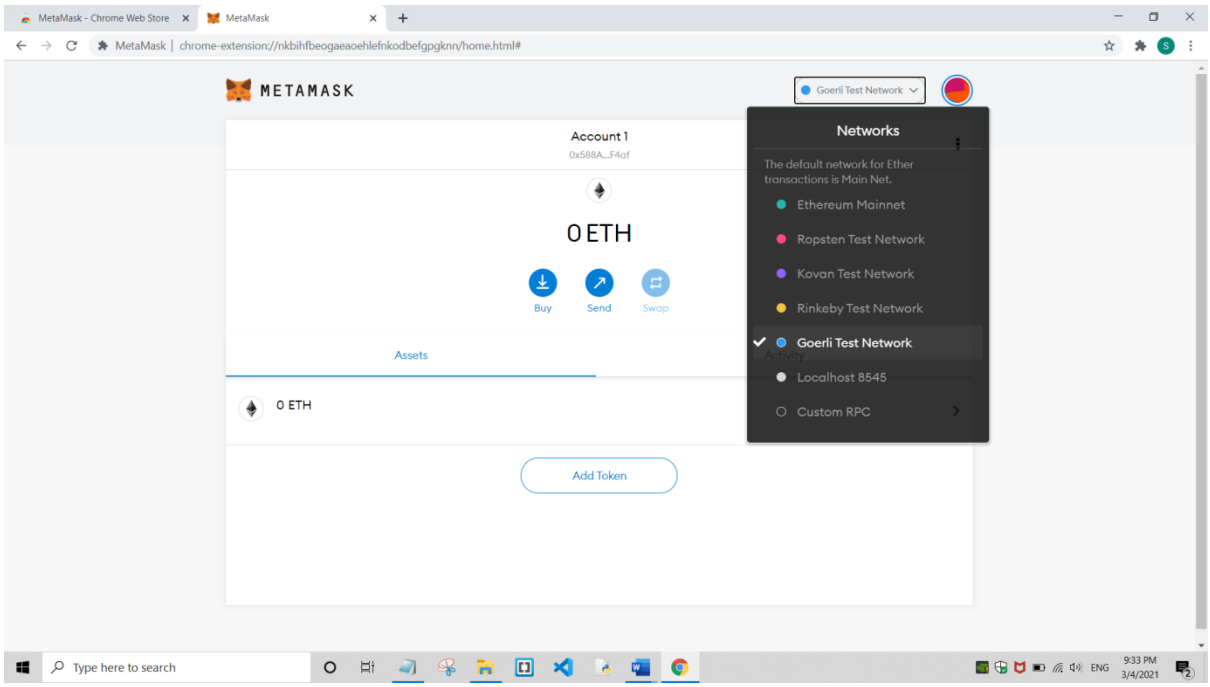
Get the Secret Backup Phrase

Use the Secret Backup Phrase to access Account

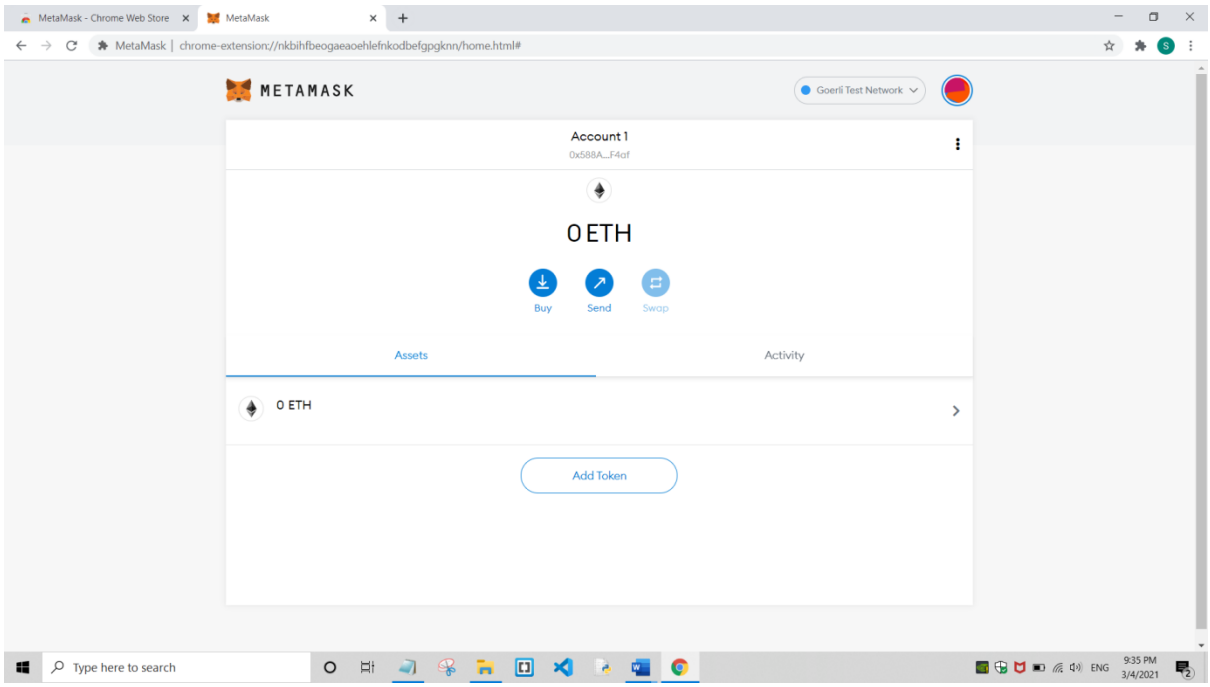




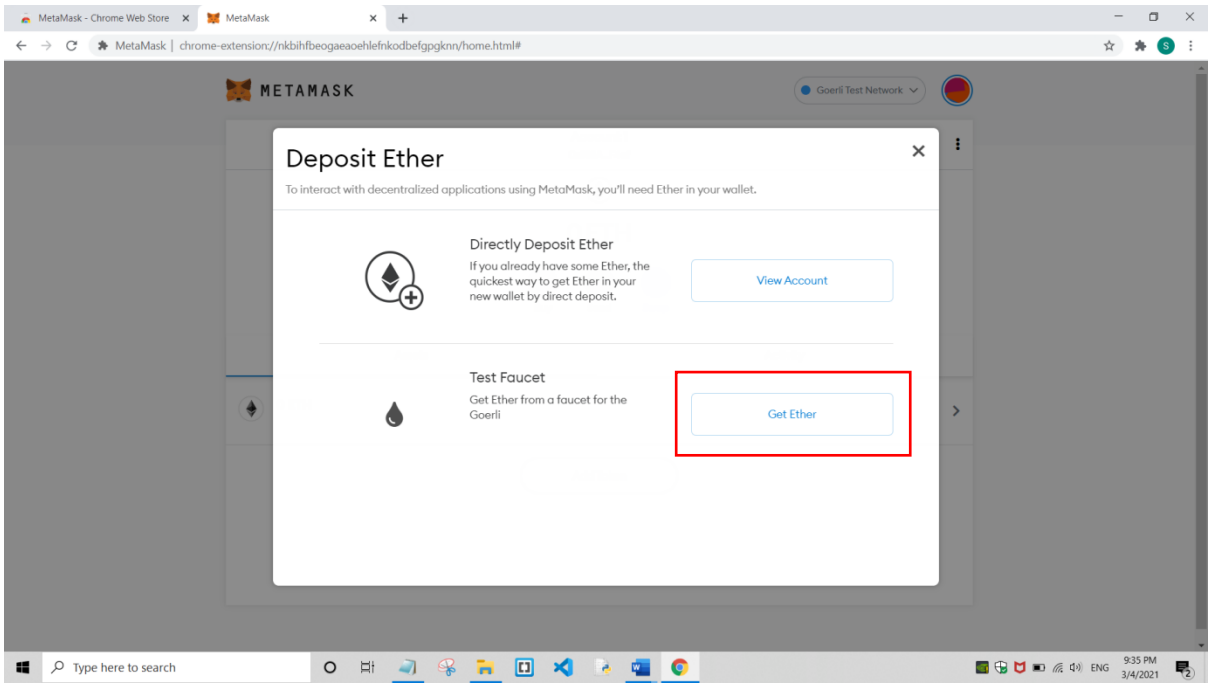
Select Goerli Test Network

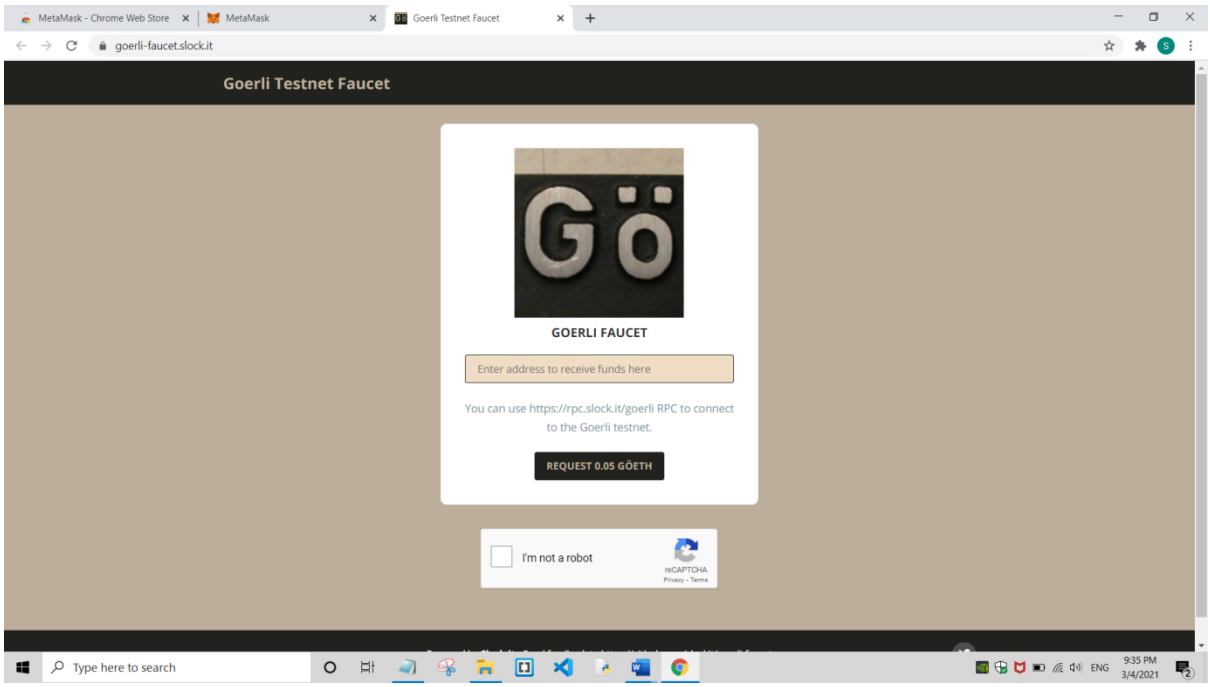


Buy Ether

