ERC-20 Token on Ethereum

MYTOKEN – ERC-20 Token Project Report

Submitted by: Ashrita Gogula
Contract Address: 0xd9145CCE52D386f254917e481eB44e9943F39138

1. Project Overview

This project demonstrates the creation of a fully functional **ERC-20 token** on the Ethereum blockchain using **Solidity** and **Remix IDE**.
The project includes token metadata, total supply creation, transfer functions, allowance mechanism, and event logging.

This token works like any real cryptocurrency built on ERC-20 standards.

2. Token Details

Property	Value
Token Name	MyToken
Symbol	MTK
Decimals	18
Total Supply	1,000,000 MTK (with 18 decimals)
Contract Address	0xd9145CCE52D386f254917e481eB44e9943F39138

3. Development Environment

- **IDE:** Remix Ethereum IDE
- **Language:** Solidity 0.8.x
- **Network:** Remix VM (Prague)
- **Contract File:** MyToken.sol

Steps followed:

1. Opened Remix IDE
2. Created a new Solidity contract file
3. Wrote the ERC-20 token code
4. Compiled contract → No errors
5. Deployed contract on Remix VM
6. Interacted with contract functions using Remix UI

4. Features Implemented

✓ ERC-20 Token Metadata

- Token name
- Symbol
- Decimals
- Total supply

✓ Balance Tracking

- Balance of any address

✓ Transfer Function

- Transfer tokens from one account to another

✓ Allowance Mechanism

- Approve a spender
- Check allowance
- Spend via transferFrom

✓ Events

- **Transfer** event
- **Approval** event

These events confirm on-chain activity and allow tracking in logs.

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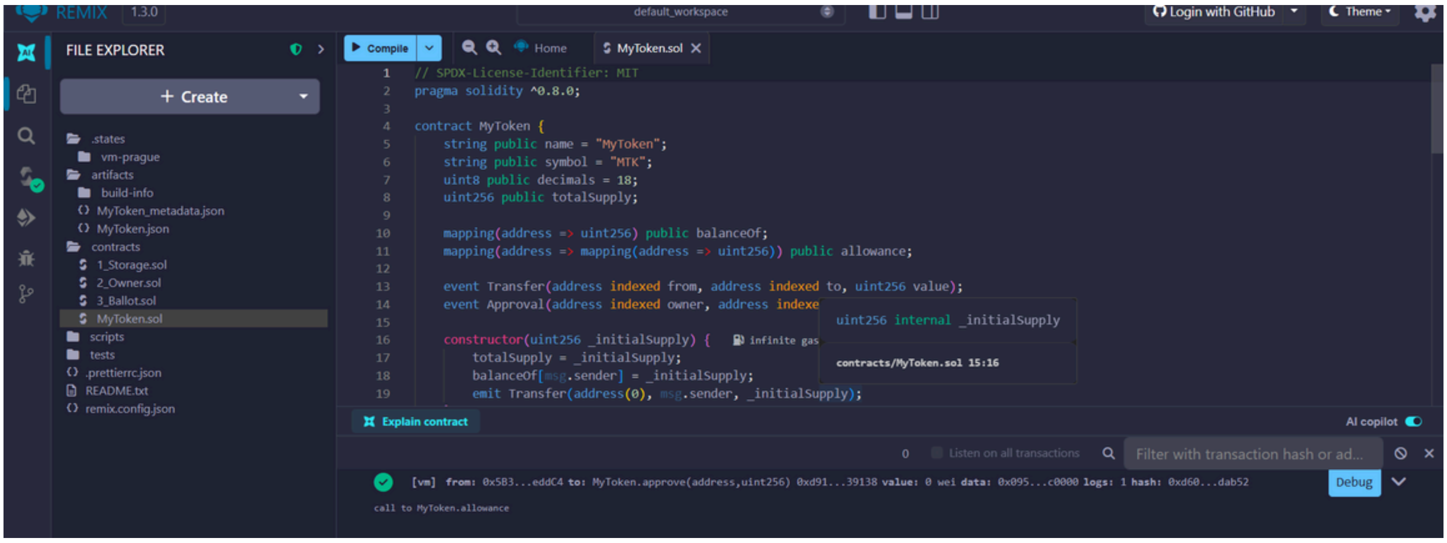
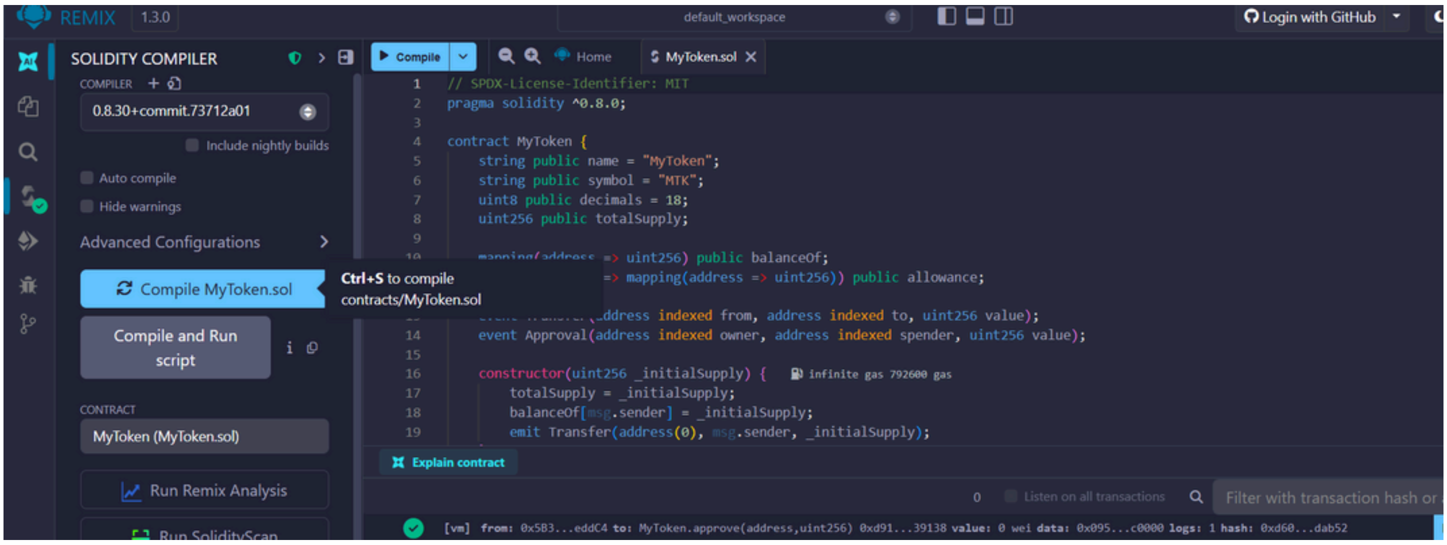
5. Screenshots Included

