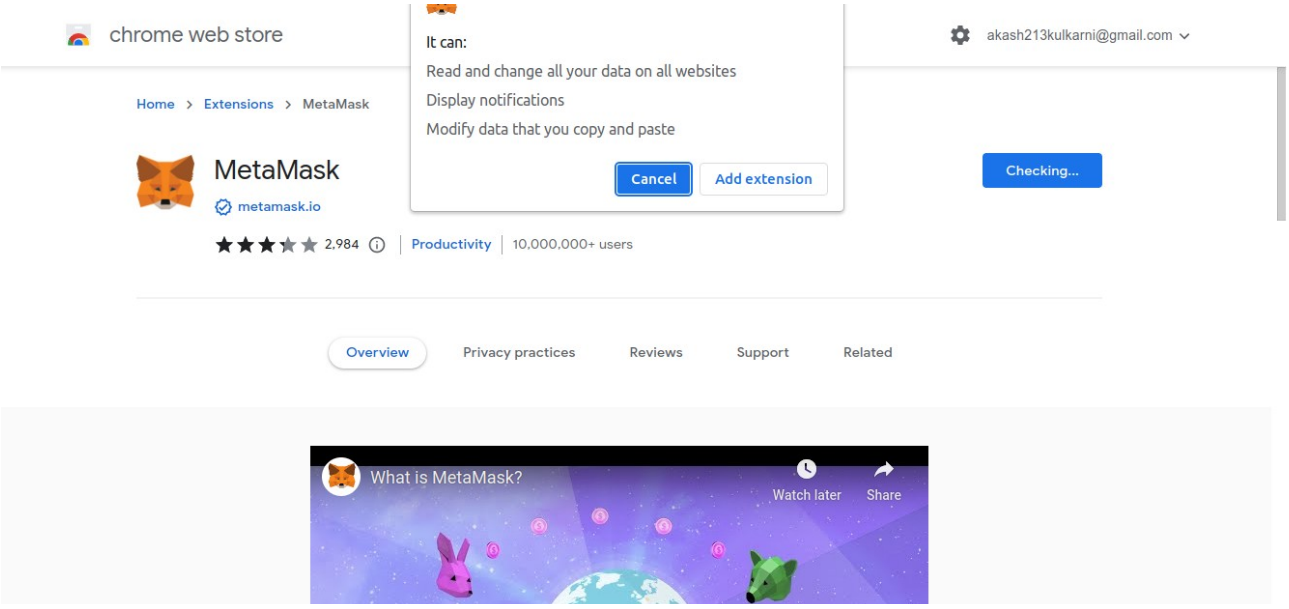
Assignment 1.A

1) Metamask Extension



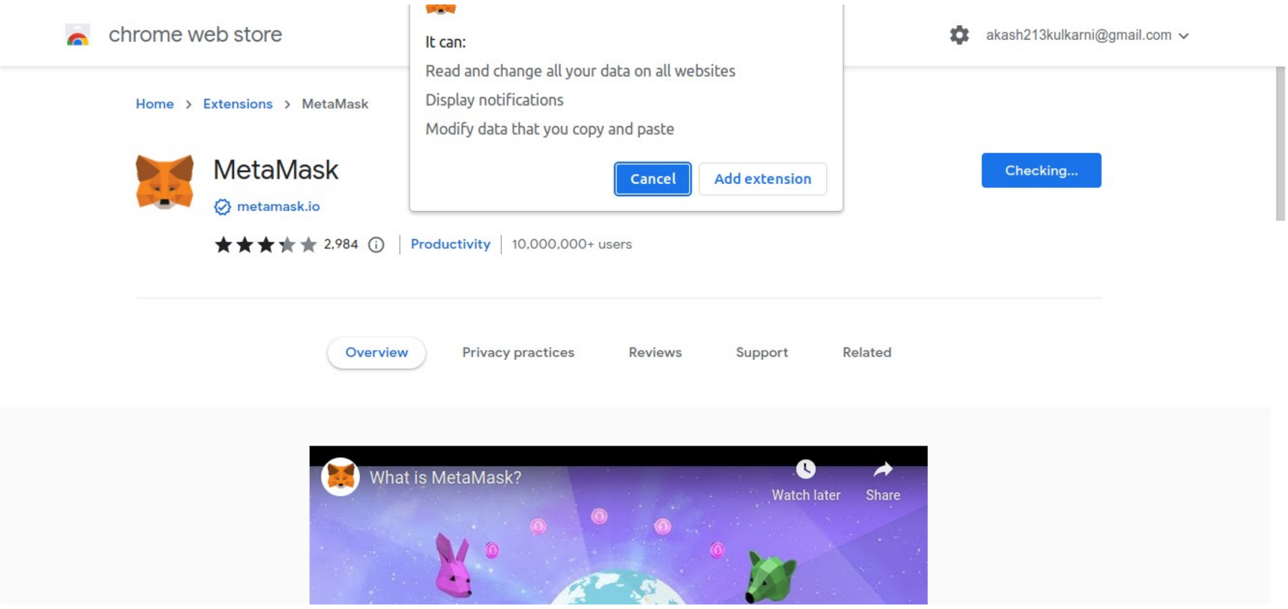
It can:

Read and change all your data on all websites

Display notifications

Modify data that you copy and paste

2) Add the extension



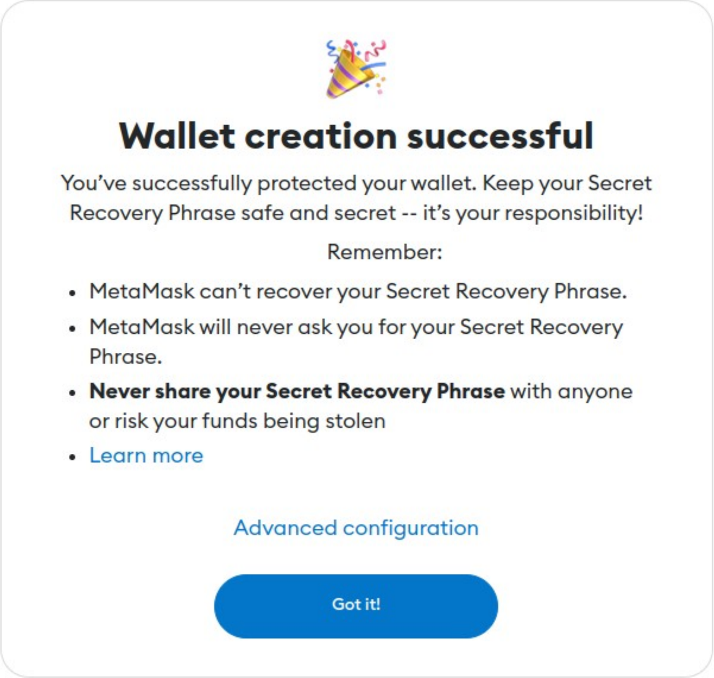
It can:

Read and change all your data on all websites

Display notifications

Modify data that you copy and paste

3) Successful Wallet



Wallet creation successful

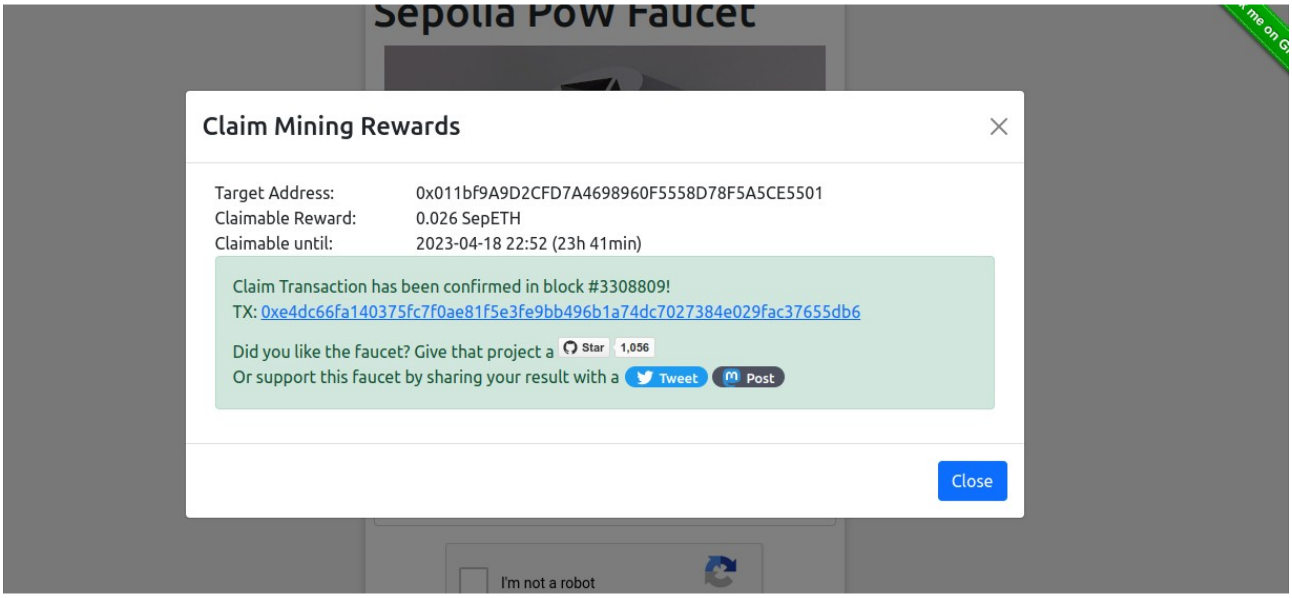
You've successfully protected your wallet. Keep your Secret Recovery Phrase safe and secret -- it's your responsibility!