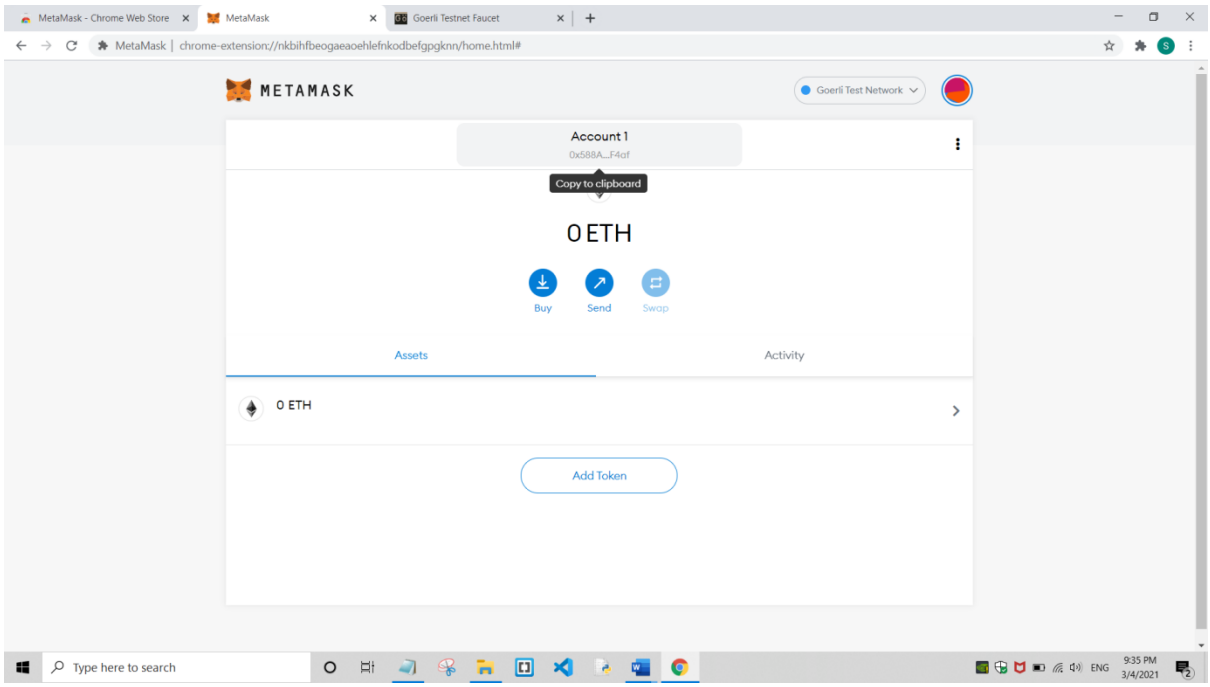


Get Ether

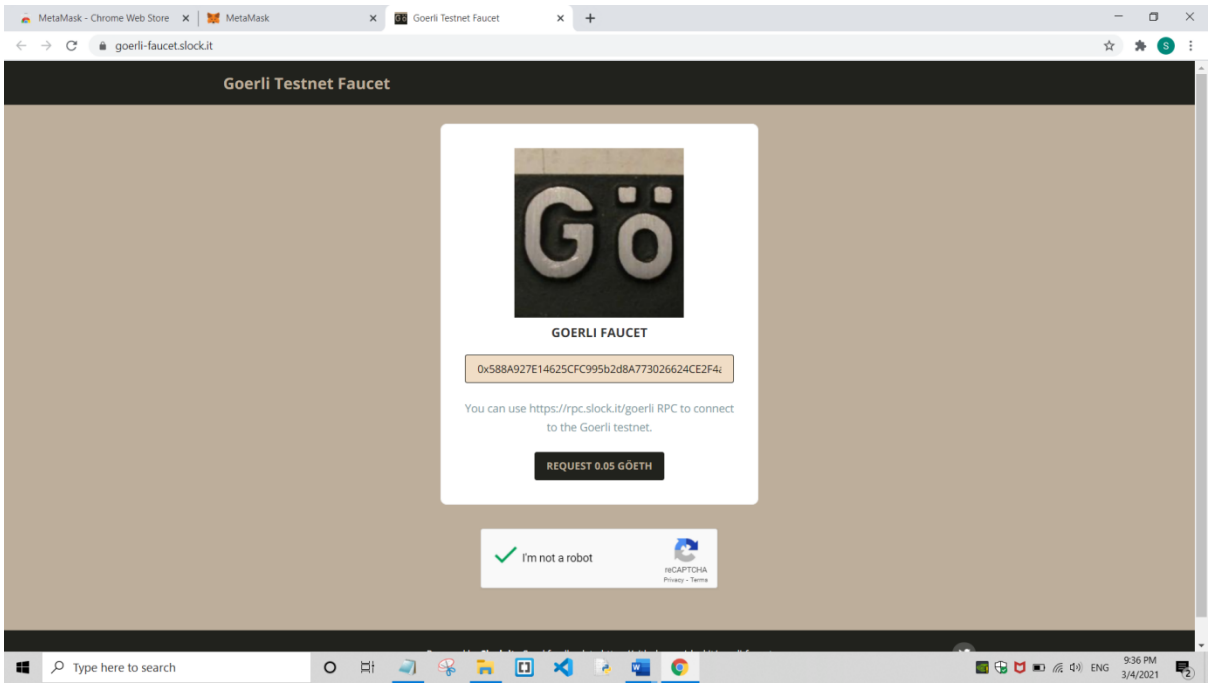


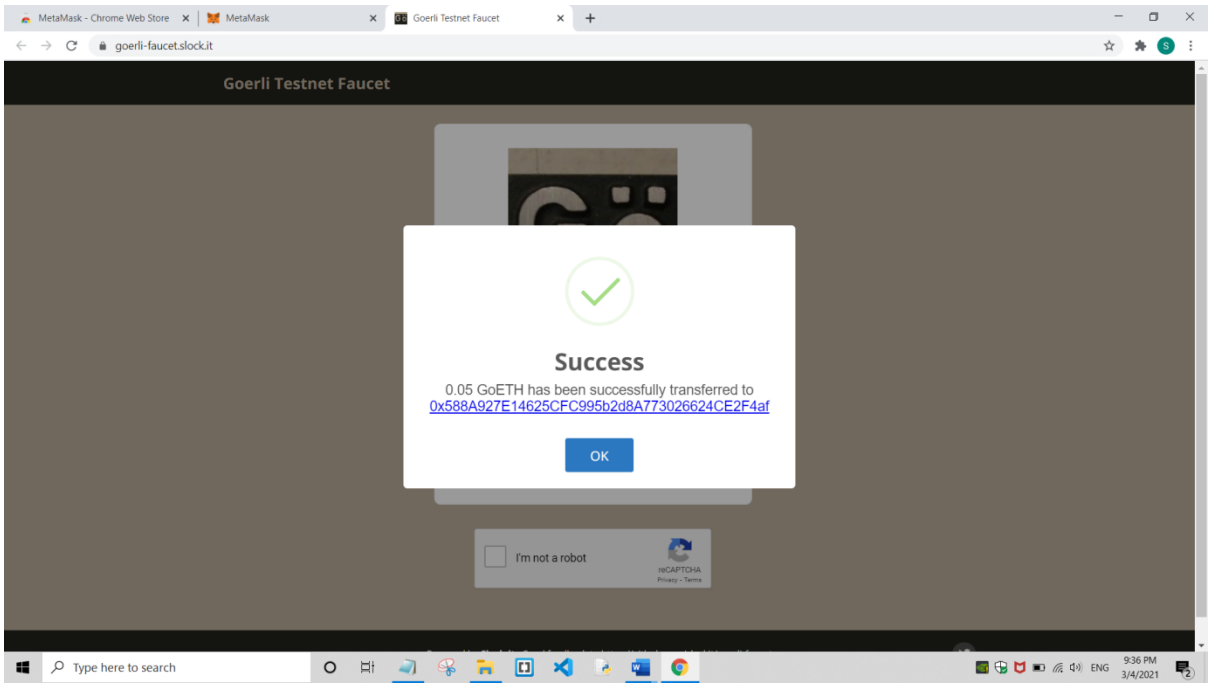


Copy the Account address

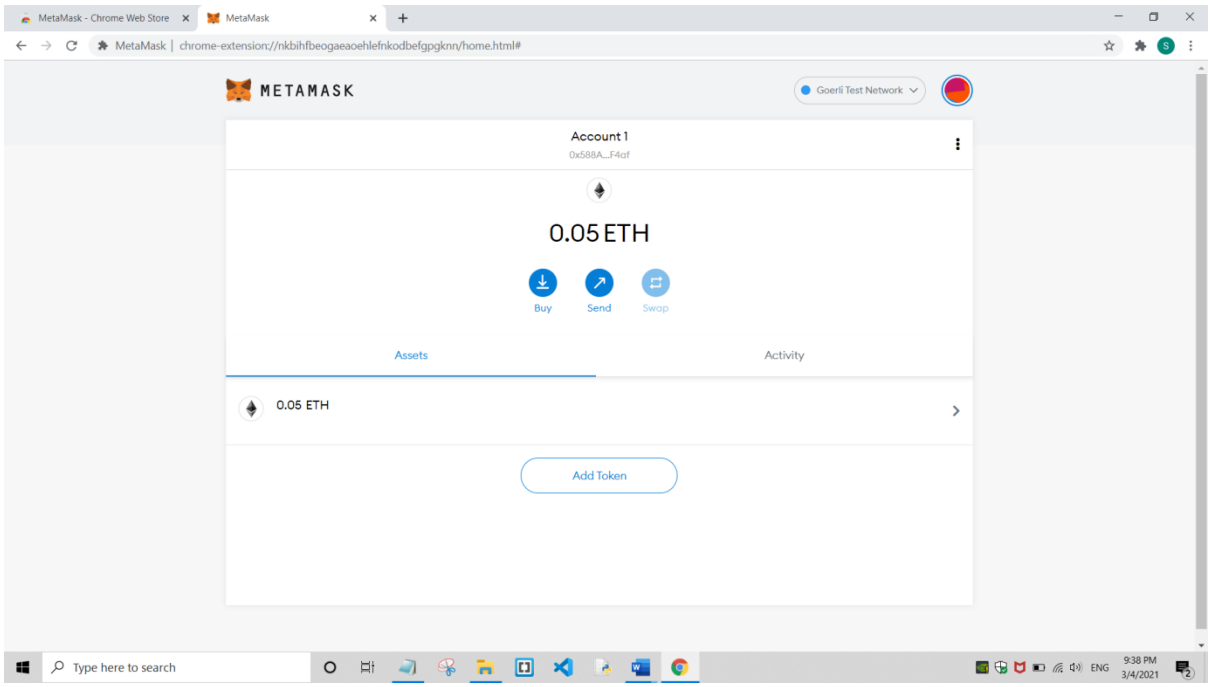


Paste the account address

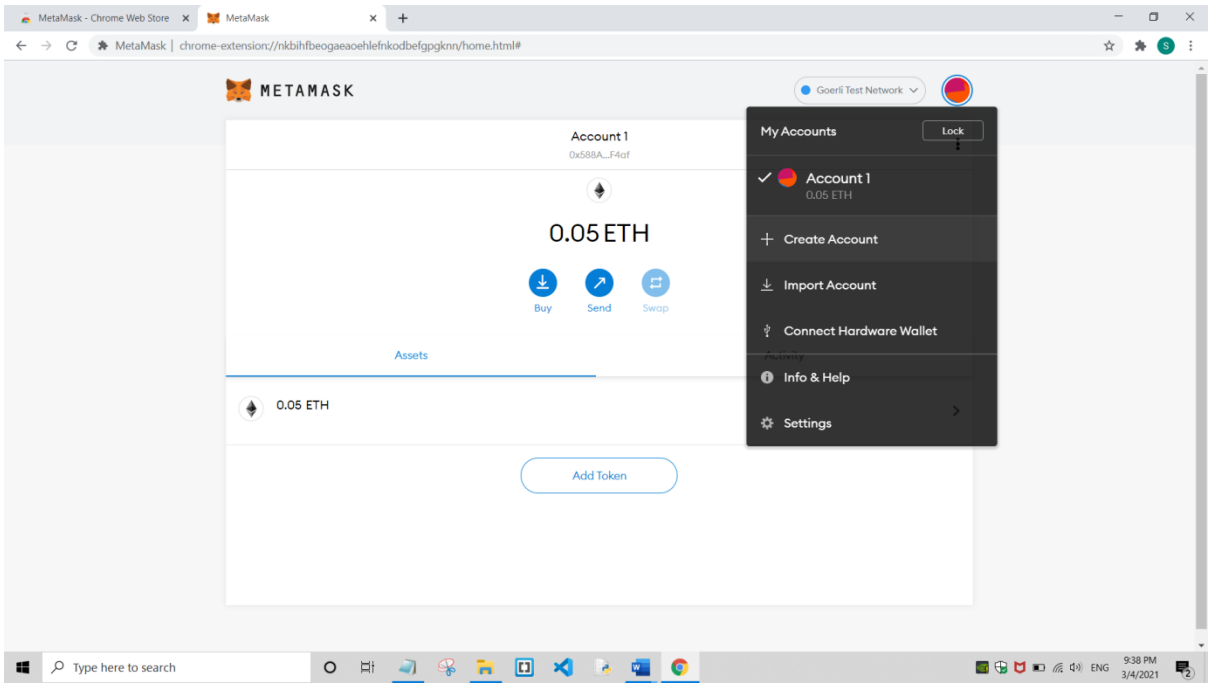