📸 5.1 Compilation Success



```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract MyToken {
    string public name = "MyToken";
    string public symbol = "MTK";
    uint8 public decimals = 18;
    uint256 public totalSupply;

    mapping(address => uint256) public balanceOf;
    mapping(address => mapping(address => uint256)) public allowance;

    event Transfer(address indexed from, address indexed to, uint256 value);
    event Approval(address indexed owner, address indexe    uint256 internal _initialSupply

    constructor(uint256 _initialSupply) {    infinite gas    contracts/MyToken.sol 15:16
        totalSupply = _initialSupply;
        balanceOf[msg.sender] = _initialSupply;
        emit Transfer(address(0), msg.sender, _initialSupply);
```

```
[vm] from: 0x5B3...eddC4 to: MyToken.approve(address,uint256) 0xd91...39138 value: 0 wei data: 0x095...c0000 logs: 1 hash: 0xd60...dab52
call to MyToken.allowance
```



COMPILER: 0.8.30+commit.73712a01

CONTRACT: MyToken (MyToken.sol)

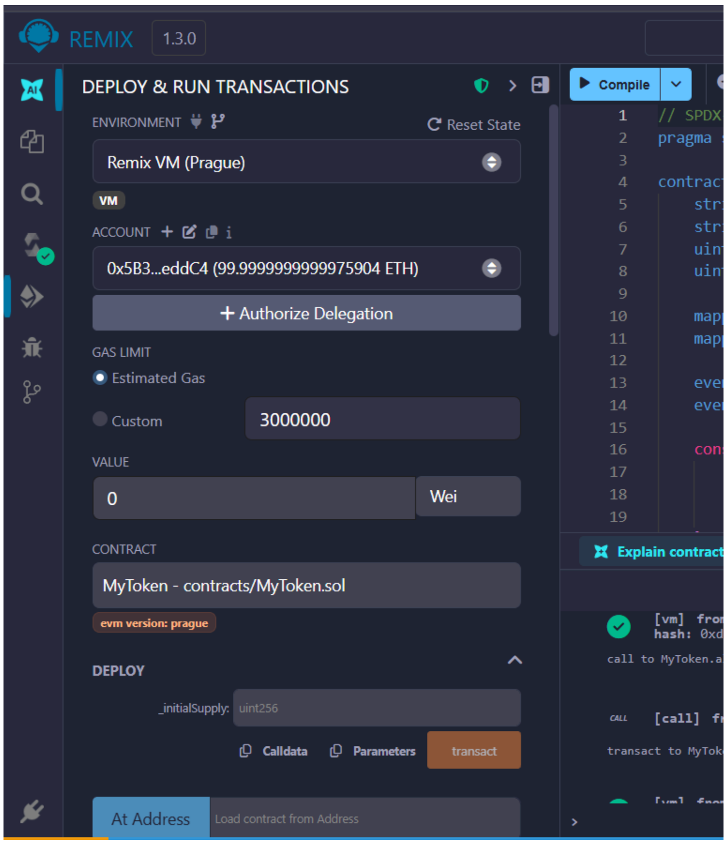
```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract MyToken {
    string public name = "MyToken";
    string public symbol = "MTK";
    uint8 public decimals = 18;
    uint256 public totalSupply;

    mapping(address => uint256) public balanceOf;
                     => mapping(address => uint256)) public allowance;

    ...ddress indexed from, address indexed to, uint256 value);
    event Approval(address indexed owner, address indexed spender, uint256 value);

    constructor(uint256 _initialSupply) {    infinite gas 792600 gas
        totalSupply = _initialSupply;
        balanceOf[msg.sender] = _initialSupply;
        emit Transfer(address(0), msg.sender, _initialSupply);
```

```
[vm] from: 0x5B3...eddC4 to: MyToken.approve(address,uint256) 0xd91...39138 value: 0 wei data: 0x095...c0000 logs: 1 hash: 0xd60...dab52
```