Remember:

- MetaMask can't recover your Secret Recovery Phrase.
- MetaMask will never ask you for your Secret Recovery Phrase.
- **Never share your Secret Recovery Phrase** with anyone or risk your funds being stolen
- Learn more

Assignment 1B

1) Mine Coins

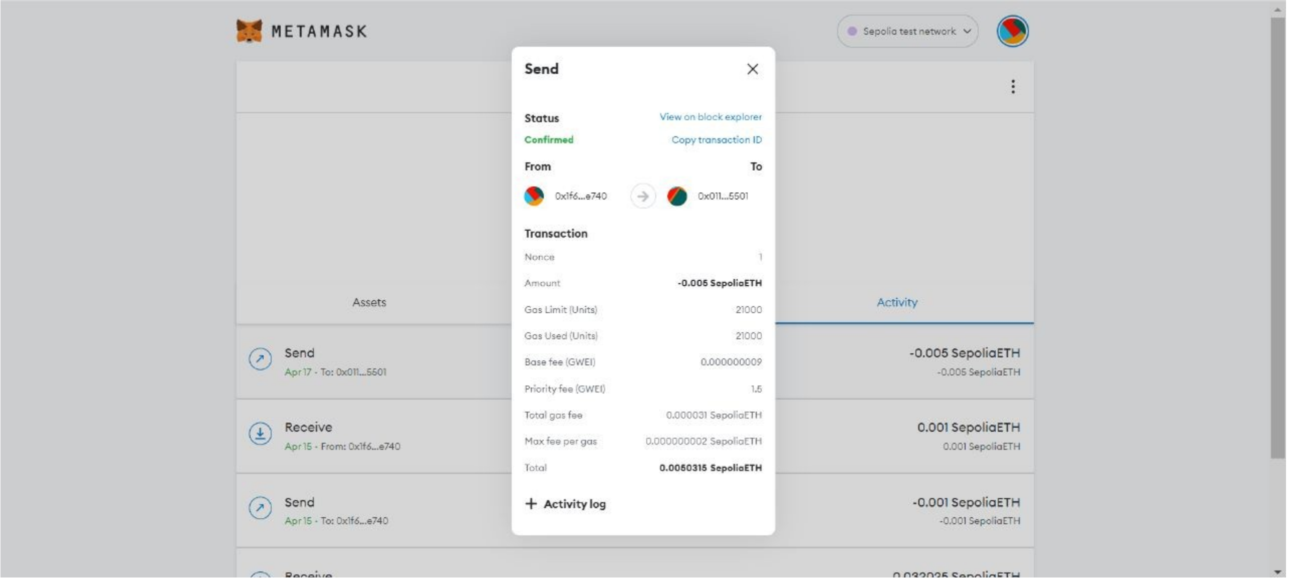


Target Address: 0x011bf9A9D2CFD7A4698960F5558D78F5A5CE5501
Claimable Reward: 0.026 SepETH
Claimable until: 2023-04-18 22:52 (23h 41min)

Claim Transaction has been confirmed in block #3308809!
TX: 0xe4dc66fa140375fc7f0ae81f5e3fe9bb496b1a74dc7027384e029fac37655db6

Did you like the faucet? Give that project a Star 1,056
Or support this faucet by sharing your result with a Tweet Post

2) Send Coins



Send

Status: Confirmed

From: 0x1f6...e740 → To: 0x011...5501

Transaction

Nonce	1
Amount	**-0.005 SepoliaETH**
Gas Limit (Units)	21000
Gas Used (Units)	21000
Base fee (GWEI)	0.000000009
Priority fee (GWEI)	1.5
Total gas fee	0.000031 SepoliaETH
Max fee per gas	0.000000002 SepoliaETH
Total	**0.0050315 SepoliaETH**

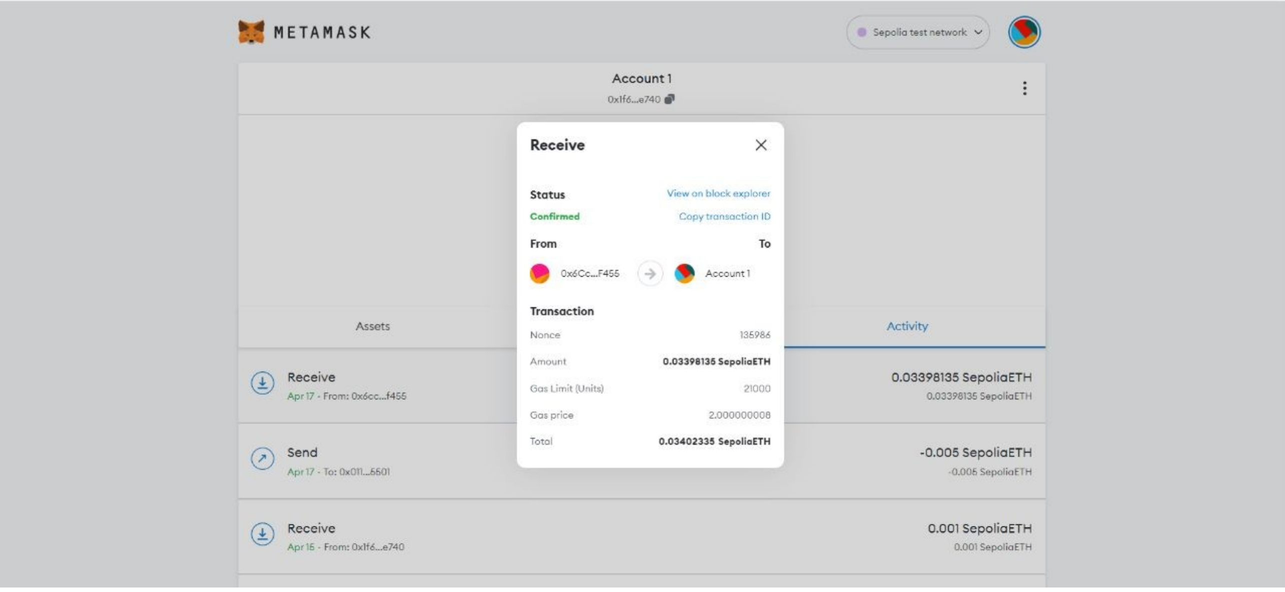
Send
Apr 17 · To: 0x011...5501
-0.005 SepoliaETH
-0.005 SepoliaETH

Receive
Apr 15 · From: 0x1f6...e740
0.001 SepoliaETH
0.001 SepoliaETH

Send
Apr 15 · To: 0x1f6...e740
-0.001 SepoliaETH
-0.001 SepoliaETH

Receive
0.032025 SepoliaETH

3) Receive Coins



Receive

Status — Confirmed

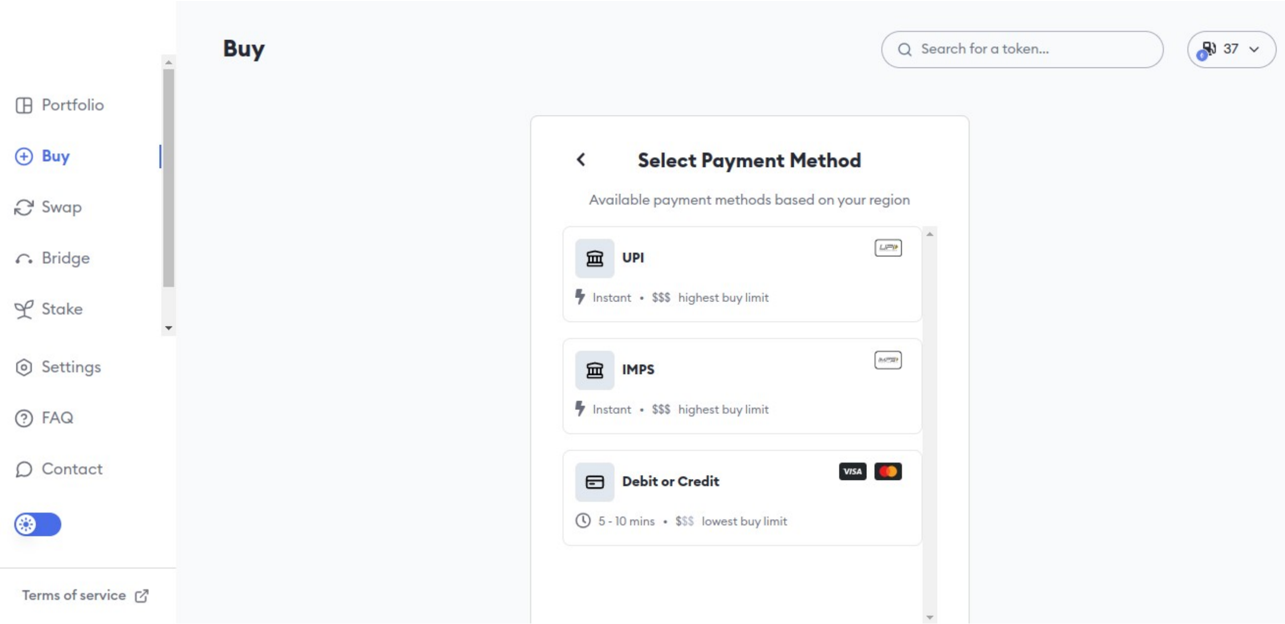
From: 0x6Cc...F455
To: Account 1

Transaction

Nonce	135986
Amount	**0.03398135 SepoliaETH**
Gas Limit (Units)	21000
Gas price	2.000000008
Total	**0.03402335 SepoliaETH**