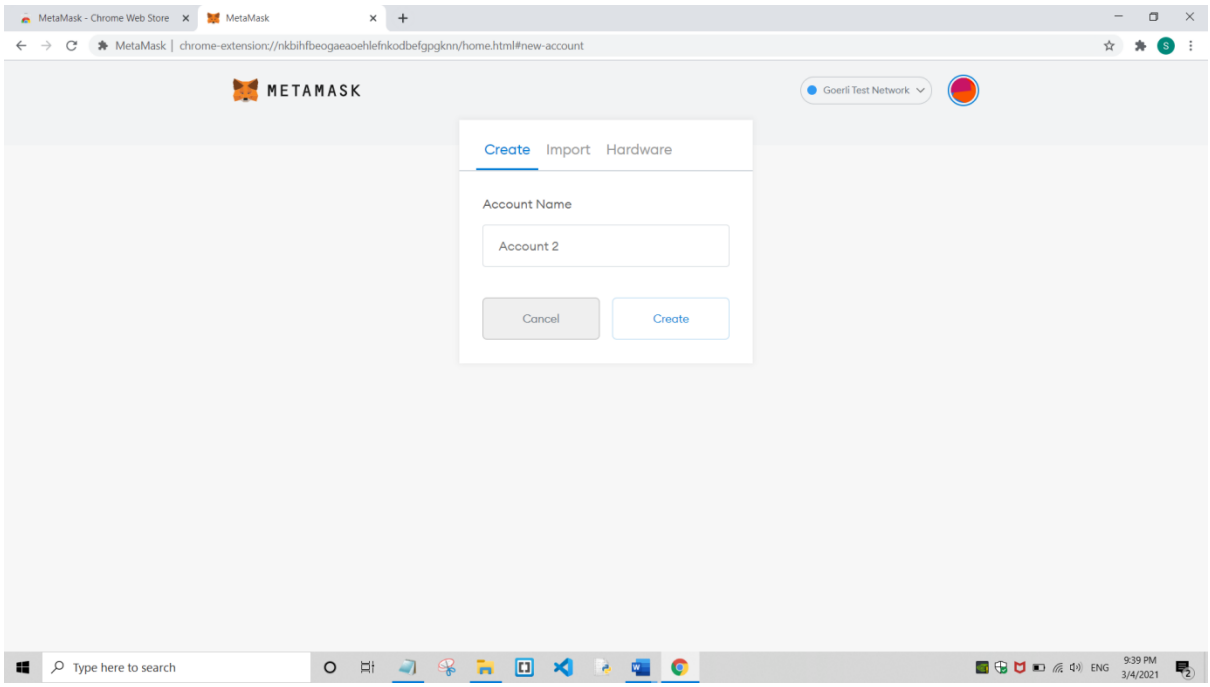


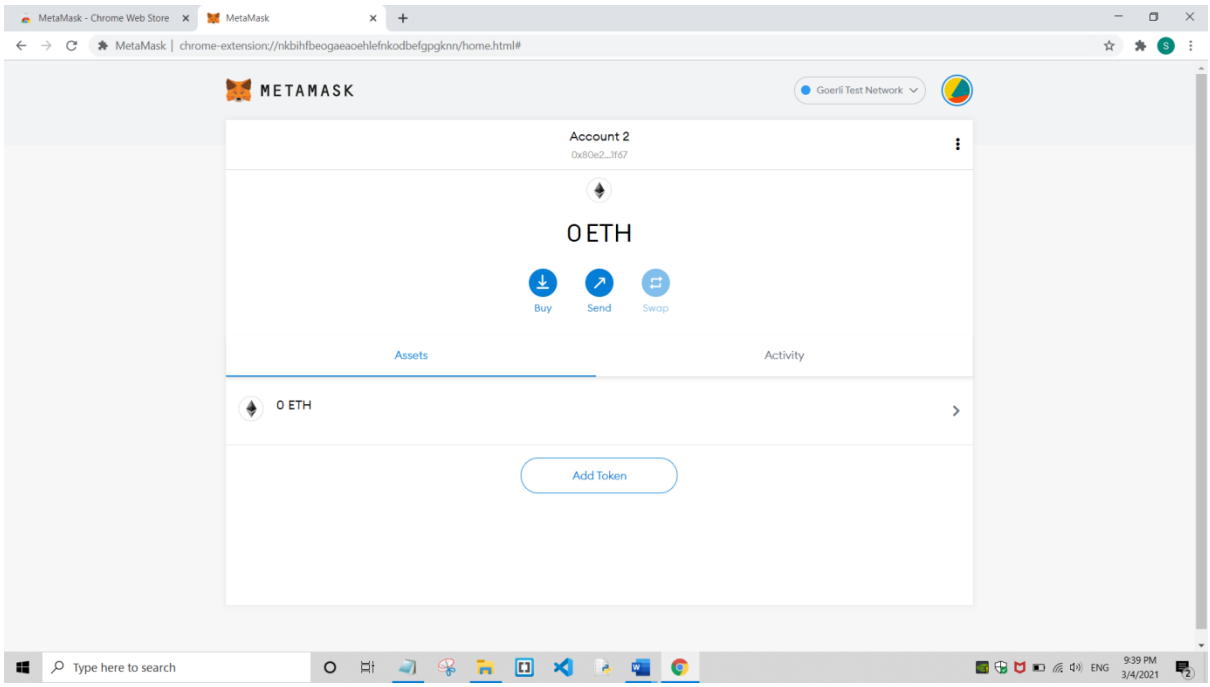
Ether added to Account



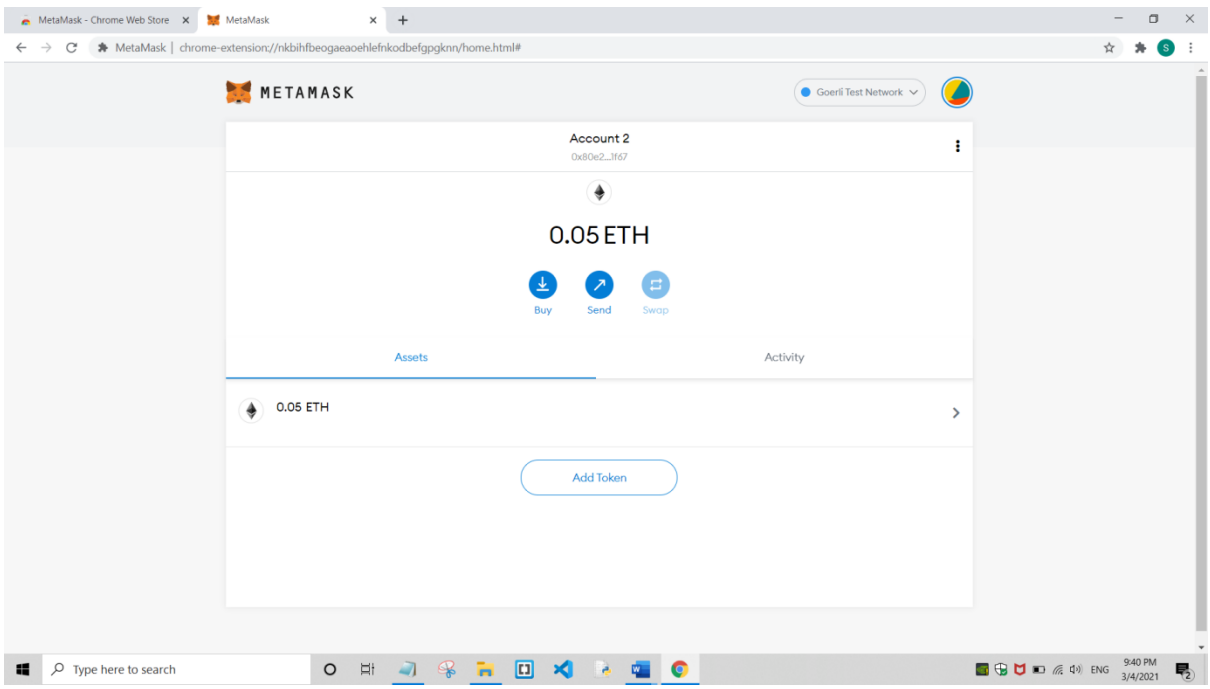
Create another account



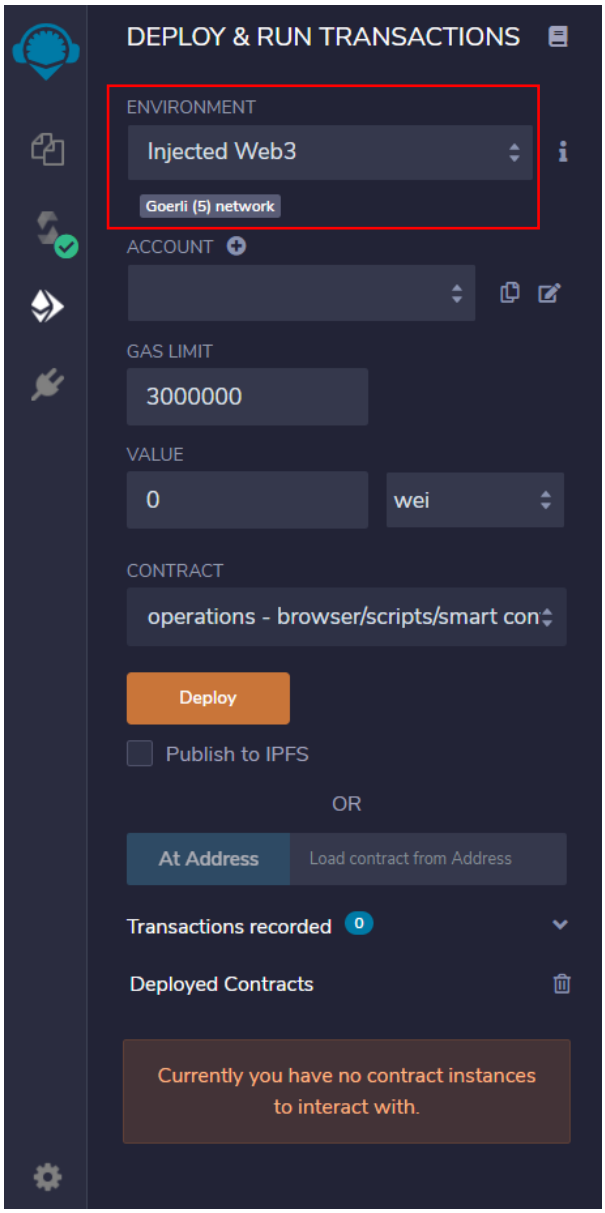




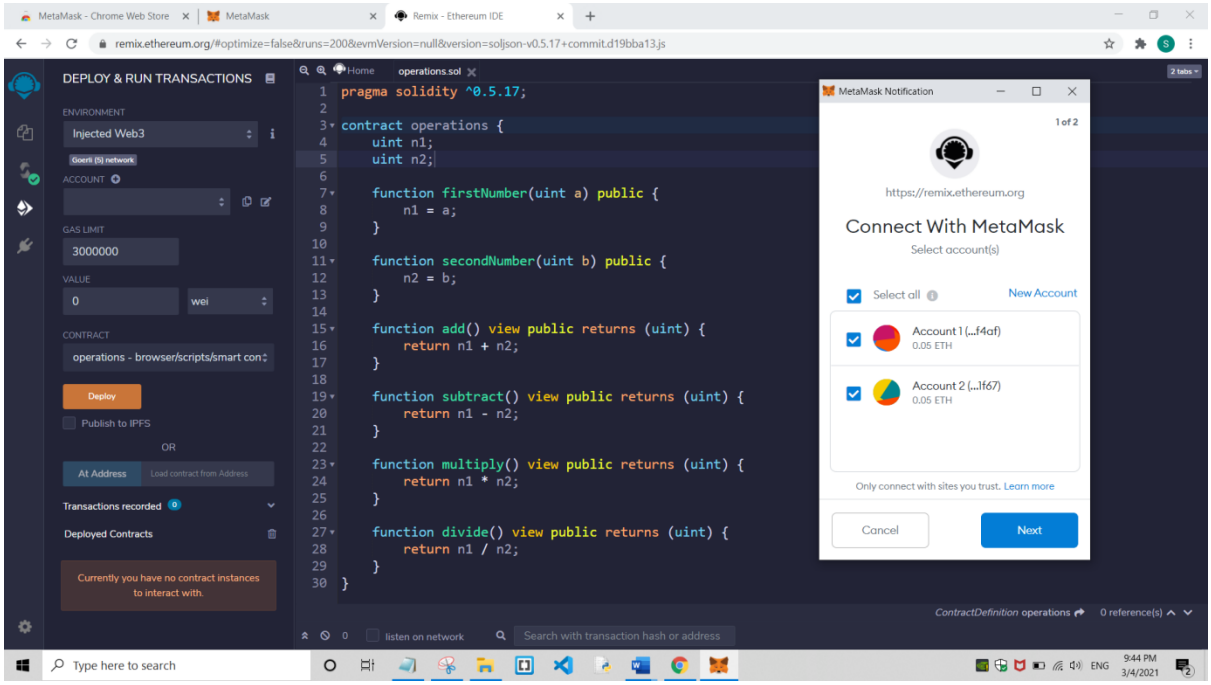
Get Ether for this account(as done for Account1)