📸 5.2 Deployment of Token Contract

MyToken Contract Details

- **Token Name:** MyToken
- **Symbol:** MTK
- **Decimals:** 18
- **Total Supply:** 1,000,000 MTK (1 million)
- **Contract Address:**
  0xd9145CCE52D386f254917e481eB44e9943F39138



DEPLOY & RUN TRANSACTIONS

ENVIRONMENT: Remix VM (Prague)

VM

ACCOUNT: 0x5B3...eddC4 (99.9999999999975904 ETH)

+ Authorize Delegation

GAS LIMIT: [✓ Estimated Gas] Custom 3000000

VALUE: 0 Wei

CONTRACT: MyToken - contracts/MyToken.sol

evm version: prague

DEPLOY

_initialSupply: uint256

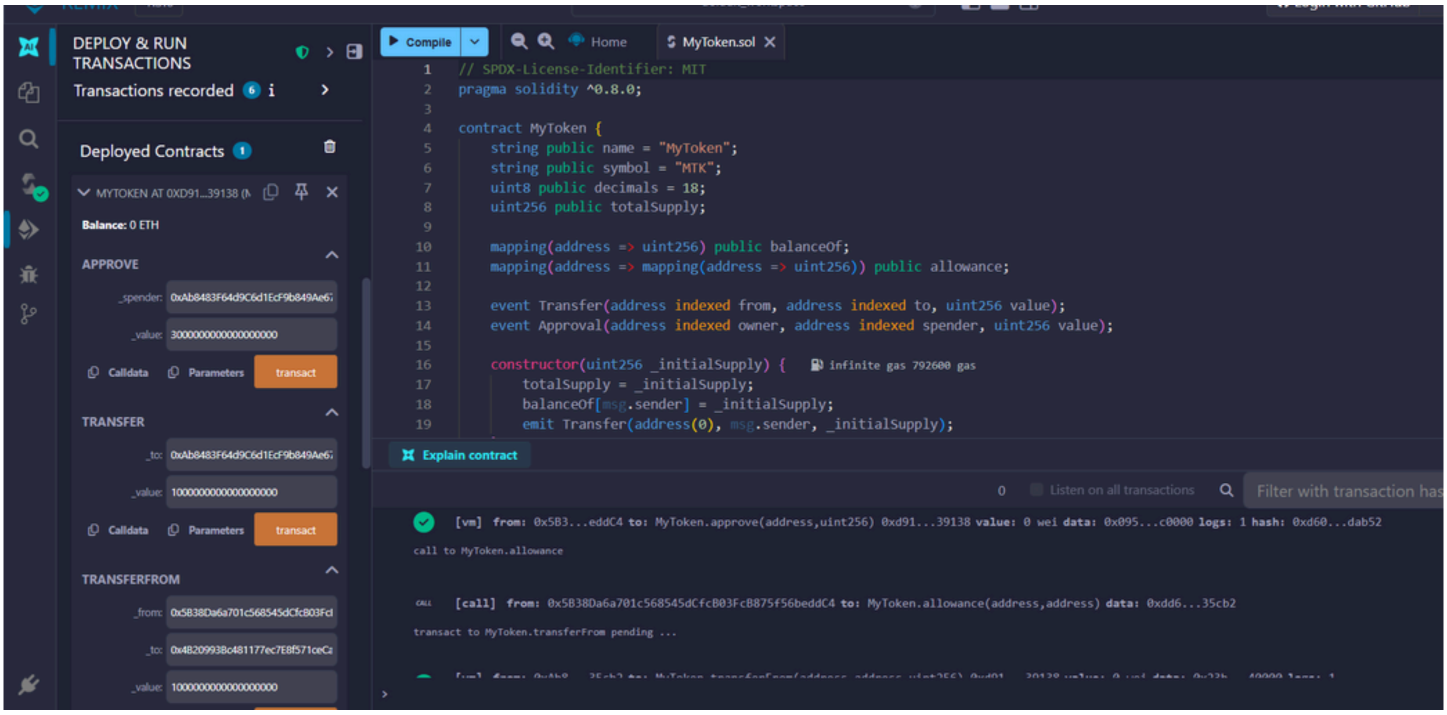
Calldata Parameters transact

At Address Load contract from Address

```
// SPDX
pragma
contrac
    str
    str
    uin
    uin

    map
    map

    eve
    eve

    con
```

```
[vm] from
hash: 0xd
call to MyToken.a
[call] f
transact to MyTok
```