Receive Apr 17 - From: 0x6cc...f455	0.03398135 SepoliaETH 0.03398135 SepoliaETH
Send Apr 17 - To: 0x011...5601	-0.005 SepoliaETH -0.005 SepoliaETH
Receive Apr 16 - From: 0x1f6...e740	0.001 SepoliaETH 0.001 SepoliaETH

4) Buy/ Sell Coins

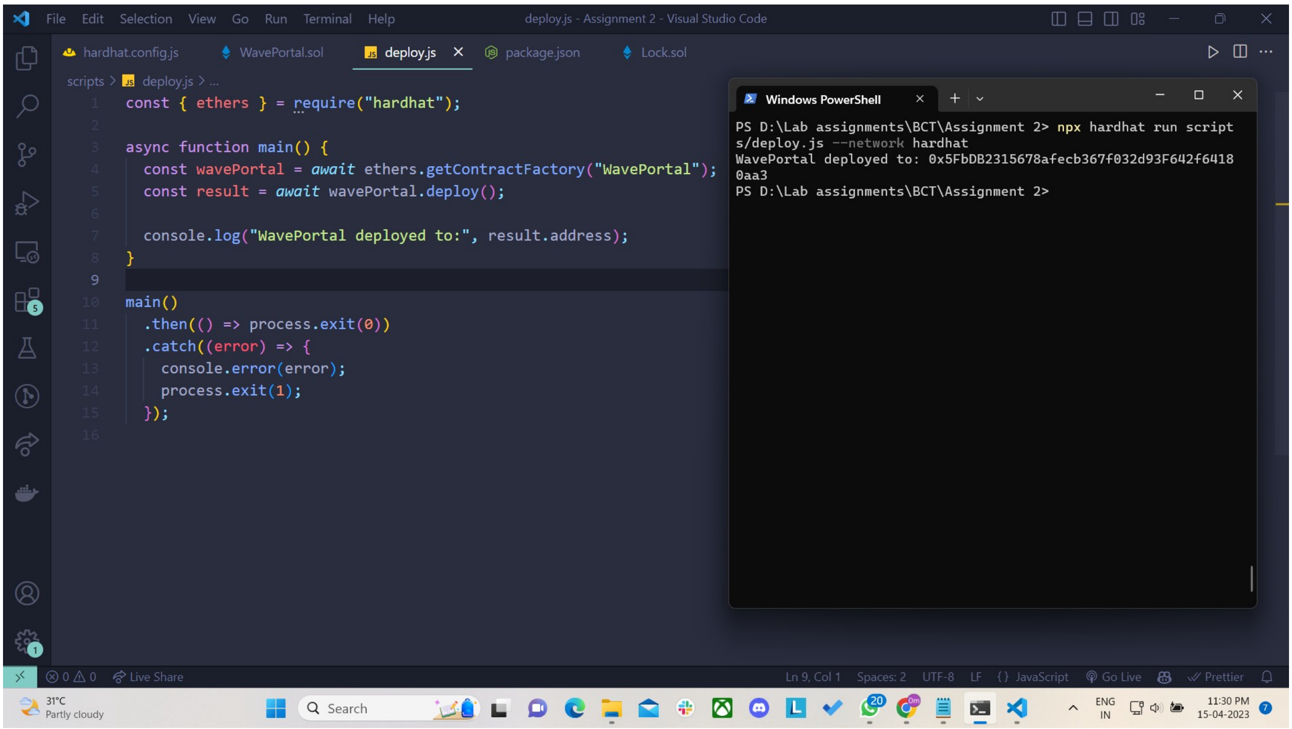


Select Payment Method

Available payment methods based on your region

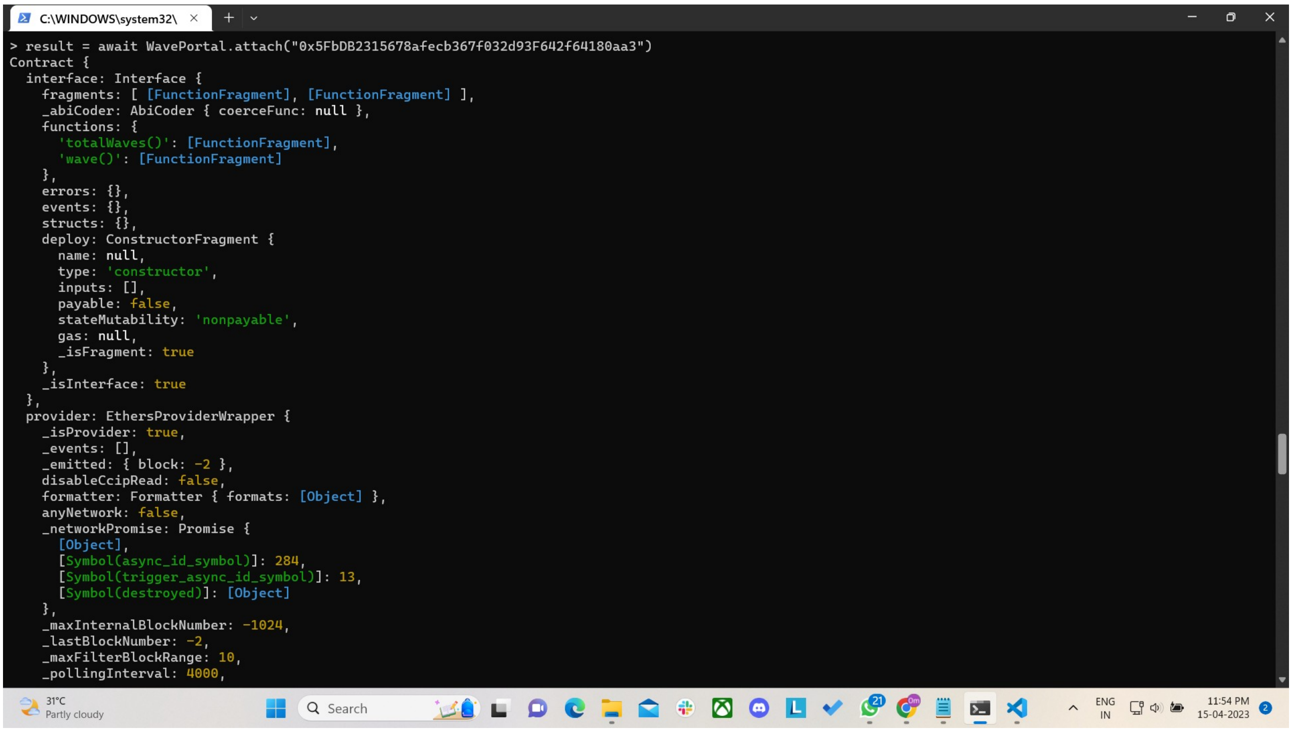
- UPI — Instant • $$$ highest buy limit
- IMPS — Instant • $$$ highest buy limit
- Debit or Credit — 5 - 10 mins • $$$ lowest buy limit

Assignment 2.1


File Edit Selection View Go Run Terminal Help
deploy.js - Assignment 2 - Visual Studio Code
hardhat.config.js
WavePortal.sol
deploy.js
package.json
Lock.sol
scripts > deploy.js > ...
Windows PowerShell
Live Share
Ln 9, Col 1 Spaces: 2 UTF-8 LF {} JavaScript Go Live Prettier
31°C
Partly cloudy
Search
ENG
IN
11:30 PM
15-04-2023

```javascript
const { ethers } = require("hardhat");

async function main() {
  const wavePortal = await ethers.getContractFactory("WavePortal");
  const result = await wavePortal.deploy();

  console.log("WavePortal deployed to:", result.address);
}

main()
  .then(() => process.exit(0))
  .catch((error) => {
    console.error(error);
    process.exit(1);
  });
```

```
PS D:\Lab assignments\BCT\Assignment 2> npx hardhat run script
s/deploy.js --network hardhat
WavePortal deployed to: 0x5FbDB2315678afecb367f032d93F642f6418
0aa3
PS D:\Lab assignments\BCT\Assignment 2>
```