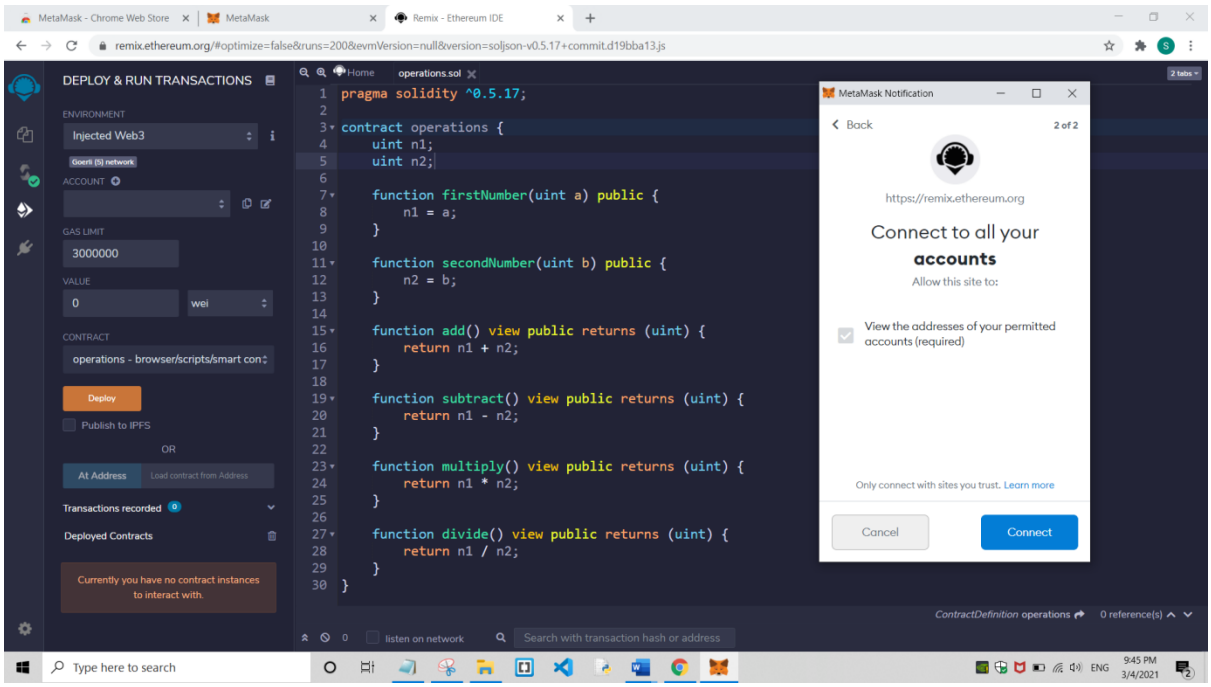


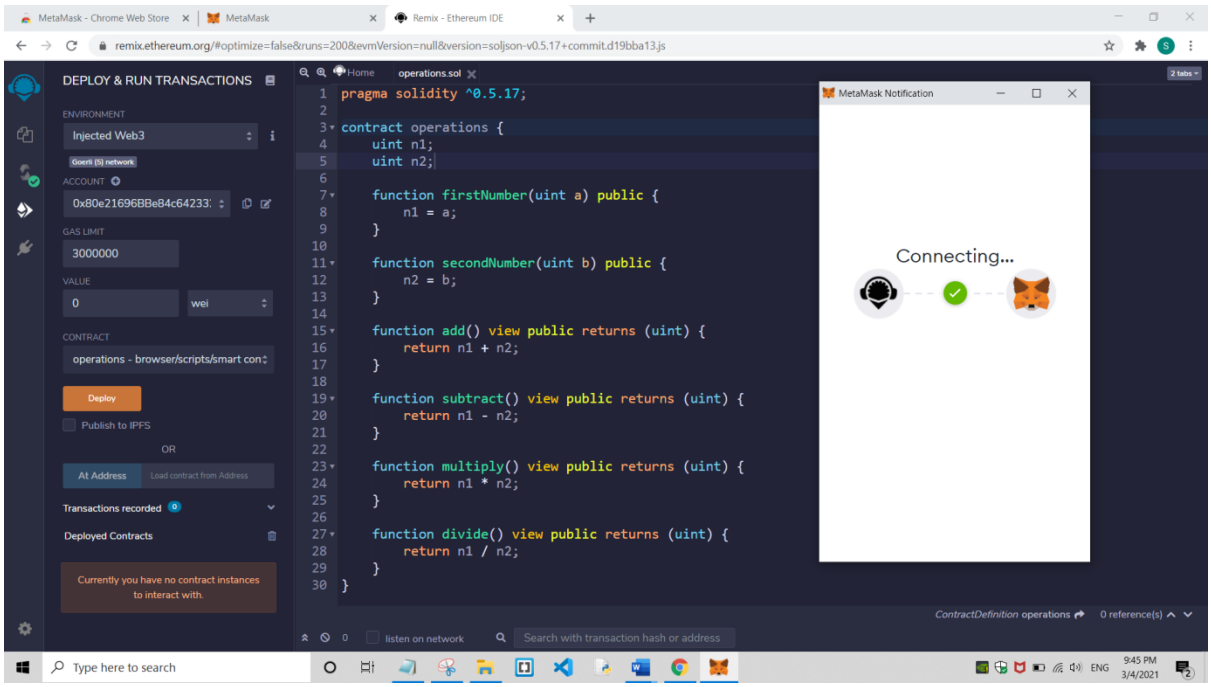
Connect to Goerli Network



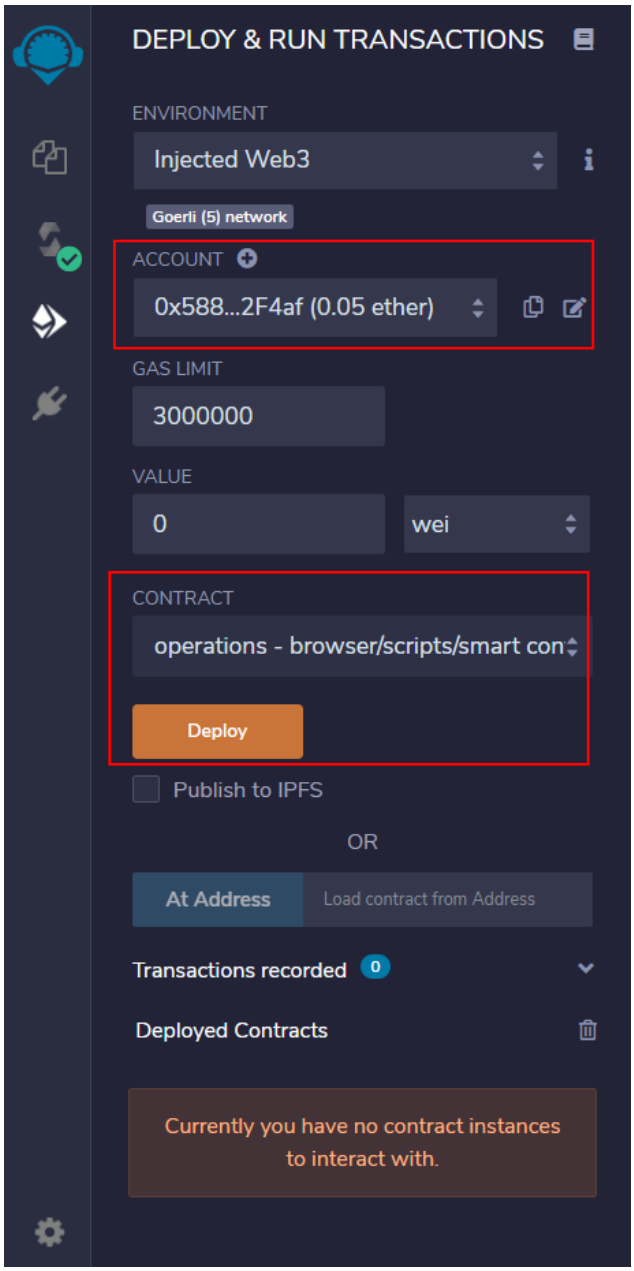
Connect the Accounts



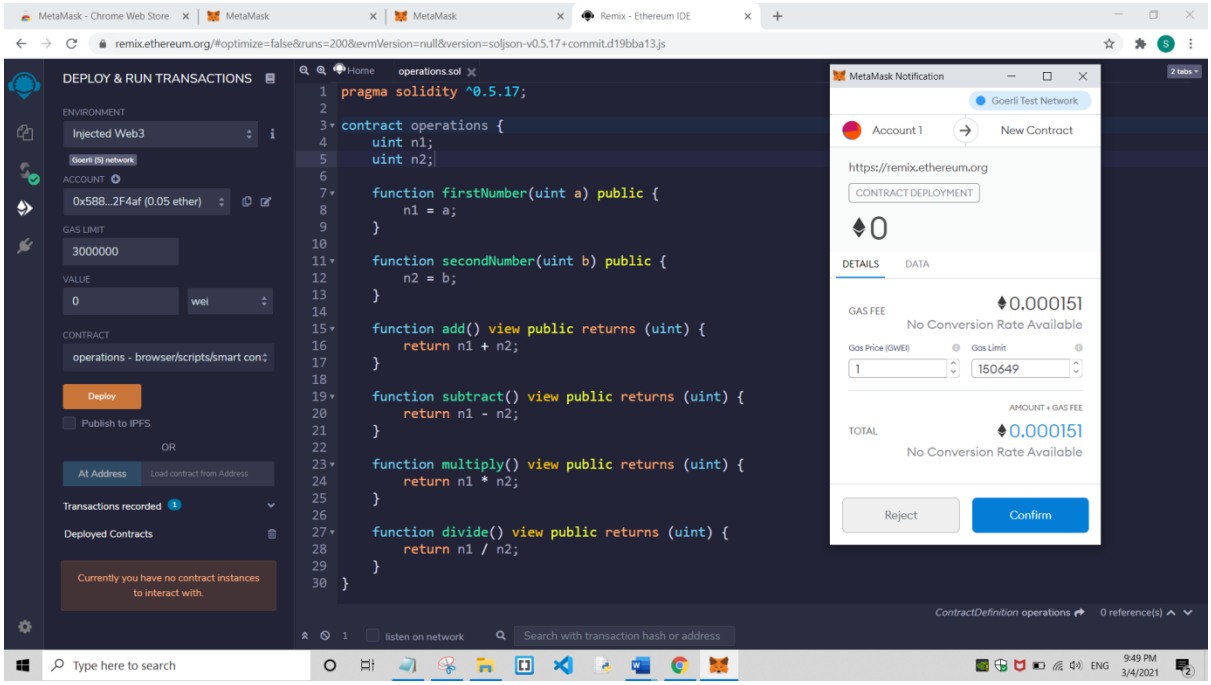


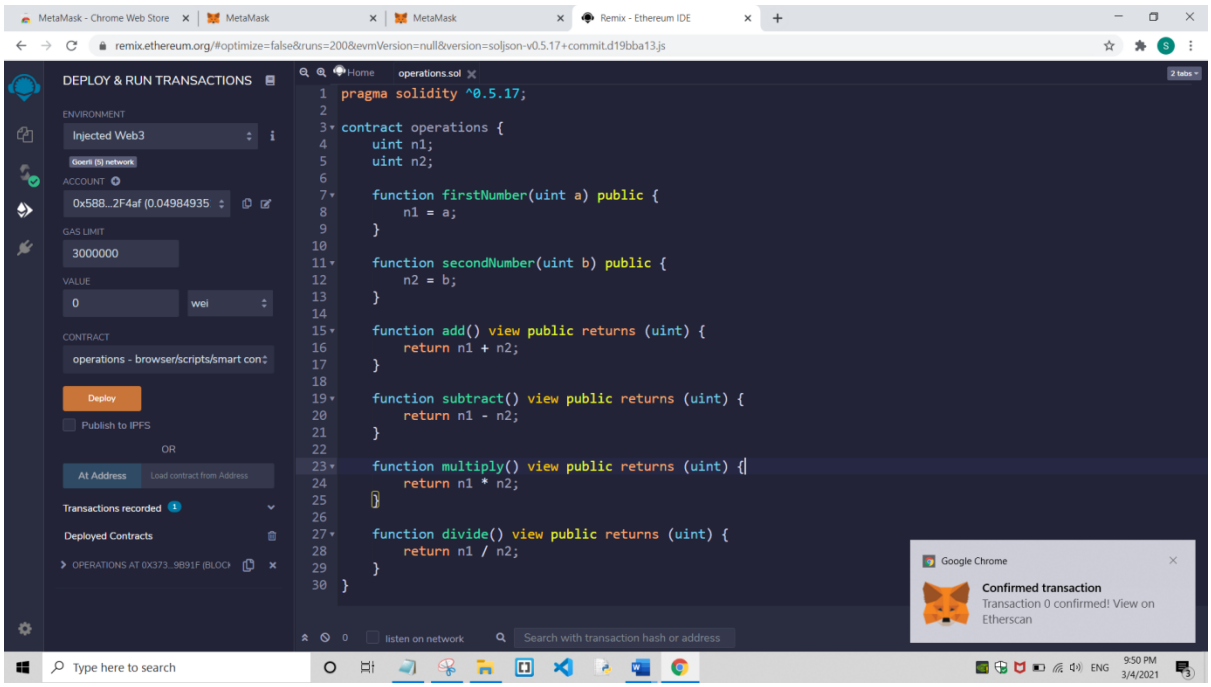

MetaMask - Chrome Web Store
MetaMask
Remix - Ethereum IDE
remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js
DEPLOY & RUN TRANSACTIONS
ENVIRONMENT
Injected Web3
Goerli (5) network
ACCOUNT
0x80e21696BBe84c64233
GAS LIMIT
3000000
VALUE
0
wei
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
Deployed Contracts
Currently you have no contract instances to interact with.
Home
operations.sol
2 tabs
1 pragma solidity ^0.5.17;
2
3 contract operations {
4 uint n1;
5 uint n2;
6
7 function firstNumber(uint a) public {
8 n1 = a;
9 }
10
11 function secondNumber(uint b) public {
12 n2 = b;
13 }