-



DEPLOY & RUN TRANSACTIONS

Transactions recorded 6

Deployed Contracts 1

MYTOKEN AT 0XD91...39138

Balance: 0 ETH

APPROVE
_spender: 0xAb8483F64d9C6d1EcF9b849Ae6
_value: 3000000000000000000
Calldata Parameters transact

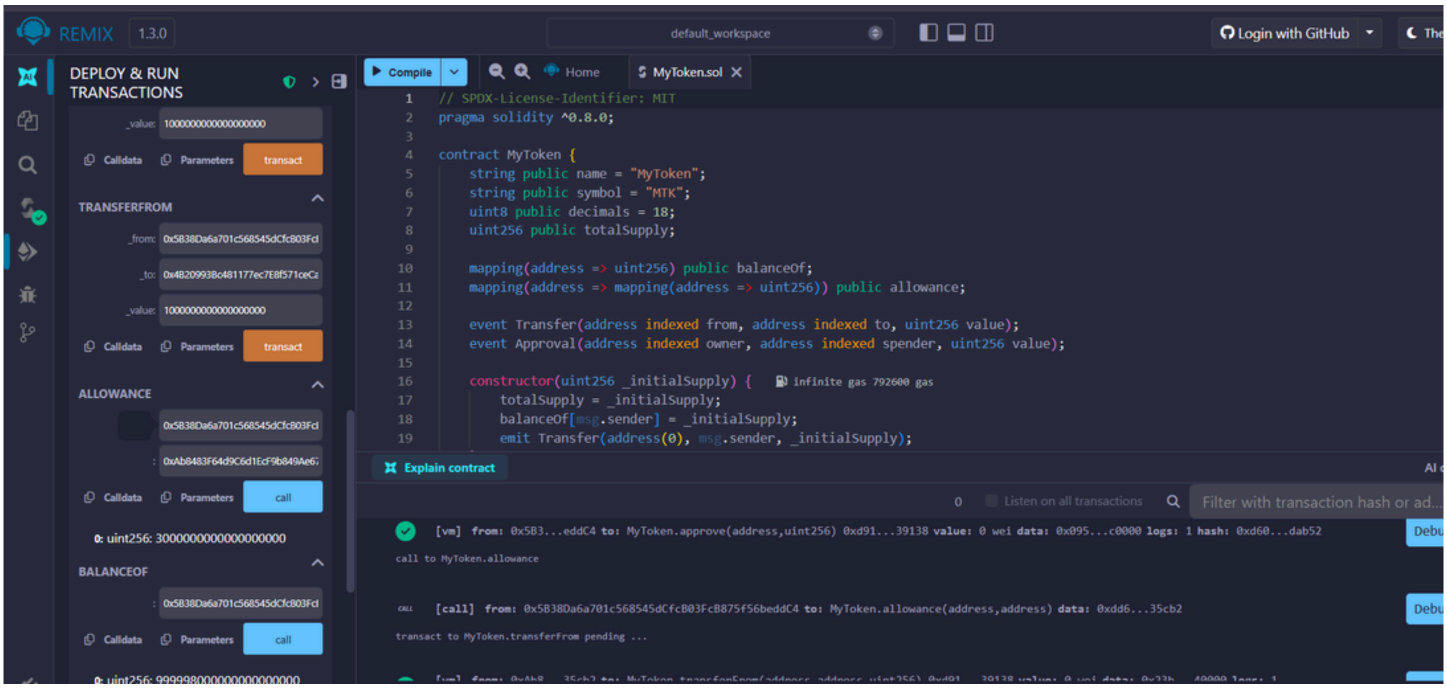
TRANSFER
_to: 0xAb8483F64d9C6d1EcF9b849Ae6
_value: 1000000000000000000
Calldata Parameters transact

TRANSFERFROM
_from: 0x5B38Da6a701c568545dCfcB03Fcl
_to: 0x4B20993Bc481177ec7E8f571ceCa
_value: 1000000000000000000

```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract MyToken {
    string public name = "MyToken";
    string public symbol = "MTK";
    uint8 public decimals = 18;
    uint256 public totalSupply;

    mapping(address => uint256) public balanceOf;
    mapping(address => mapping(address => uint256)) public allowance;

    event Transfer(address indexed from, address indexed to, uint256 value);
    event Approval(address indexed owner, address indexed spender, uint256 value);

    constructor(uint256 _initialSupply) {    infinite gas 792600 gas
        totalSupply = _initialSupply;
        balanceOf[msg.sender] = _initialSupply;
        emit Transfer(address(0), msg.sender, _initialSupply);
```

0 Listen on all transactions Filter with transaction has

```
[vm] from: 0x5B3...eddC4 to: MyToken.approve(address,uint256) 0xd91...39138 value: 0 wei data: 0x095...c0000 logs: 1 hash: 0xd60...dab52
call to MyToken.allowance

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.allowance(address,address) data: 0xdd6...35cb2
transact to MyToken.transferFrom pending ...
```


REMIX 1.3.0
default_workspace
Login with GitHub
DEPLOY & RUN TRANSACTIONS
Compile
Home
MyToken.sol
Explain contract
Listen on all transactions
Filter with transaction hash or ad...