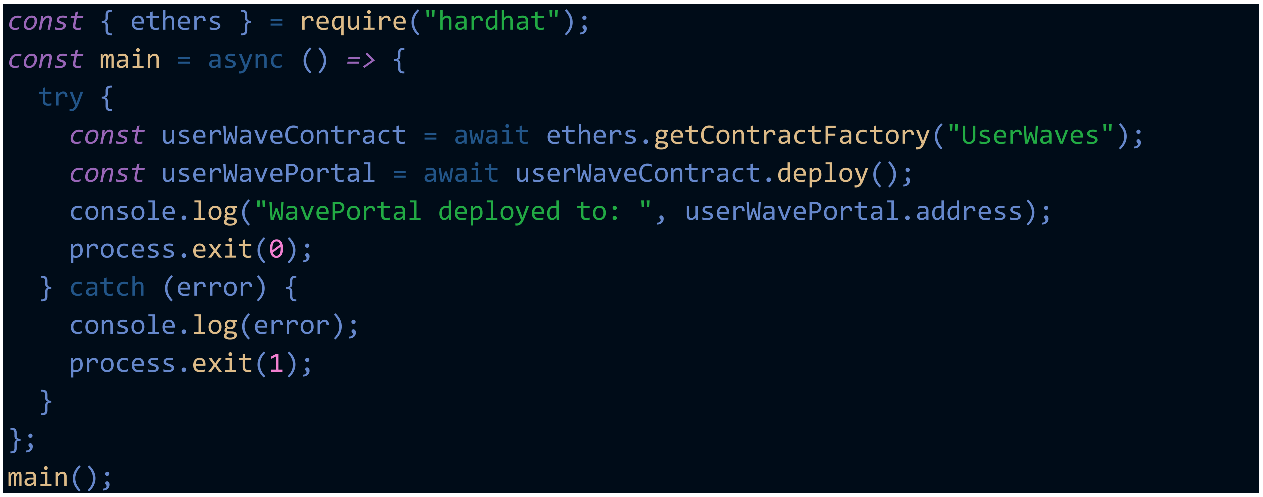


```
> result = await WavePortal.attach("0x5FbDB2315678afecb367f032d93F642f64180aa3")
Contract {
  interface: Interface {
    fragments: [ [FunctionFragment], [FunctionFragment] ],
    _abiCoder: AbiCoder { coerceFunc: null },
    functions: {
      'totalWaves()': [FunctionFragment],
      'wave()': [FunctionFragment]
    },
    errors: {},
    events: {},
    structs: {},
    deploy: ConstructorFragment {
      name: null,
      type: 'constructor',
      inputs: [],
      payable: false,
      stateMutability: 'nonpayable',
      gas: null,
      _isFragment: true
    },
    _isInterface: true
  },
  provider: EthersProviderWrapper {
    _isProvider: true,
    _events: [],
    _emitted: { block: -2 },
    disableCcipRead: false,
    formatter: Formatter { formats: [Object] },
    anyNetwork: false,
    _networkPromise: Promise {
      [Object],
      [Symbol(async_id_symbol)]: 284,
      [Symbol(trigger_async_id_symbol)]: 13,
      [Symbol(destroyed)]: [Object]
    },
    _maxInternalBlockNumber: -1024,
    _lastBlockNumber: -2,
    _maxFilterBlockRange: 10,
    _pollingInterval: 4000,
```

UserWaves.sol

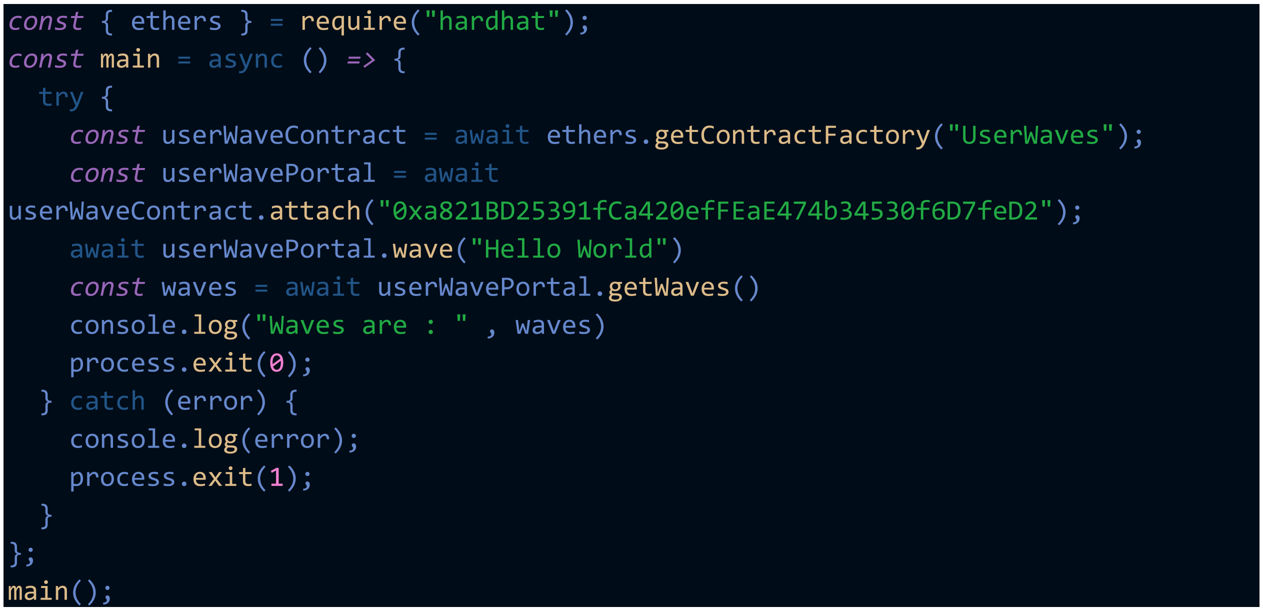
```
// SPDX-License-Identifier: MIT
pragma solidity >=0.7.3;

contract UserWaves {
  struct Wave {
    address sender;
    string message;
    uint256 timestamp;
  }
  uint256 totalWaves;
  Wave[] waves;

  event NewWave(address indexed sender, string message, uint256 timestamp);

  function wave(string memory _message) public {
    totalWaves += 1;
    waves.push(Wave(msg.sender, _message, block.timestamp));
    emit NewWave(msg.sender, _message, block.timestamp);
  }

  function getTotalWaves() public view returns (uint256) {
    return totalWaves;
  }

  function getWaves() public view returns (Wave[] memory) {
    return waves;
  }
}
```

deployUserWaves.js



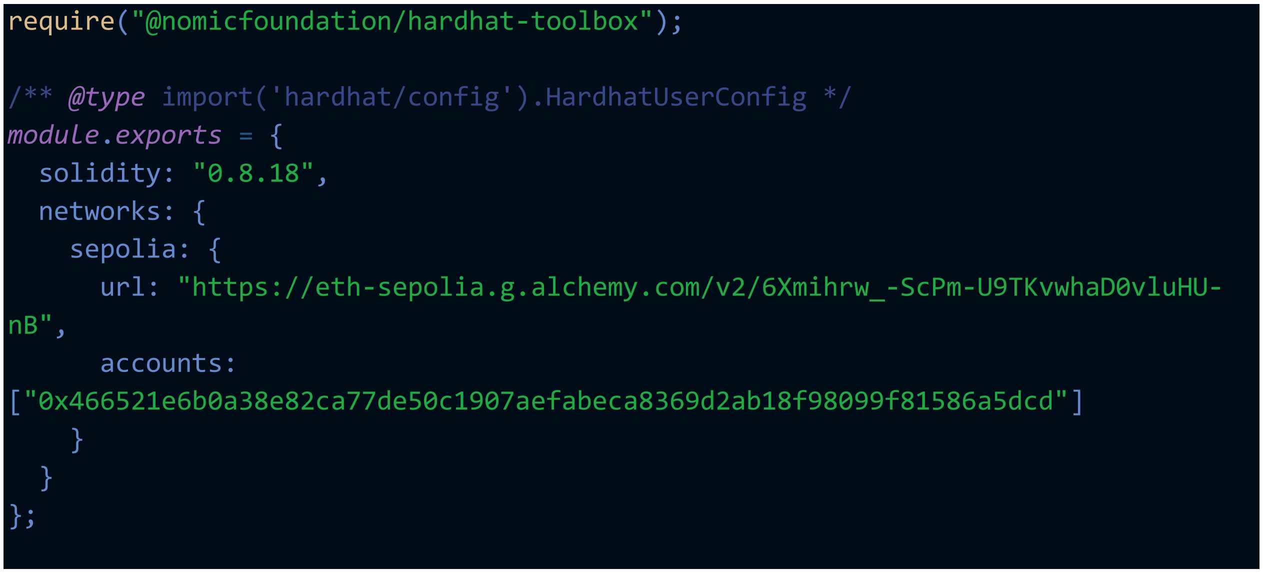
```
const { ethers } = require("hardhat");
const main = async () => {
  try {
    const userWaveContract = await ethers.getContractFactory("UserWaves");
    const userWavePortal = await userWaveContract.deploy();
    console.log("WavePortal deployed to: ", userWavePortal.address);
    process.exit(0);
  } catch (error) {
    console.log(error);
    process.exit(1);
  }
};
main();
```