14
15 function add() view public returns (uint) {
16 return n1 + n2;
17 }
18
19 function subtract() view public returns (uint) {
20 return n1 - n2;
21 }
22
23 function multiply() view public returns (uint) {
24 return n1 * n2;
25 }
26
27 function divide() view public returns (uint) {
28 return n1 / n2;
29 }
30 }
MetaMask Notification
Connecting...
ContractDefinition operations
0 reference(s)
listen on network
Search with transaction hash or address
Type here to search
ENG
9:45 PM
3/4/2021

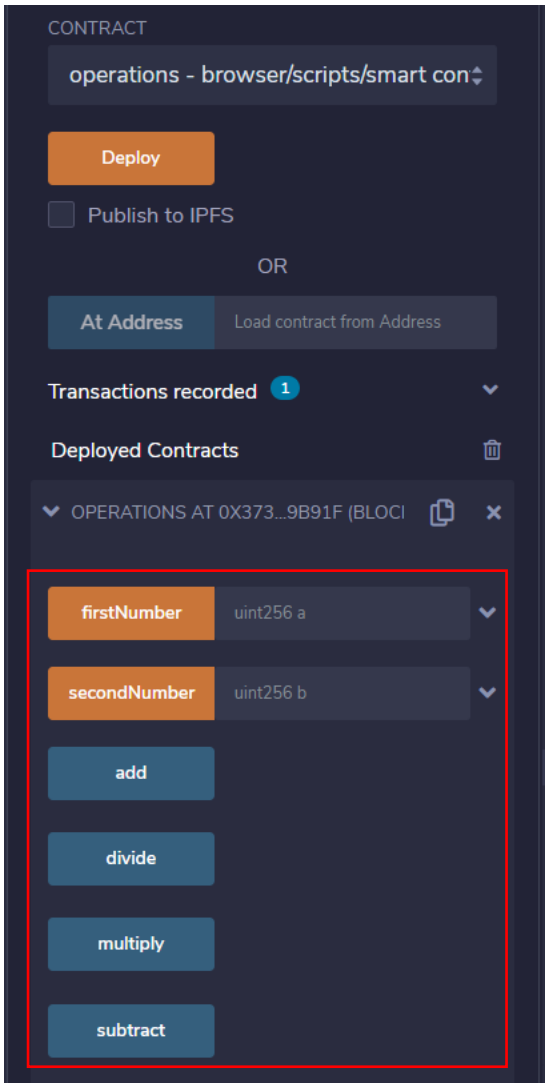
Account1

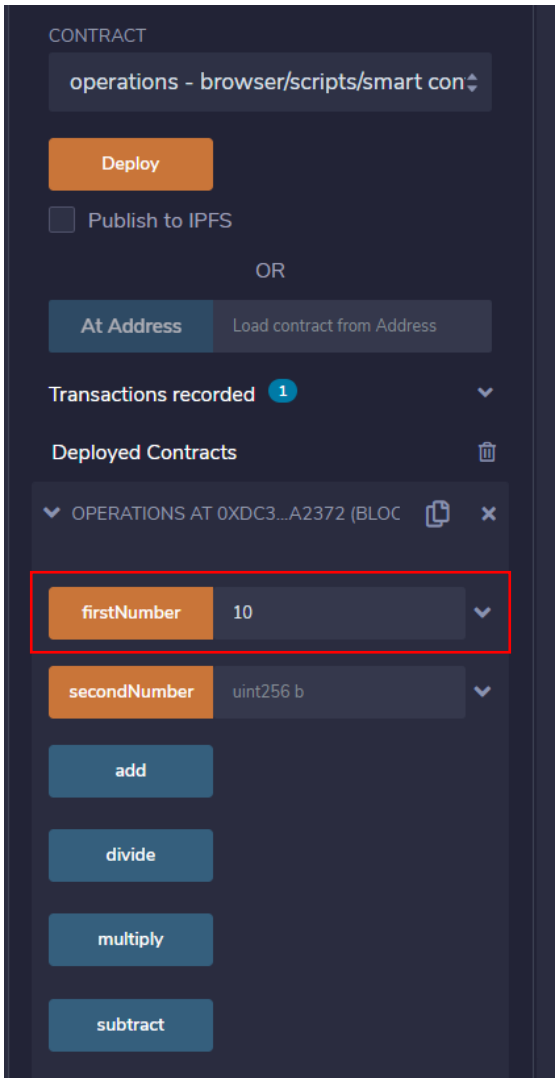

DEPLOY & RUN TRANSACTIONS
ENVIRONMENT
Injected Web3
Goerli (5) network
ACCOUNT
0x588...2F4af (0.05 ether)
GAS LIMIT
3000000
VALUE
0
wei
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
0
Deployed Contracts
Currently you have no contract instances to interact with.