_value: 1000000000000000000
Calldata Parameters transact

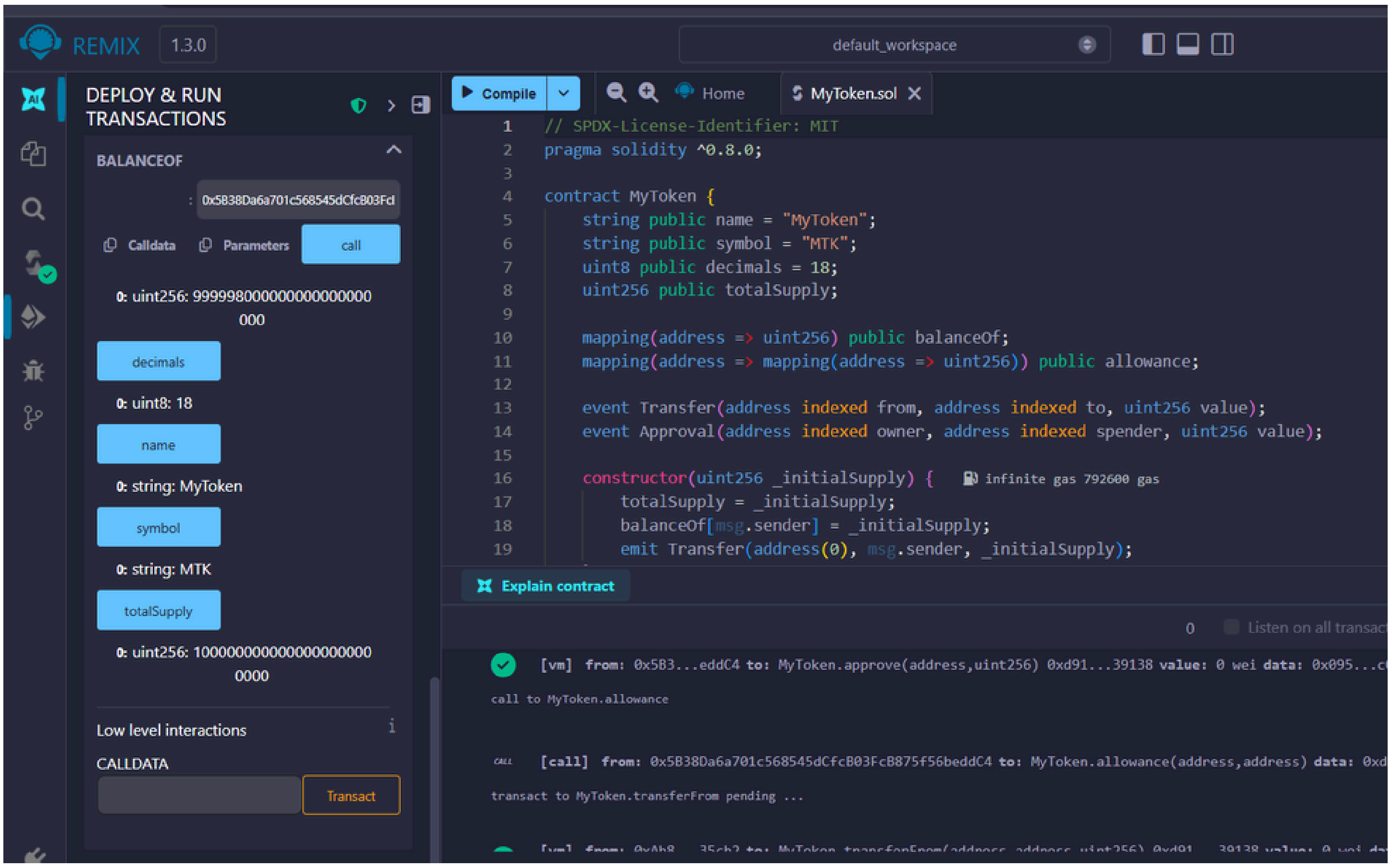
TRANSFERFROM
_from: 0x5B38Da6a701c568545dCfcB03Fcl
_to: 0x4B20993Bc481177ec7E8f571ceCa
_value: 1000000000000000000
Calldata Parameters transact

ALLOWANCE
0x5B38Da6a701c568545dCfcB03Fcl
: 0xAb8483F64d9C6d1EcF9b849Ae67
Calldata Parameters call
0: uint256: 3000000000000000000