sendWaves.js



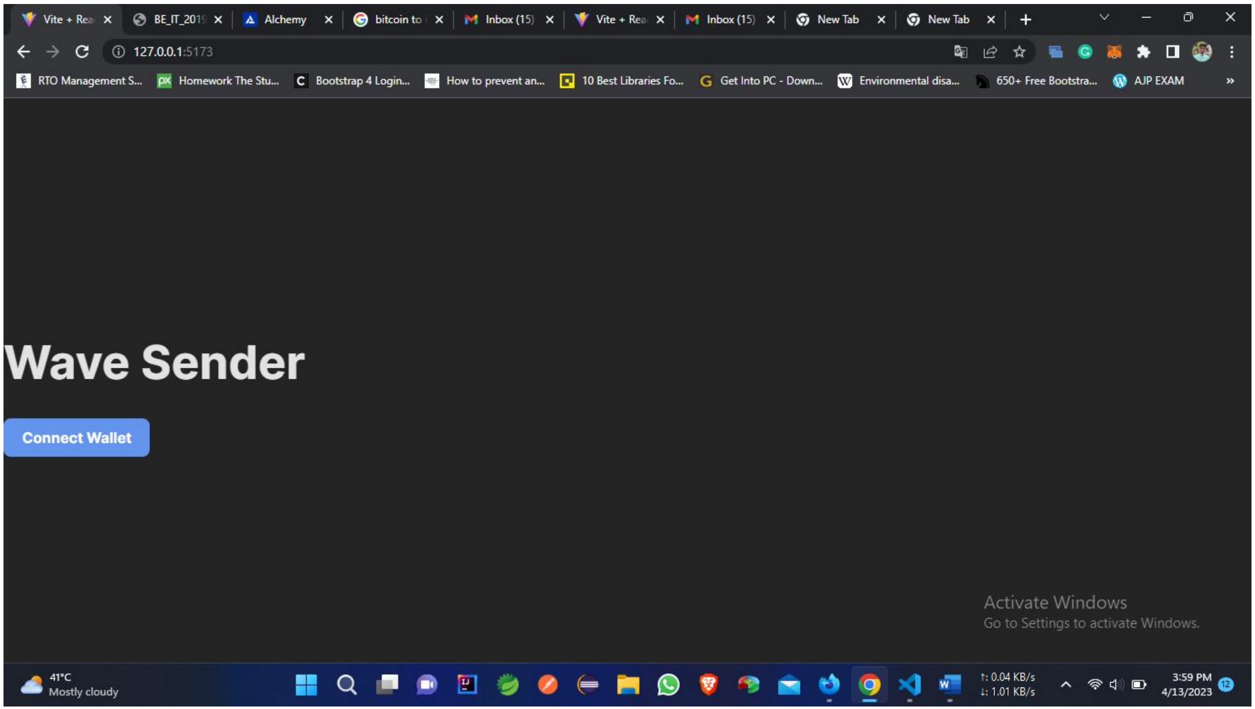
```
const { ethers } = require("hardhat");
const main = async () => {
  try {
    const userWaveContract = await ethers.getContractFactory("UserWaves");
    const userWavePortal = await
userWaveContract.attach("0xa821BD25391fCa420efFEaE474b34530f6D7feD2");
    await userWavePortal.wave("Hello World")
    const waves = await userWavePortal.getWaves()
    console.log("Waves are : " , waves)
    process.exit(0);
  } catch (error) {
    console.log(error);
    process.exit(1);
  }
};
main();
```

hardhat.config.js

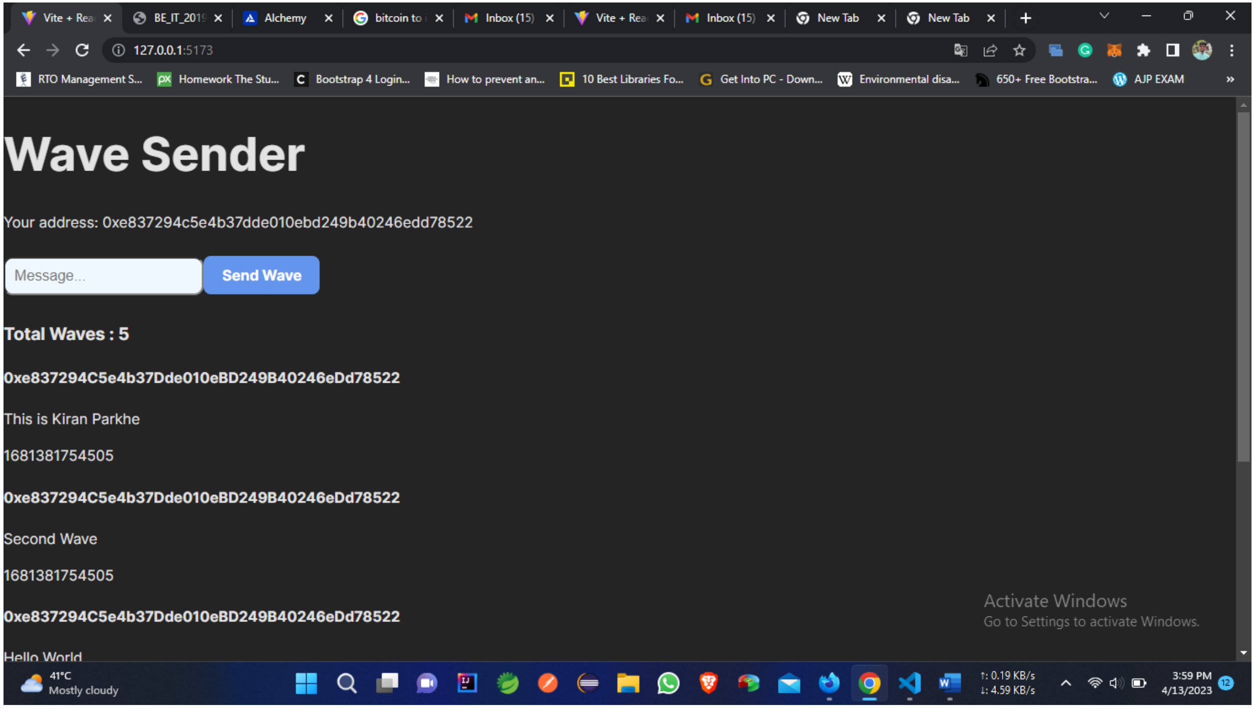


```
require("@nomicfoundation/hardhat-toolbox");

/** @type import('hardhat/config').HardhatUserConfig */
module.exports = {
  solidity: "0.8.18",
  networks: {
    sepolia: {
      url: "https://eth-sepolia.g.alchemy.com/v2/6Xmihrw_-ScPm-U9TKvwhaD0vluHU-
nB",
      accounts:
["0x466521e6b0a38e82ca77de50c1907aefabeca8369d2ab18f98099f81586a5dcd"]
    }
  }
};
```

Screenshots of output:



Wave Sender



Wave Sender

Your address: 0xe837294c5e4b37dde010ebd249b40246edd78522

Total Waves : 5

0xe837294C5e4b37Dde010eBD249B40246eDd78522

This is Kiran Parkhe

1681381754505

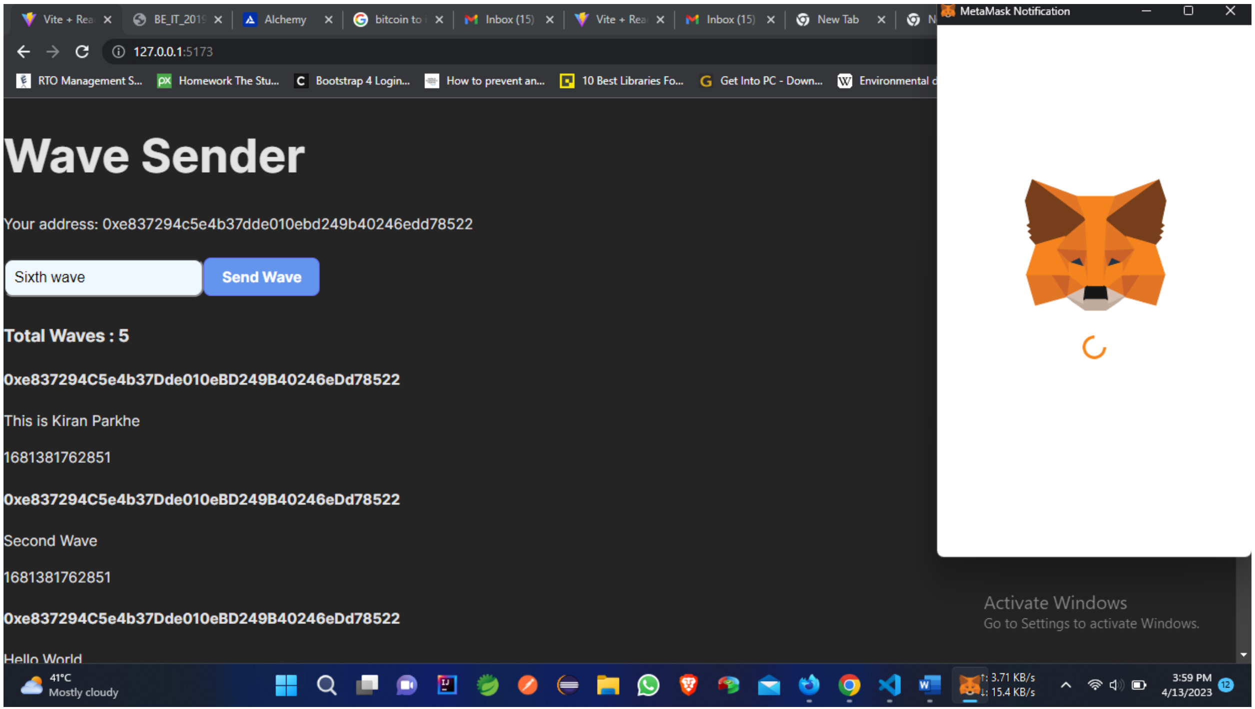
0xe837294C5e4b37Dde010eBD249B40246eDd78522