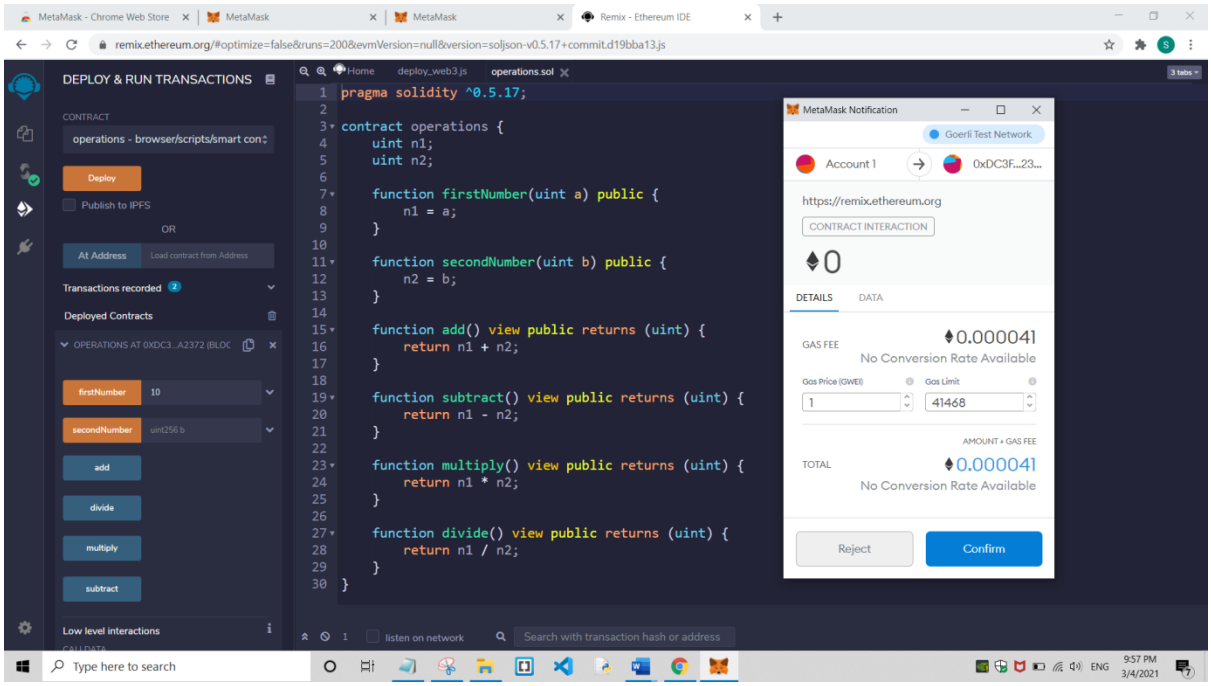
Transaction Confirmation

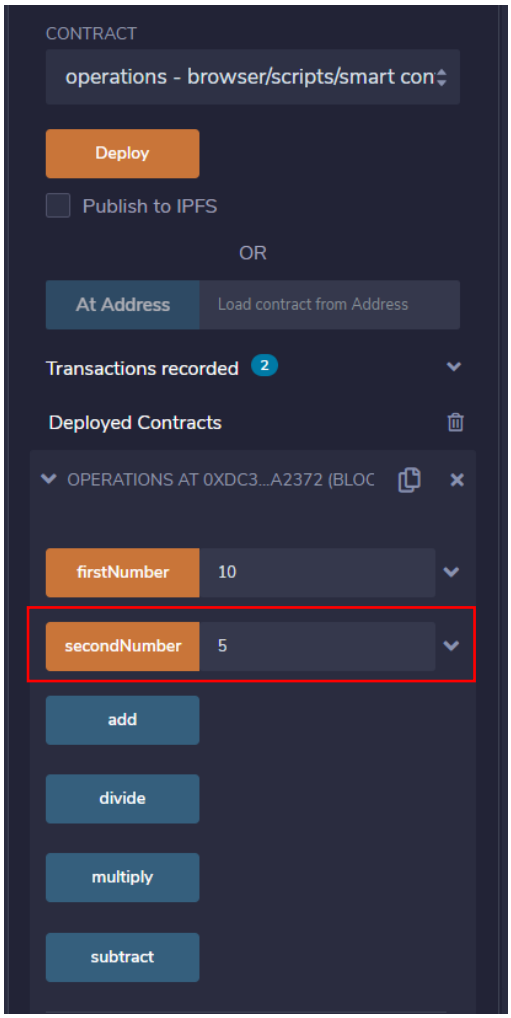


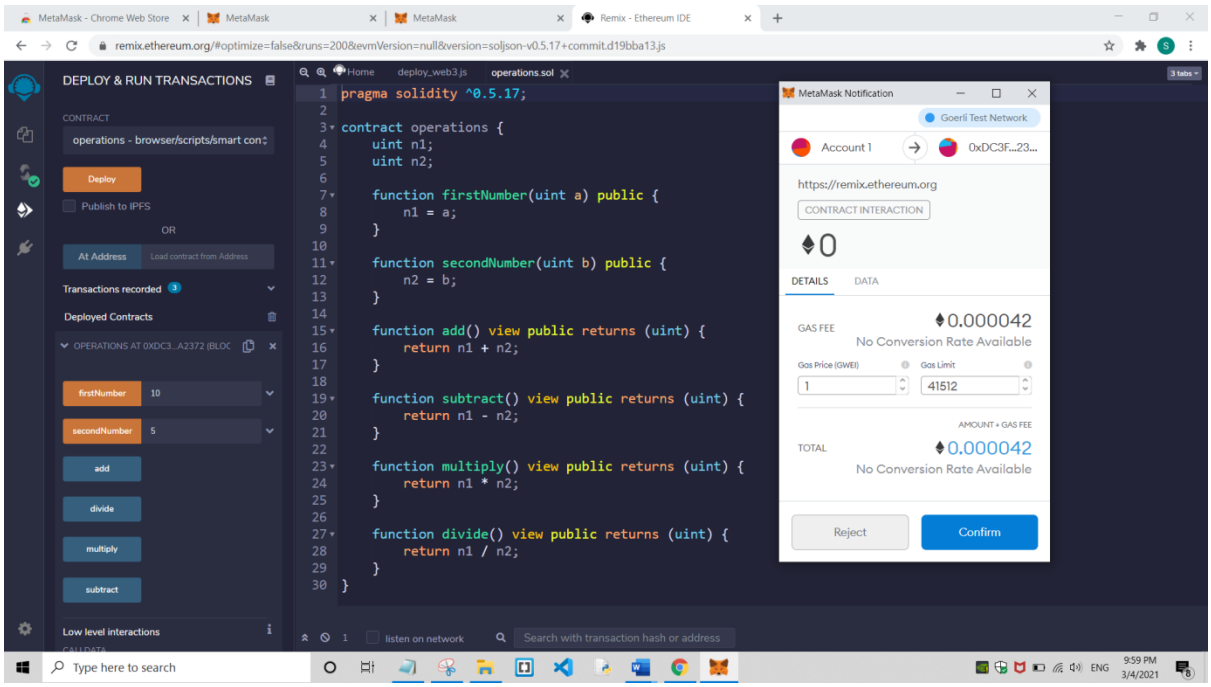


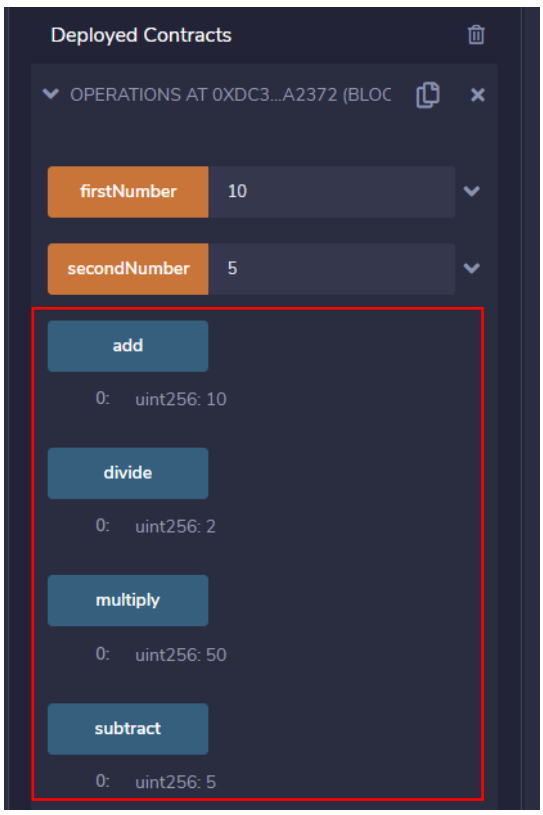

CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
1
Deployed Contracts
OPERATIONS AT 0X373...9B91F (BLOCI
firstNumber
uint256 a
secondNumber
uint256 b
add
divide
multiply
subtract


CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
1
Deployed Contracts
OPERATIONS AT 0XDC3...A2372 (BLOC
firstNumber
10
secondNumber
uint256 b
add
divide
multiply
subtract

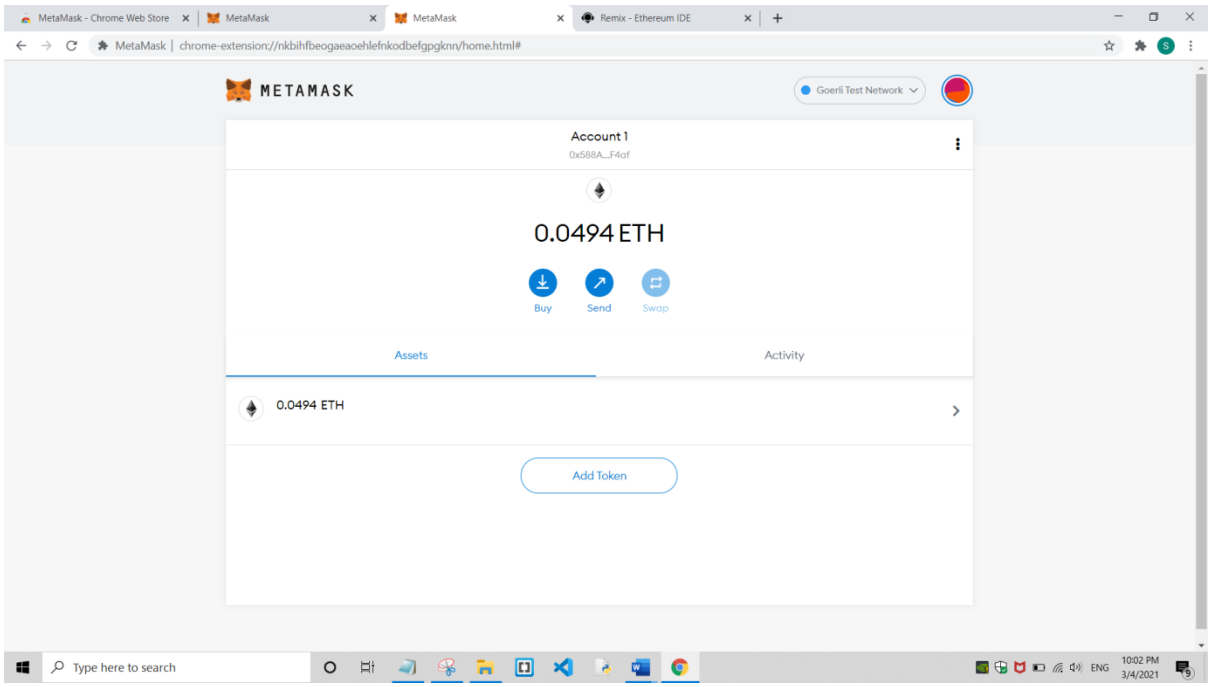

MetaMask - Chrome Web Store
MetaMask
MetaMask
Remix - Ethereum IDE
remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js
DEPLOY & RUN TRANSACTIONS
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded 2
Deployed Contracts
OPERATIONS AT 0XDC3...A2372 (BLOC
firstNumber 10
secondNumber uint256 b
add
divide
multiply
subtract
Low level interactions
Home
deploy_web3.js
operations.sol
3 tabs
pragma solidity ^0.5.17;
contract operations {
uint n1;
uint n2;
function firstNumber(uint a) public {
n1 = a;
}
function secondNumber(uint b) public {
n2 = b;
}
function add() view public returns (uint) {
return n1 + n2;
}
function subtract() view public returns (uint) {
return n1 - n2;
}
function multiply() view public returns (uint) {
return n1 * n2;
}
function divide() view public returns (uint) {
return n1 / n2;
}
}
listen on network
Search with transaction hash or address
MetaMask Notification
Goerli Test Network
Account 1
0xDC3F...23...
https://remix.ethereum.org
CONTRACT INTERACTION
0
DETAILS
DATA
GAS FEE
0.000041
No Conversion Rate Available
Gas Price (GWEI)
Gas Limit
1
41468
AMOUNT + GAS FEE
TOTAL
0.000041
No Conversion Rate Available
Reject
Confirm
Type here to search
ENG
9:57 PM
3/4/2021


CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
2
Deployed Contracts
OPERATIONS AT 0XDC3...A2372 (BLOC
firstNumber
10
secondNumber
5
add
divide
multiply
subtract

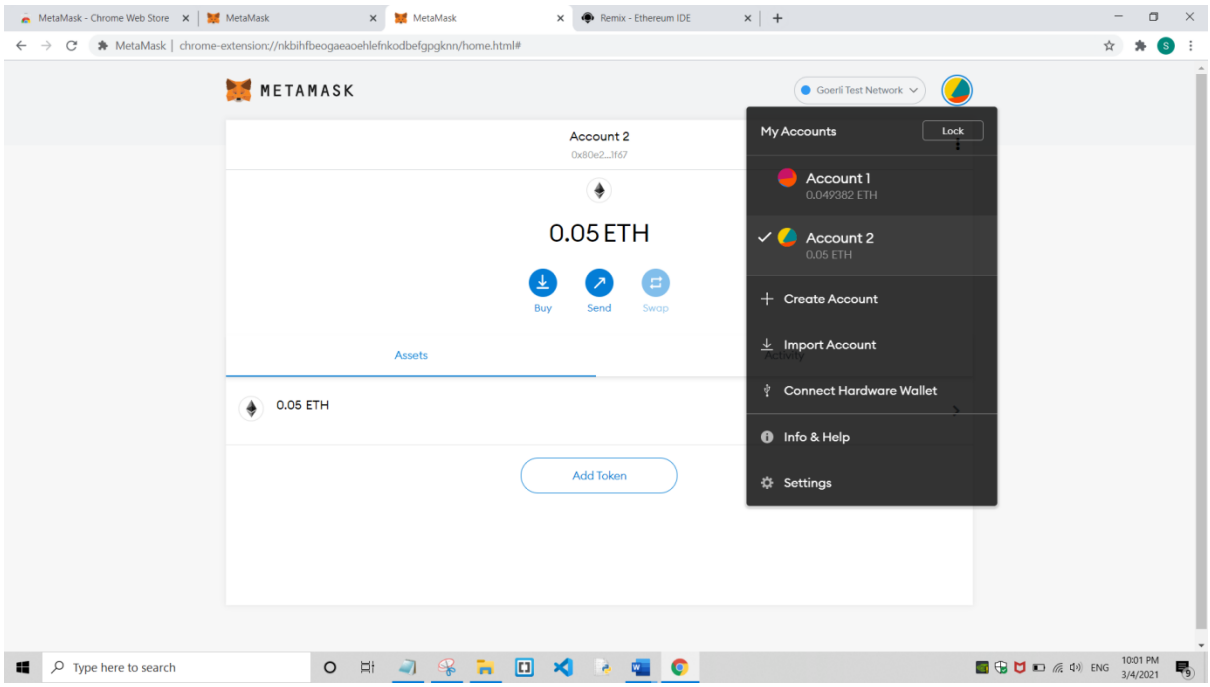

MetaMask - Chrome Web Store
MetaMask
MetaMask
Remix - Ethereum IDE
remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js
DEPLOY & RUN TRANSACTIONS
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded 3
Deployed Contracts
OPERATIONS AT 0XDC3...A2372 (BLOC
firstNumber 10
secondNumber 5
add
divide
multiply
subtract
Low level interactions
Home
deploy_web3.js
operations.sol
3 tabs
1 pragma solidity ^0.5.17;
2
3 contract operations {
4 uint n1;
5 uint n2;
6
7 function firstNumber(uint a) public {
8 n1 = a;
9 }
10
11 function secondNumber(uint b) public {
12 n2 = b;
13 }
14
15 function add() view public returns (uint) {
16 return n1 + n2;
17 }
18
19 function subtract() view public returns (uint) {
20 return n1 - n2;
21 }
22
23 function multiply() view public returns (uint) {
24 return n1 * n2;
25 }
26
27 function divide() view public returns (uint) {
28 return n1 / n2;
29 }
30 }
MetaMask Notification
Goerli Test Network
Account 1
0xDC3F...23...
https://remix.ethereum.org
CONTRACT INTERACTION
0
DETAILS
DATA
GAS FEE
0.000042
No Conversion Rate Available
Gas Price (GWEI)
Gas Limit
1
41512
AMOUNT + GAS FEE
TOTAL
0.000042
No Conversion Rate Available
Reject
Confirm
listen on network
Search with transaction hash or address
Type here to search
ENG
9:59 PM
3/4/2021


Deployed Contracts
OPERATIONS AT 0XDC3...A2372 (BLOC
firstNumber
10
secondNumber
5
add
0: uint256: 10
divide
0: uint256: 2
multiply
0: uint256: 50
subtract
0: uint256: 5