BALANCEOF
: 0x5B38Da6a701c568545dCfcB03Fcl
Calldata Parameters call
0: uint256: 999998000000000000000000

```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract MyToken {
    string public name = "MyToken";
    string public symbol = "MTK";
    uint8 public decimals = 18;
    uint256 public totalSupply;

    mapping(address => uint256) public balanceOf;
    mapping(address => mapping(address => uint256)) public allowance;

    event Transfer(address indexed from, address indexed to, uint256 value);
    event Approval(address indexed owner, address indexed spender, uint256 value);

    constructor(uint256 _initialSupply) {   infinite gas 792600 gas
        totalSupply = _initialSupply;
        balanceOf[msg.sender] = _initialSupply;
        emit Transfer(address(0), msg.sender, _initialSupply);
```

```
[vm] from: 0x5B3...eddC4 to: MyToken.approve(address,uint256) 0xd91...39138 value: 0 wei data: 0x095...c0000 logs: 1 hash: 0xd60...dab52
call to MyToken.allowance

[call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.allowance(address,address) data: 0xdd6...35cb2
transact to MyToken.transferFrom pending ...
```



BALANCEOF
: 0x5B38Da6a701c568545dCfcB03Fcl
Calldata Parameters call
0: uint256: 999998000000000000000000

decimals
0: uint8: 18

name
0: string: MyToken

symbol
0: string: MTK

totalSupply
0: uint256: 1000000000000000000000000

Low level interactions
CALLDATA
Transact

```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract MyToken {
    string public name = "MyToken";
    string public symbol = "MTK";
    uint8 public decimals = 18;
    uint256 public totalSupply;

    mapping(address => uint256) public balanceOf;
    mapping(address => mapping(address => uint256)) public allowance;

    event Transfer(address indexed from, address indexed to, uint256 value);
    event Approval(address indexed owner, address indexed spender, uint256 value);

    constructor(uint256 _initialSupply) {   infinite gas 792600 gas
        totalSupply = _initialSupply;
        balanceOf[msg.sender] = _initialSupply;
        emit Transfer(address(0), msg.sender, _initialSupply);
```

```
[vm] from: 0x5B3...eddC4 to: MyToken.approve(address,uint256) 0xd91...39138 value: 0 wei data: 0x095...c
call to MyToken.allowance

[call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.allowance(address,address) data: 0xd
transact to MyToken.transferFrom pending ...
```

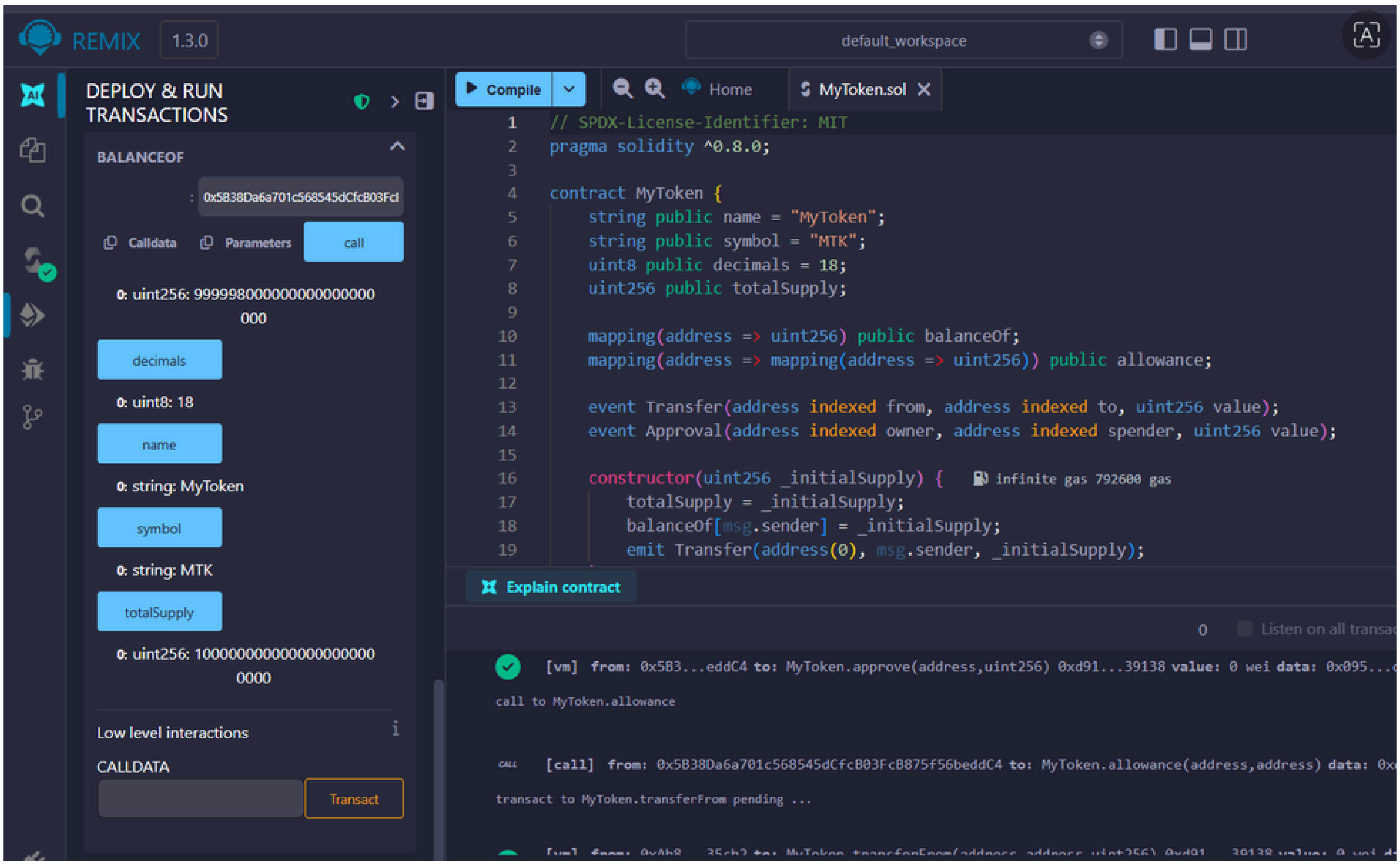
📸 5.3 Token Information (name, symbol, decimals, totalSupply)