Second Wave

1681381754505

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Hello World



Wave Sender

Your address: 0xe837294c5e4b37dde010ebd249b40246edd78522

Sixth wave

Send Wave

Total Waves : 5

0xe837294C5e4b37Dde010eBD249B40246eDd78522

This is Kiran Parkhe

1681381762851

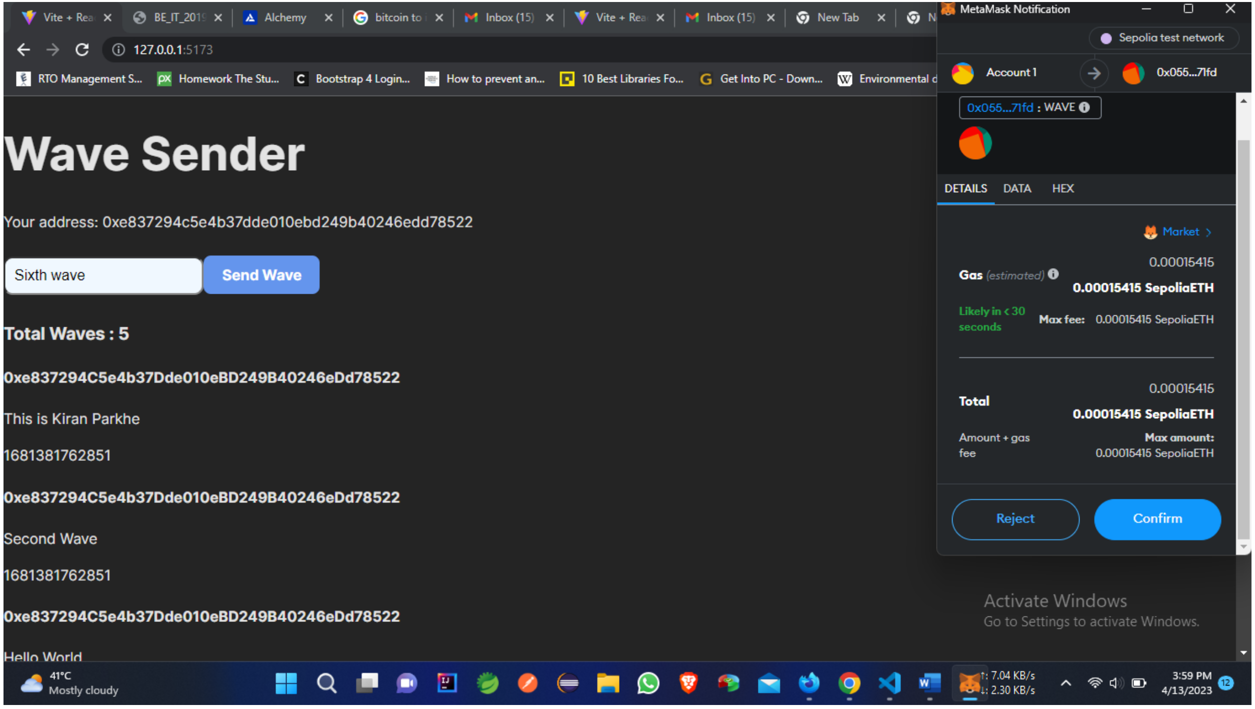
0xe837294C5e4b37Dde010eBD249B40246eDd78522

Second Wave

1681381762851

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Hello World



Wave Sender

Your address: 0xe837294c5e4b37dde010ebd249b40246edd78522

Sixth wave

Send Wave

Total Waves : 5

0xe837294C5e4b37Dde010eBD249B40246eDd78522

This is Kiran Parkhe

1681381762851

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Second Wave

1681381762851

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Hello World

Sepolia test network

Account 1 → 0x055...71fd

0x055...71fd : WAVE

DETAILS DATA HEX

Market >

0.00015415

Gas *(estimated)* **0.00015415 SepoliaETH**

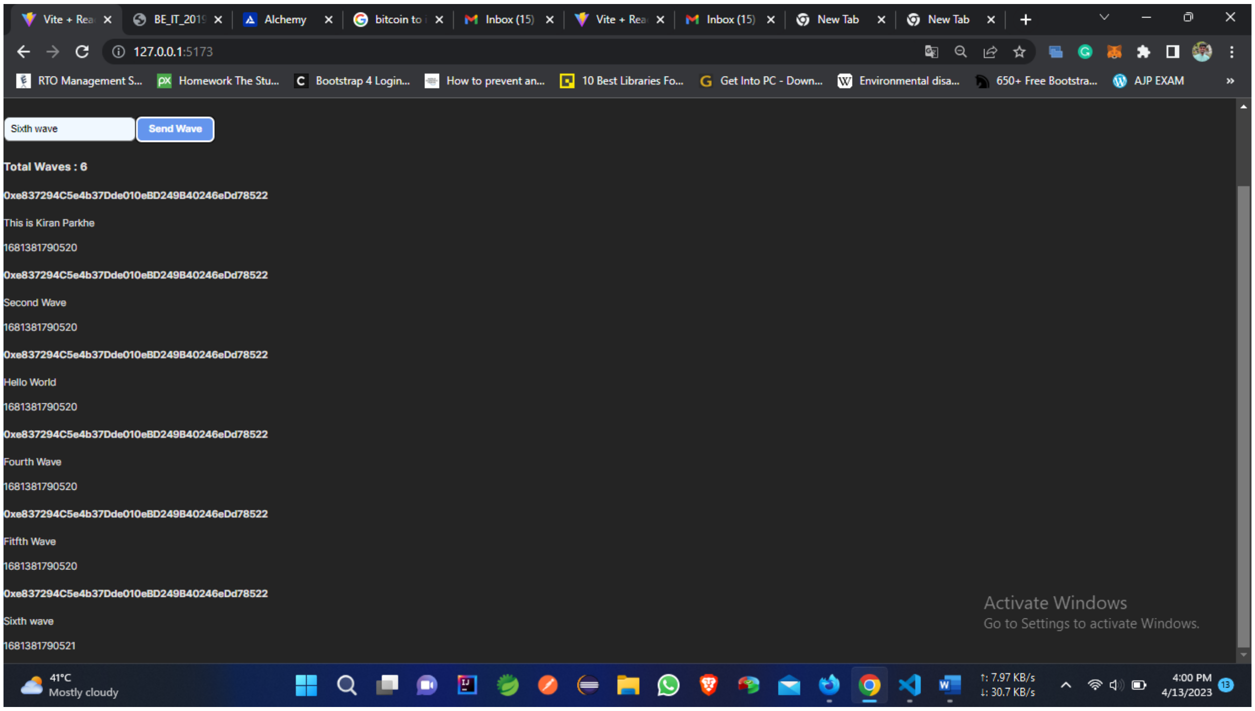
Likely in < 30 seconds **Max fee:** 0.00015415 SepoliaETH

0.00015415

Total **0.00015415 SepoliaETH**

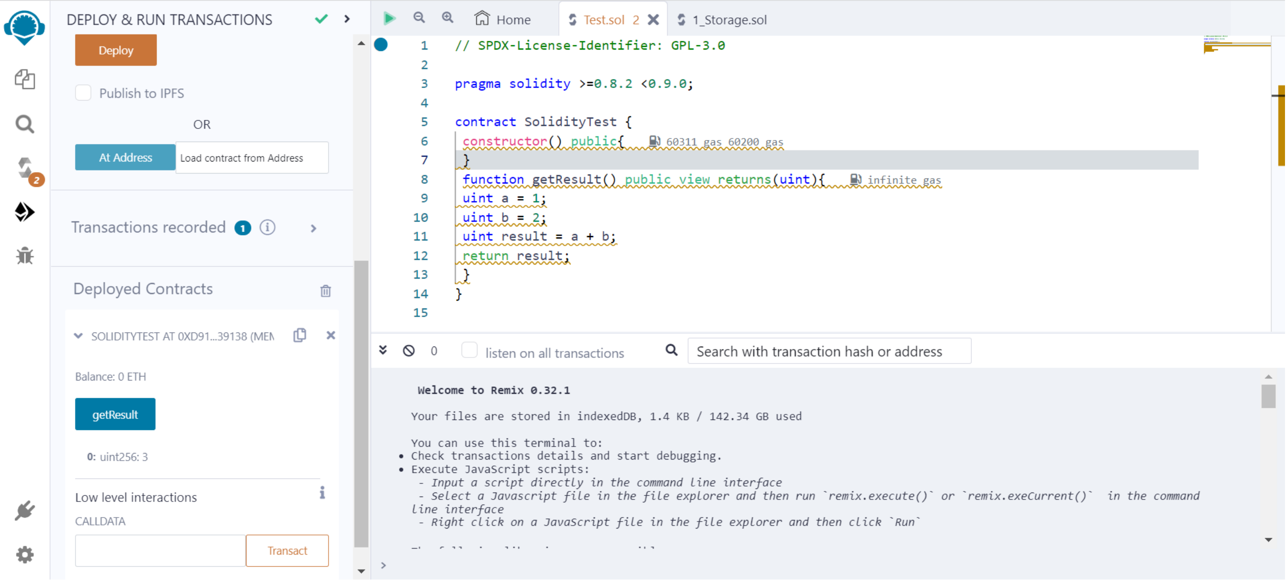
Amount + gas fee **Max amount:** 0.00015415 SepoliaETH