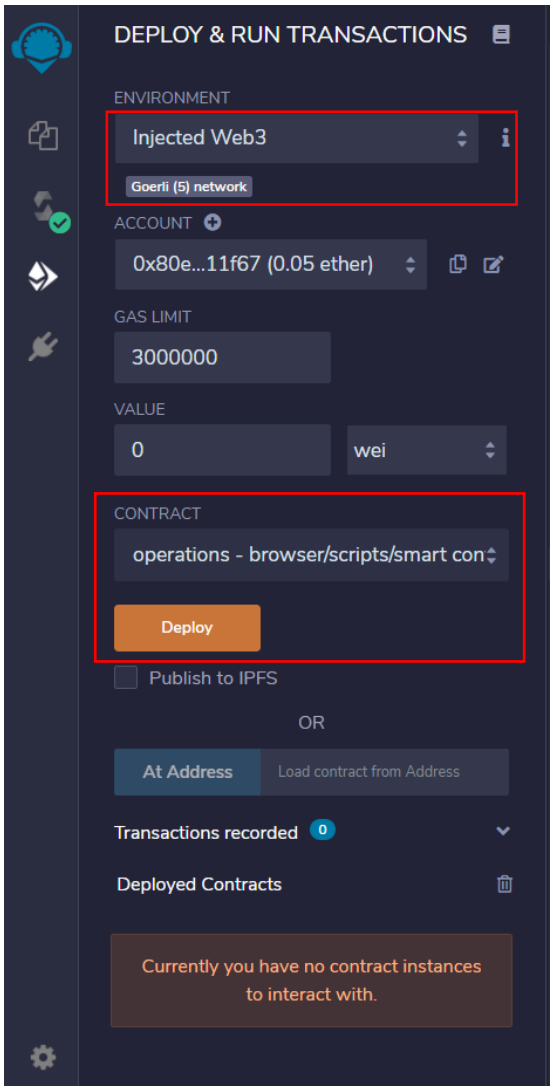
Ethers are consumed

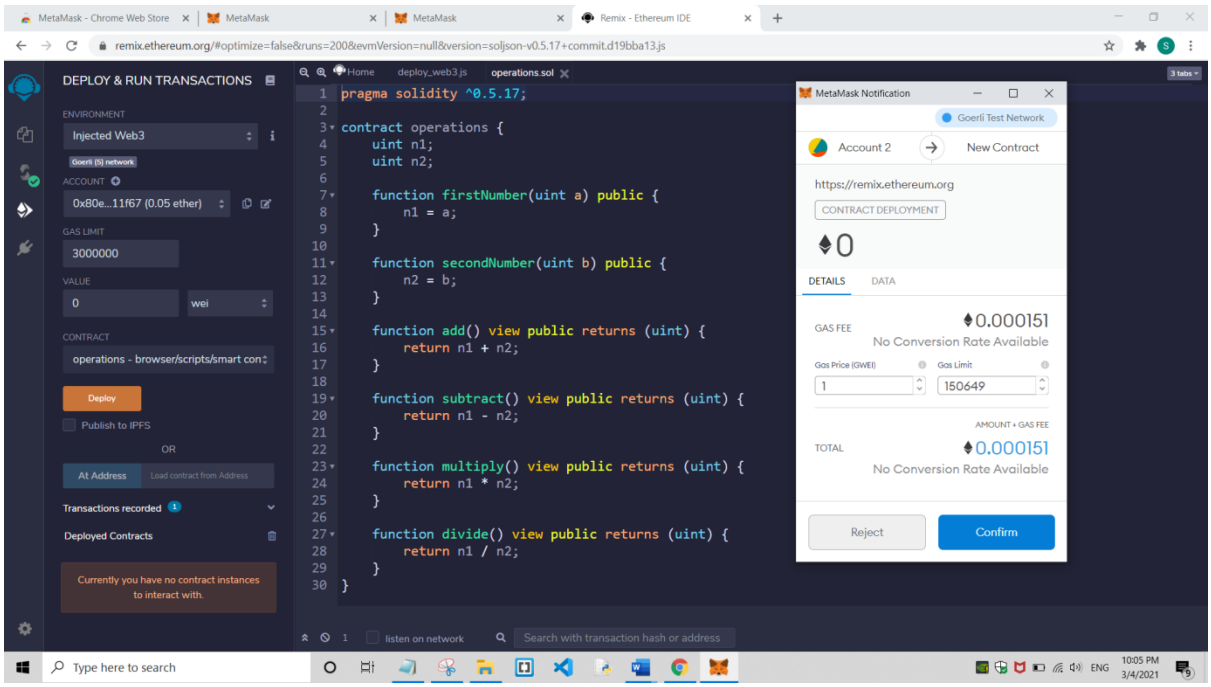


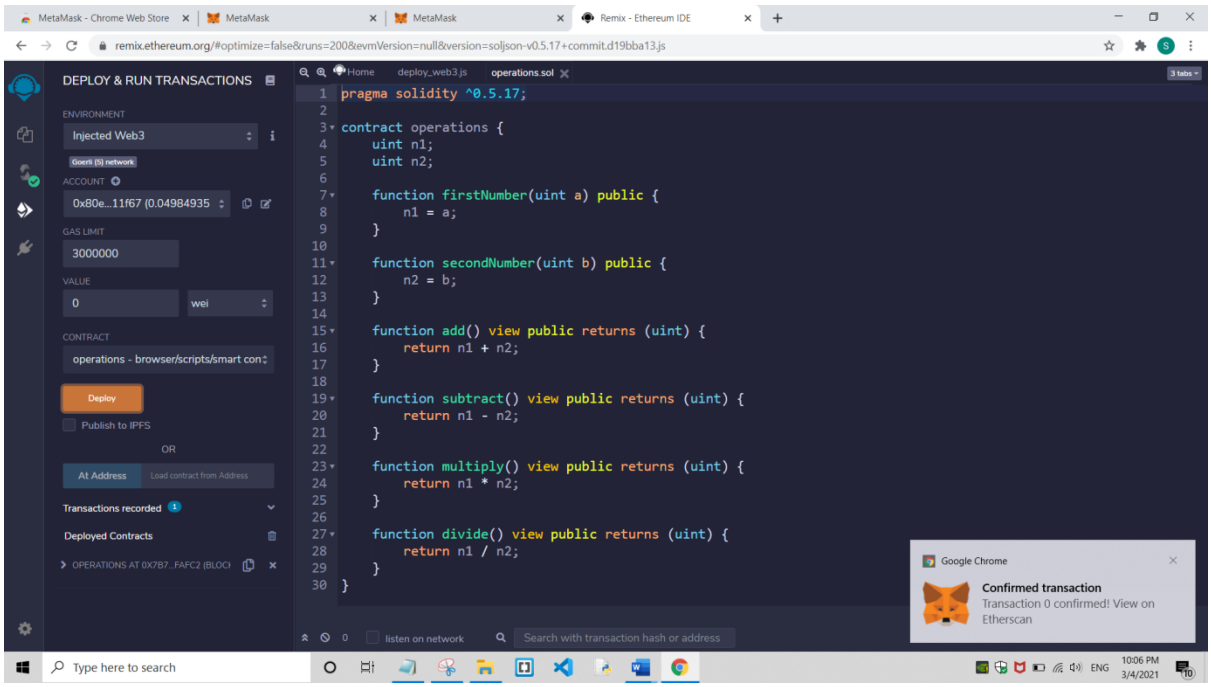
Switch to Account2

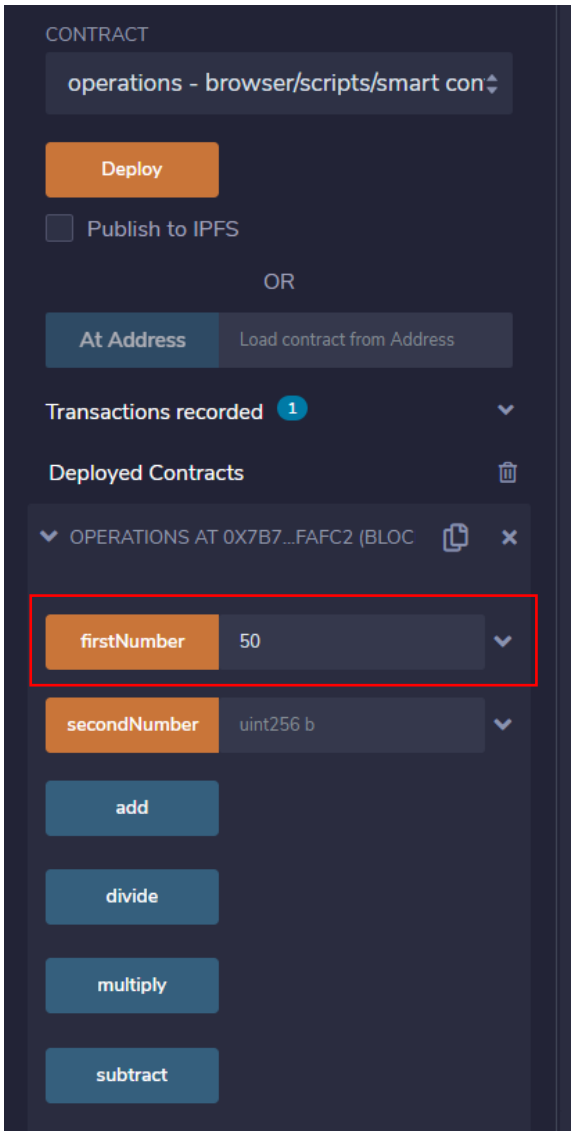


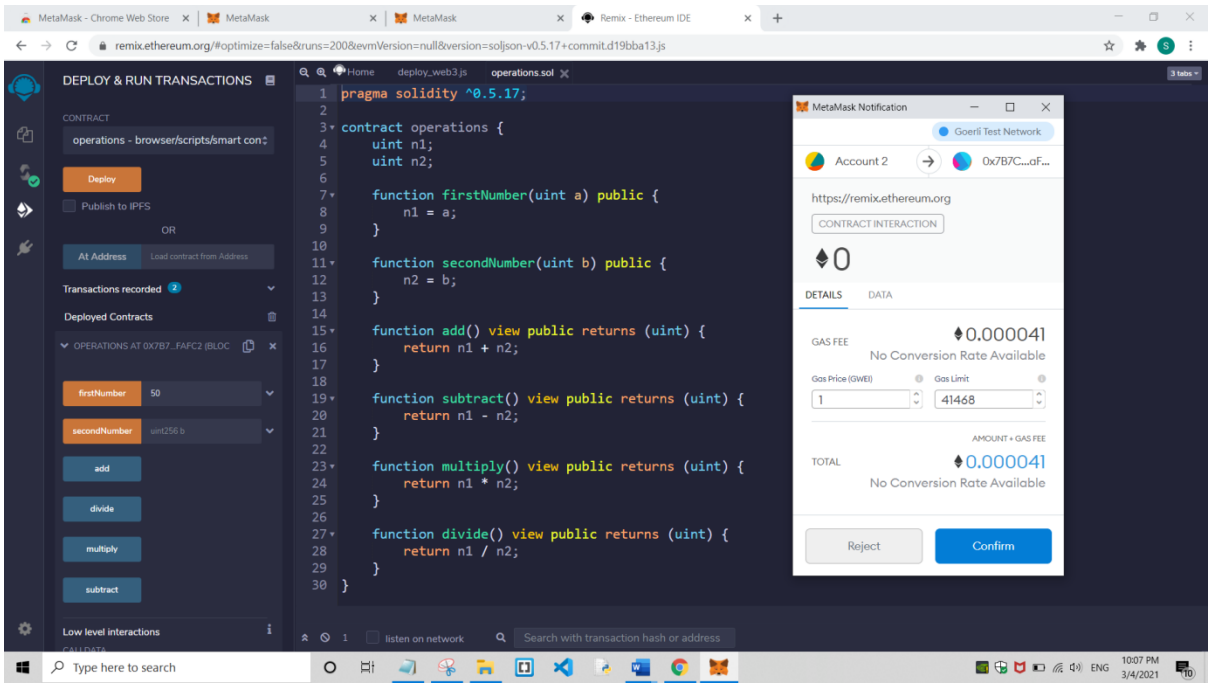
Account2

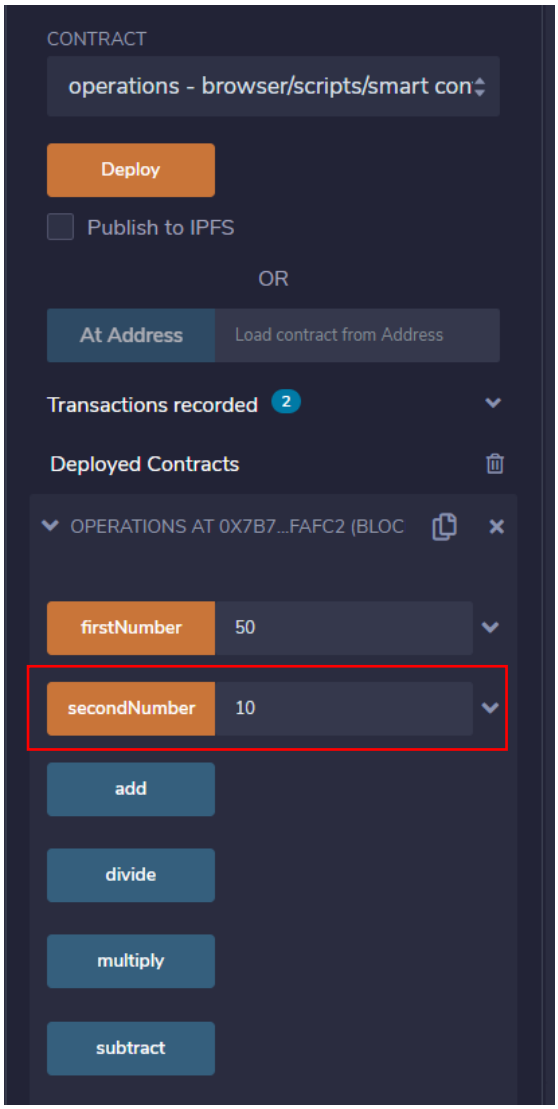

DEPLOY & RUN TRANSACTIONS
ENVIRONMENT
Injected Web3
Goerli (5) network
ACCOUNT
0x80e...11f67 (0.05 ether)
GAS LIMIT
3000000
VALUE
0
wei
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
0
Deployed Contracts
Currently you have no contract instances to interact with.

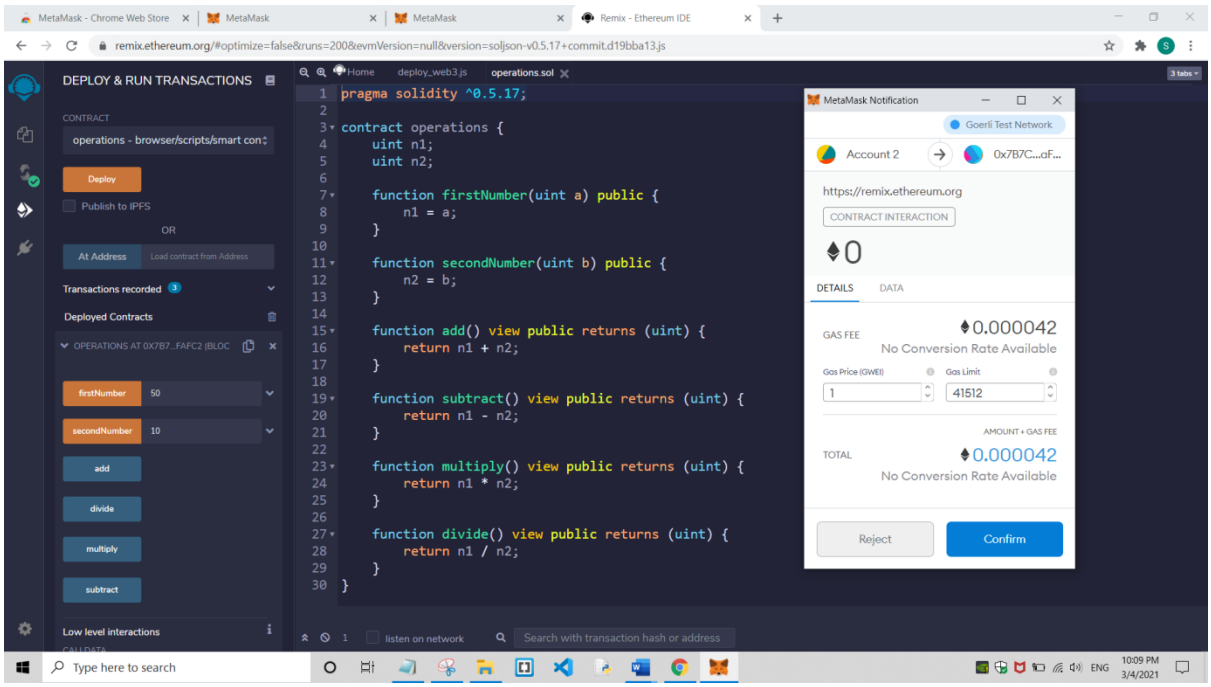

MetaMask - Chrome Web Store
MetaMask
MetaMask
Remix - Ethereum IDE
remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js
DEPLOY & RUN TRANSACTIONS
ENVIRONMENT
Injected Web3
Goerli (5) network
ACCOUNT
0x80e...11f67 (0.05 ether)
GAS LIMIT
3000000
VALUE
0
wei
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
Deployed Contracts
Currently you have no contract instances to interact with.
Home
deploy_web3.js
operations.sol
pragma solidity ^0.5.17;
contract operations {
uint n1;
uint n2;
function firstNumber(uint a) public {
n1 = a;
}
function secondNumber(uint b) public {
n2 = b;
}
function add() view public returns (uint) {
return n1 + n2;
}
function subtract() view public returns (uint) {
return n1 - n2;
}
function multiply() view public returns (uint) {
return n1 * n2;
}
function divide() view public returns (uint) {
return n1 / n2;
}
}
MetaMask Notification
Goerli Test Network
Account 2
New Contract
https://remix.ethereum.org
CONTRACT DEPLOYMENT
0
DETAILS
DATA
GAS FEE
0.000151
No Conversion Rate Available
Gas Price (GWEI)
Gas Limit
1
150649
AMOUNT + GAS FEE
TOTAL
0.000151
No Conversion Rate Available
Reject
Confirm
listen on network
Search with transaction hash or address
Type here to search
ENG
10:05 PM
3/4/2021

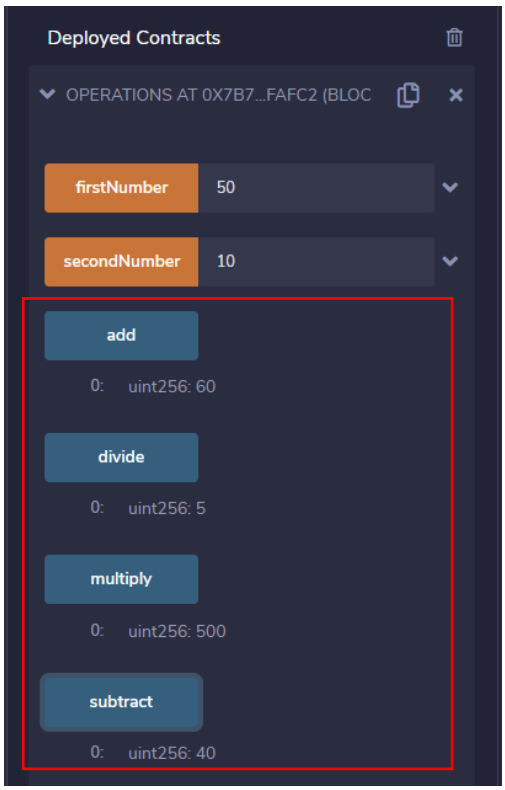

MetaMask - Chrome Web Store
MetaMask
MetaMask
Remix - Ethereum IDE
remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js
DEPLOY & RUN TRANSACTIONS
ENVIRONMENT
Injected Web3
Goerli (5) network
ACCOUNT
0x80e...11f67 (0.04984935
GAS LIMIT
3000000
VALUE
0
wei
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
Deployed Contracts
OPERATIONS AT 0X7B7...FAFC2 (BLOCI
Home
deploy_web3.js
operations.sol
pragma solidity ^0.5.17;
contract operations {
uint n1;
uint n2;
function firstNumber(uint a) public {
n1 = a;
}
function secondNumber(uint b) public {
n2 = b;
}
function add() view public returns (uint) {
return n1 + n2;
}
function subtract() view public returns (uint) {
return n1 - n2;
}
function multiply() view public returns (uint) {
return n1 * n2;
}
function divide() view public returns (uint) {
return n1 / n2;
}
}
Google Chrome
Confirmed transaction
Transaction 0 confirmed! View on Etherscan
listen on network
Search with transaction hash or address
Type here to search
ENG
10:06 PM
3/4/2021


CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
1
Deployed Contracts
OPERATIONS AT 0X7B7...FAFC2 (BLOC
firstNumber
50
secondNumber