decimals → 18

name → MyToken

symbol → MTK

totalSupply → 1000000000000000000000000..



0x5B38Da6a701c568545dCfcB03Fcl

0: uint256: 999998000000000000000000

0: uint8: 18

0: string: MyToken

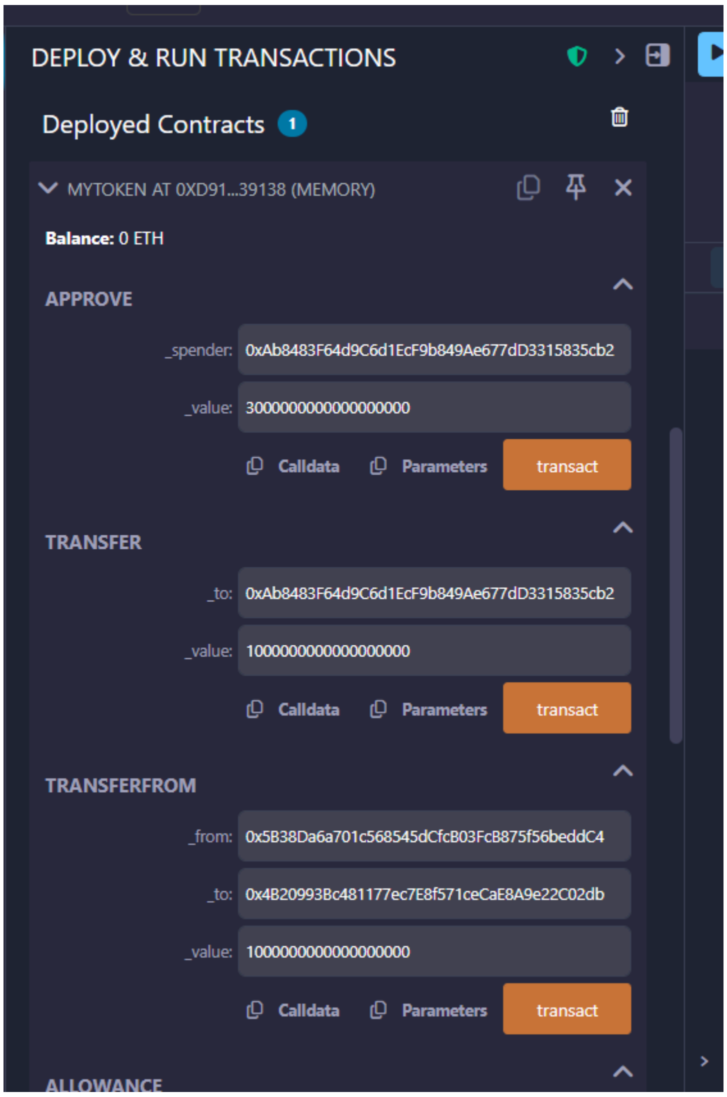
0: string: MTK

0: uint256: 1000000000000000000000000

```solidity
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract MyToken {
    string public name = "MyToken";
    string public symbol = "MTK";
    uint8 public decimals = 18;
    uint256 public totalSupply;

    mapping(address => uint256) public balanceOf;
    mapping(address => mapping(address => uint256)) public allowance;

    event Transfer(address indexed from, address indexed to, uint256 value);
    event Approval(address indexed owner, address indexed spender, uint256 value);

    constructor(uint256 _initialSupply) {    infinite gas 792600 gas
        totalSupply = _initialSupply;
        balanceOf[msg.sender] = _initialSupply;
        emit Transfer(address(0), msg.sender, _initialSupply);
```

```
[vm] from: 0x5B3...eddC4 to: MyToken.approve(address,uint256) 0xd91...39138 value: 0 wei data: 0x095...
call to MyToken.allowance

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.allowance(address,address) data: 0x
transact to MyToken.transferFrom pending ...
```