Reject Confirm



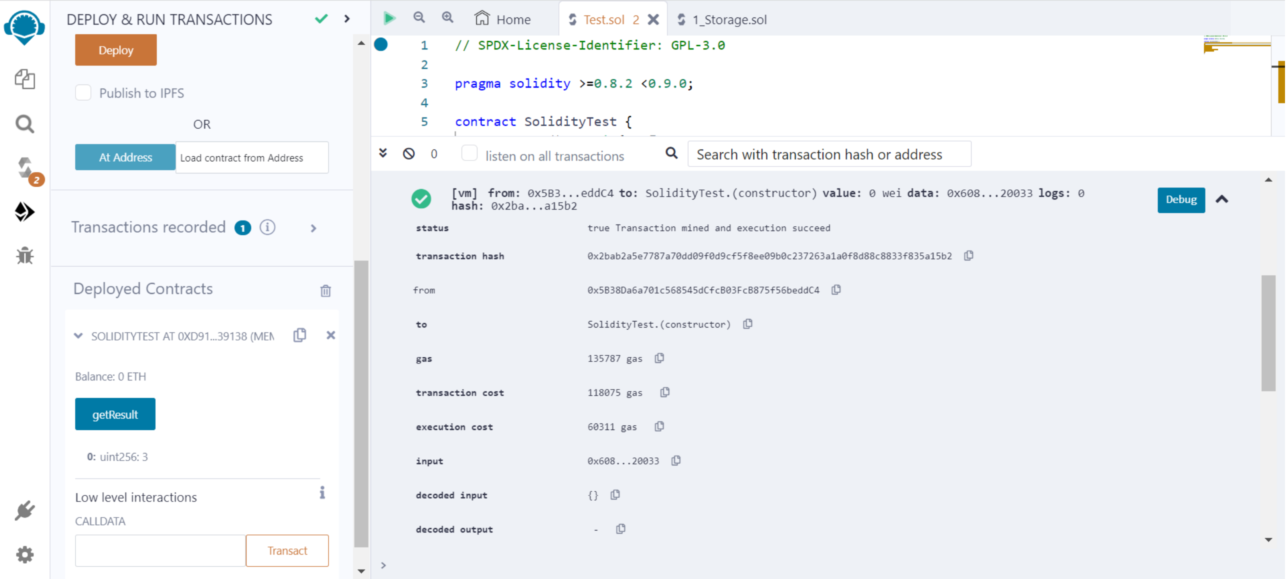
```
Total Waves : 6

0xe837294C5e4b37Dde010eBD249B40246eDd78522

This is Kiran Parkhe

1681381790520

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Second Wave

1681381790520

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Hello World

1681381790520

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Fourth Wave

1681381790520

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Fitfth Wave

1681381790520

0xe837294C5e4b37Dde010eBD249B40246eDd78522

Sixth wave

1681381790521
```

Assignment – 3



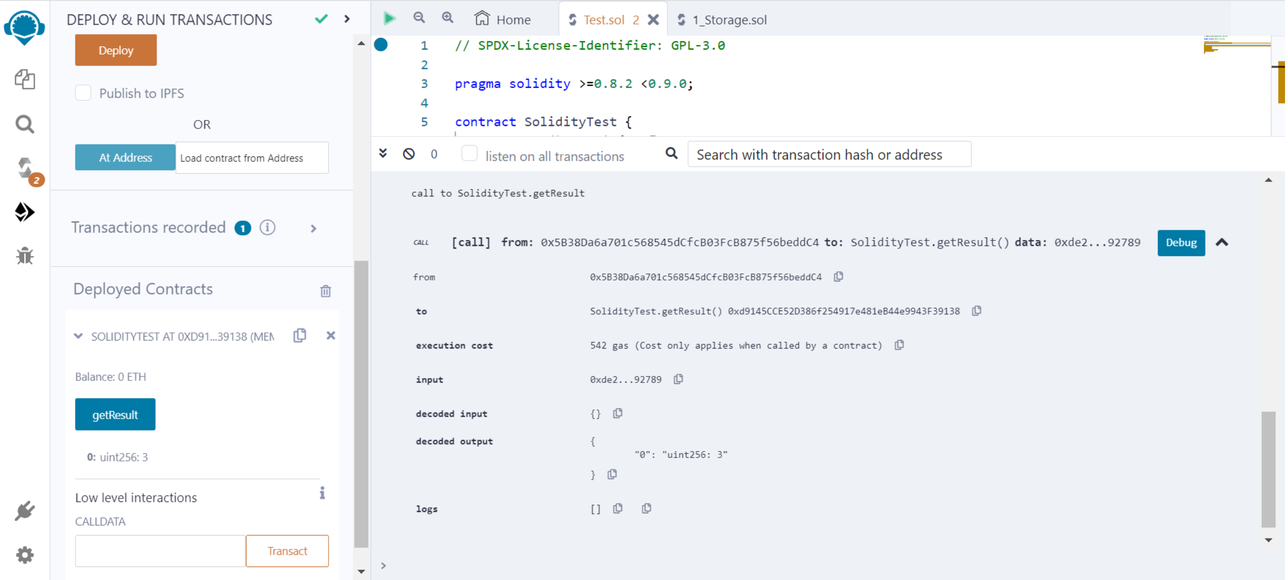
```
// SPDX-License-Identifier: GPL-3.0

pragma solidity >=0.8.2 <0.9.0;

contract SolidityTest {
 constructor() public{
 }
 function getResult() public view returns(uint){
 uint a = 1;
 uint b = 2;
 uint result = a + b;
 return result;
 }
}
```

```
 Welcome to Remix 0.32.1

Your files are stored in indexedDB, 1.4 KB / 142.34 GB used

You can use this terminal to:
• Check transactions details and start debugging.
• Execute JavaScript scripts:
  - Input a script directly in the command line interface
  - Select a Javascript file in the file explorer and then run `remix.execute()` or `remix.exeCurrent()`  in the command
line interface
  - Right click on a JavaScript file in the file explorer and then click `Run`
```



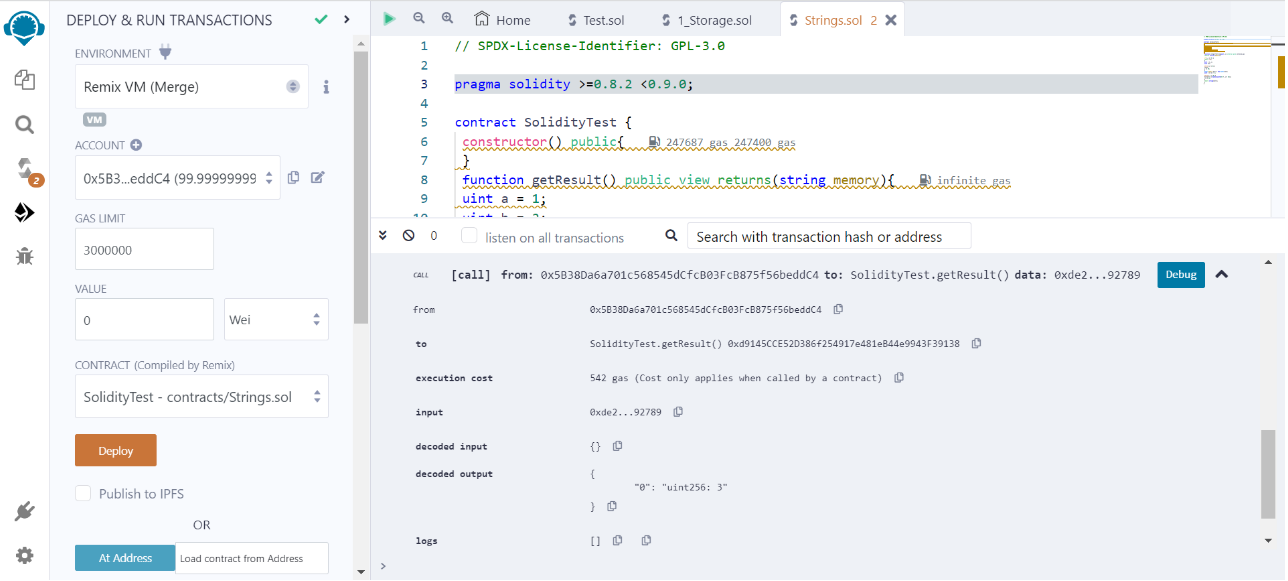
```
// SPDX-License-Identifier: GPL-3.0

pragma solidity >=0.8.2 <0.9.0;

contract SolidityTest {
```

```
[vm] from: 0x5B3...eddC4 to: SolidityTest.(constructor) value: 0 wei data: 0x608...20033 logs: 0
hash: 0x2ba...a15b2
status                 true Transaction mined and execution succeed
transaction hash       0x2bab2a5e7787a70dd09f0d9cf5f8ee09b0c237263a1a0f8d88c8833f835a15b2
from                   0x5B38Da6a701c568545dCfcB03FcB875f56beddC4
to                     SolidityTest.(constructor)
gas                    135787 gas
transaction cost       118075 gas
execution cost         60311 gas
input                  0x608...20033
decoded input          {}
decoded output          -
```



```
// SPDX-License-Identifier: GPL-3.0

pragma solidity >=0.8.2 <0.9.0;

contract SolidityTest {
```

```
call to SolidityTest.getResult

CALL  [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: SolidityTest.getResult() data: 0xde2...92789
from                   0x5B38Da6a701c568545dCfcB03FcB875f56beddC4
to                     SolidityTest.getResult() 0xd9145CCE52D386f254917e481eB44e9943F39138
execution cost         542 gas (Cost only applies when called by a contract)
input                  0xde2...92789
decoded input          {}
decoded output         {
                               "0": "uint256: 3"
                       }
logs                   []
```


DEPLOY & RUN TRANSACTIONS
Home
Test.sol
1_Storage.sol
Strings.sol 2
Deploy
Publish to IPFS
OR
At Address
Load contract from Address
listen on all transactions
Search with transaction hash or address
Debug

ENVIRONMENT: Remix VM (Merge)