uint256 b
add
divide
multiply
subtract


MetaMask - Chrome Web Store
MetaMask
MetaMask
Remix - Ethereum IDE
remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js
DEPLOY & RUN TRANSACTIONS
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded 2
Deployed Contracts
OPERATIONS AT 0X7B7...FAFC2 (BLOC
firstNumber
50
secondNumber
uint256 b
add
divide
multiply
subtract
Low level interactions
CALLDATA
Home
deploy_web3.js
operations.sol
3 tabs
1 pragma solidity ^0.5.17;
2
3 contract operations {
4 uint n1;
5 uint n2;
6
7 function firstNumber(uint a) public {
8 n1 = a;
9 }
10
11 function secondNumber(uint b) public {
12 n2 = b;
13 }
14
15 function add() view public returns (uint) {
16 return n1 + n2;
17 }
18
19 function subtract() view public returns (uint) {
20 return n1 - n2;
21 }
22
23 function multiply() view public returns (uint) {
24 return n1 * n2;
25 }
26
27 function divide() view public returns (uint) {
28 return n1 / n2;
29 }
30 }
listen on network
Search with transaction hash or address
MetaMask Notification
Goerli Test Network
Account 2
0x7B7C...aF...
https://remix.ethereum.org
CONTRACT INTERACTION
0
DETAILS
DATA
GAS FEE
0.000041
No Conversion Rate Available
Gas Price (GWEI)
Gas Limit
1
41468
AMOUNT + GAS FEE
TOTAL
0.000041
No Conversion Rate Available
Reject
Confirm
Type here to search
ENG
10:07 PM
3/4/2021


CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded
2
Deployed Contracts
OPERATIONS AT 0X7B7...FAFC2 (BLOC
firstNumber
50
secondNumber
10
add
divide
multiply
subtract


MetaMask - Chrome Web Store
MetaMask
MetaMask
Remix - Ethereum IDE
remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js
DEPLOY & RUN TRANSACTIONS
CONTRACT
operations - browser/scripts/smart con
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
Transactions recorded 3
Deployed Contracts
OPERATIONS AT 0X7B7...FAFC2 (BLOC
firstNumber 50
secondNumber 10
add
divide
multiply
subtract
Low level interactions
Home
deploy_web3.js
operations.sol
3 tabs
1 pragma solidity ^0.5.17;
2
3 contract operations {
4 uint n1;
5 uint n2;
6
7 function firstNumber(uint a) public {
8 n1 = a;
9 }
10
11 function secondNumber(uint b) public {
12 n2 = b;
13 }
14
15 function add() view public returns (uint) {
16 return n1 + n2;
17 }
18
19 function subtract() view public returns (uint) {
20 return n1 - n2;
21 }
22
23 function multiply() view public returns (uint) {
24 return n1 * n2;
25 }
26
27 function divide() view public returns (uint) {
28 return n1 / n2;
29 }
30 }
listen on network
Search with transaction hash or address
MetaMask Notification
Goerli Test Network
Account 2
0x7B7C...aF...
https://remix.ethereum.org
CONTRACT INTERACTION
0
DETAILS
DATA
GAS FEE
0.000042
No Conversion Rate Available
Gas Price (GWEI)
Gas Limit
1
41512
AMOUNT + GAS FEE
TOTAL
0.000042
No Conversion Rate Available
Reject
Confirm
Type here to search
ENG
10:09 PM
3/4/2021


Deployed Contracts
OPERATIONS AT 0X7B7...FAFC2 (BLOC
firstNumber 50
secondNumber 10
add
0: uint256: 60
divide
0: uint256: 5
multiply
0: uint256: 500
subtract
0: uint256: 40