ACCOUNT: 0x5B3...eddC4 (99.99999999

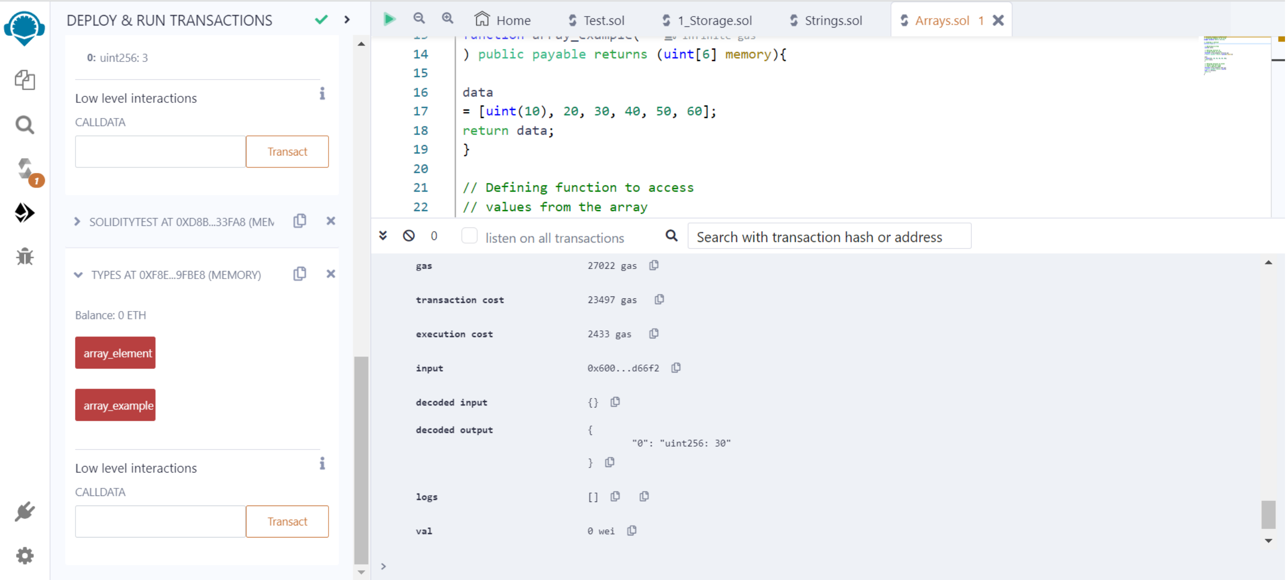
GAS LIMIT: 3000000

VALUE: 0 Wei

CONTRACT (Compiled by Remix): SolidityTest - contracts/Strings.sol

```
// SPDX-License-Identifier: GPL-3.0

pragma solidity >=0.8.2 <0.9.0;

contract SolidityTest {
 constructor() public{     247687 gas 247400 gas
 }
 function getResult() public view returns(string memory){     infinite gas
 uint a = 1;
```

```
CALL  [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: SolidityTest.getResult() data: 0xde2...92789

from              0x5B38Da6a701c568545dCfcB03FcB875f56beddC4
to                SolidityTest.getResult() 0xd9145CCE52D386f254917e481eB44e9943F39138
execution cost    542 gas (Cost only applies when called by a contract)
input             0xde2...92789
decoded input     {}
decoded output    {
                        "0": "uint256: 3"
                  }
logs              []
```


DEPLOY & RUN TRANSACTIONS
Home
Test.sol
1_Storage.sol
Strings.sol
Arrays.sol 1
Transact
array_element
array_example
Transact
listen on all transactions
Search with transaction hash or address

0: uint256: 3

Low level interactions

CALLDATA

SOLIDITYTEST AT 0XD8B...33FA8 (MEN

TYPES AT 0XF8E...9FBE8 (MEMORY)

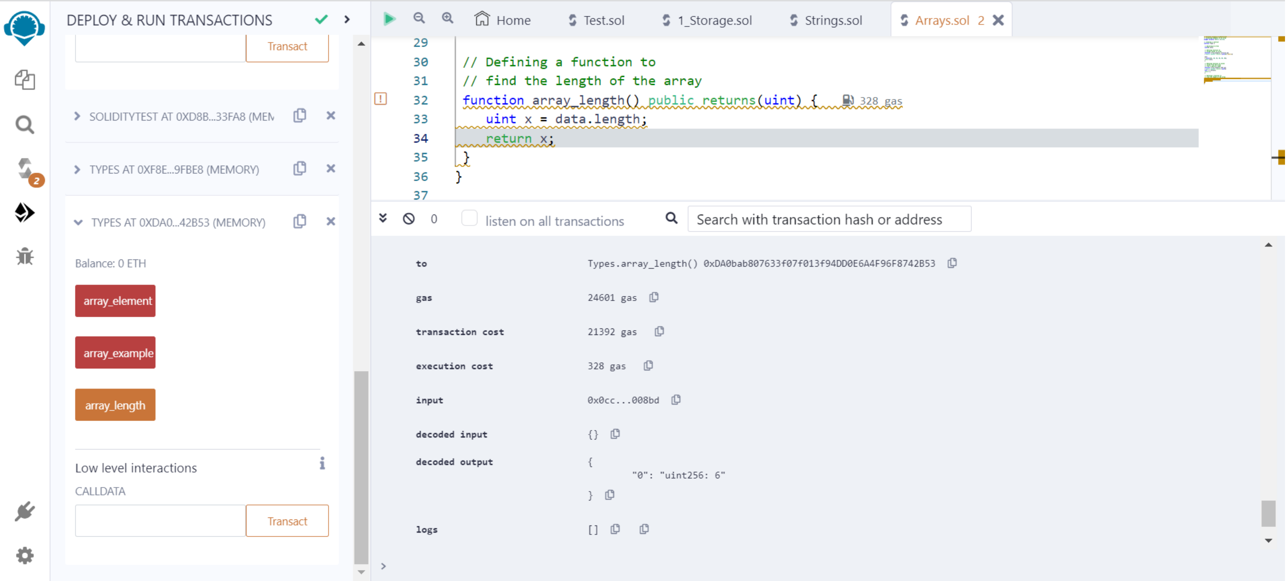
Balance: 0 ETH

Low level interactions

CALLDATA

```
) public payable returns (uint[6] memory){

data
= [uint(10), 20, 30, 40, 50, 60];
return data;
}

// Defining function to access
// values from the array
```

```
gas               27022 gas
transaction cost  23497 gas
execution cost    2433 gas
input             0x600...d66f2
decoded input     {}
decoded output    {
                        "0": "uint256: 30"
                  }
logs              []
val               0 wei
```



SOLIDITYTEST AT 0XD8B...33FA8 (MEN

TYPES AT 0XF8E...9FBE8 (MEMORY)

TYPES AT 0XDA0...42B53 (MEMORY)

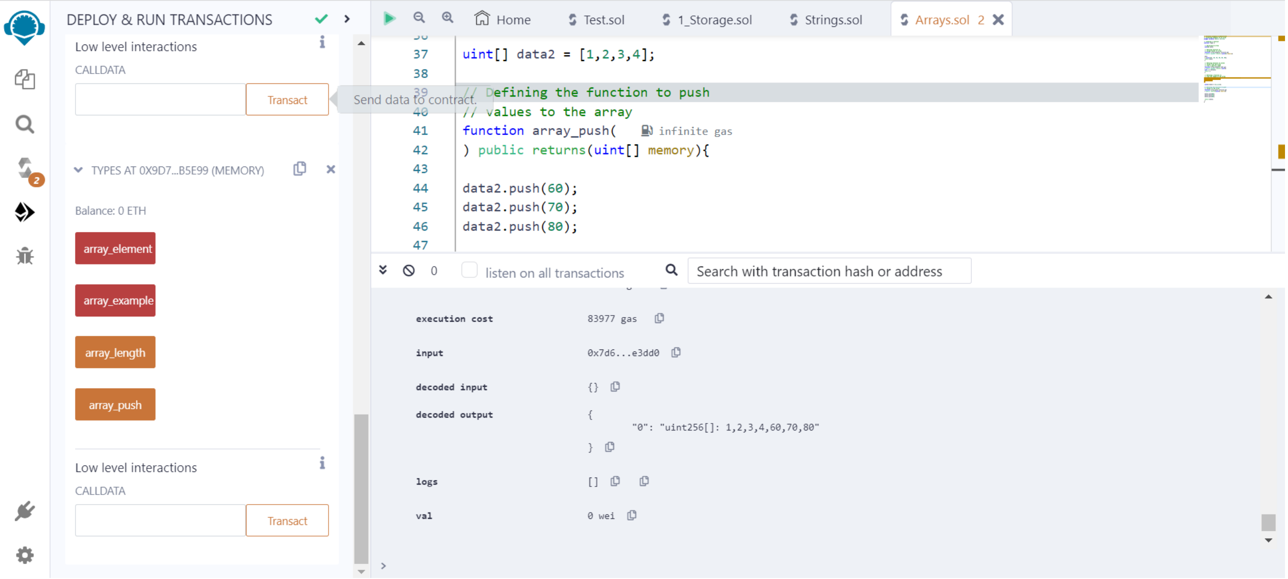
Balance: 0 ETH

Low level interactions

CALLDATA

```

// Defining a function to
// find the length of the array
function array_length() public returns(uint) {     328 gas
   uint x = data.length;
   return x;
}
}
```

```
to                Types.array_length() 0xDA0bab807633f07f013f94DD0E6A4F96F8742B53
gas               24601 gas
transaction cost  21392 gas
execution cost    328 gas
input             0x0cc...008bd
decoded input     {}
decoded output    {
                        "0": "uint256: 6"
                  }
logs              []
```



```
uint[] data2 = [1,2,3,4];

// Defining the function to push
// values to the array
function array_push(     infinite gas
) public returns(uint[] memory){

data2.push(60);
data2.push(70);
data2.push(80);

```

```
execution cost          83977 gas

input                   0x7d6...e3dd0

decoded input           {}

decoded output          {
                              "0": "uint256[]: 1,2,3,4,60,70,80"
                        }

logs                    []

val                     0 wei
```