📸 5.4 Transfer Test – Successful Token Transfer



DEPLOY & RUN TRANSACTIONS

Deployed Contracts 1

MYTOKEN AT 0XD91...39138 (MEMORY)

Balance: 0 ETH

APPROVE

_spender: 0xAb8483F64d9C6d1EcF9b849Ae677dD3315835cb2

_value: 3000000000000000000

Calldata Parameters transact

TRANSFER

_to: 0xAb8483F64d9C6d1EcF9b849Ae677dD3315835cb2

_value: 1000000000000000000

Calldata Parameters transact

TRANSFERFROM

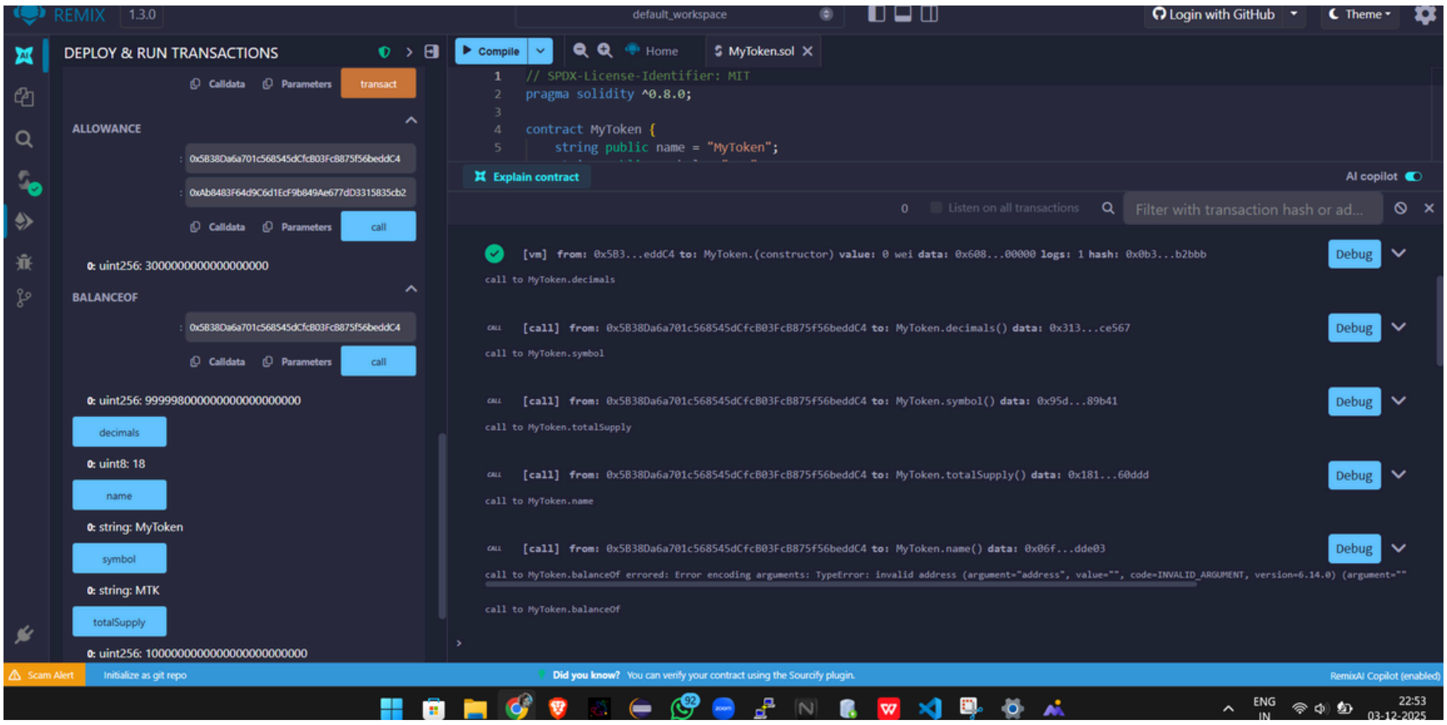
_from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

_to: 0x4B20993Bc481177ec7E8f571ceCaE8A9e22C02db

_value: 1000000000000000000

Calldata Parameters transact

ALLOWANCE



REMIX 1.3.0 default_workspace Login with GitHub Theme

DEPLOY & RUN TRANSACTIONS

Calldata Parameters transact

ALLOWANCE

: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

: 0xAb8483F64d9C6d1EcF9b849Ae677dD3315835cb2

Calldata Parameters call

0: uint256: 3000000000000000000

BALANCEOF

: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

Calldata Parameters call

0: uint256: 999998000000000000000000

decimals

0: uint8: 18

name

0: string: MyToken

symbol

0: string: MTK

totalSupply

0: uint256: 1000000000000000000000000

Compile Home MyToken.sol

```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract MyToken {
    string public name = "MyToken";
```

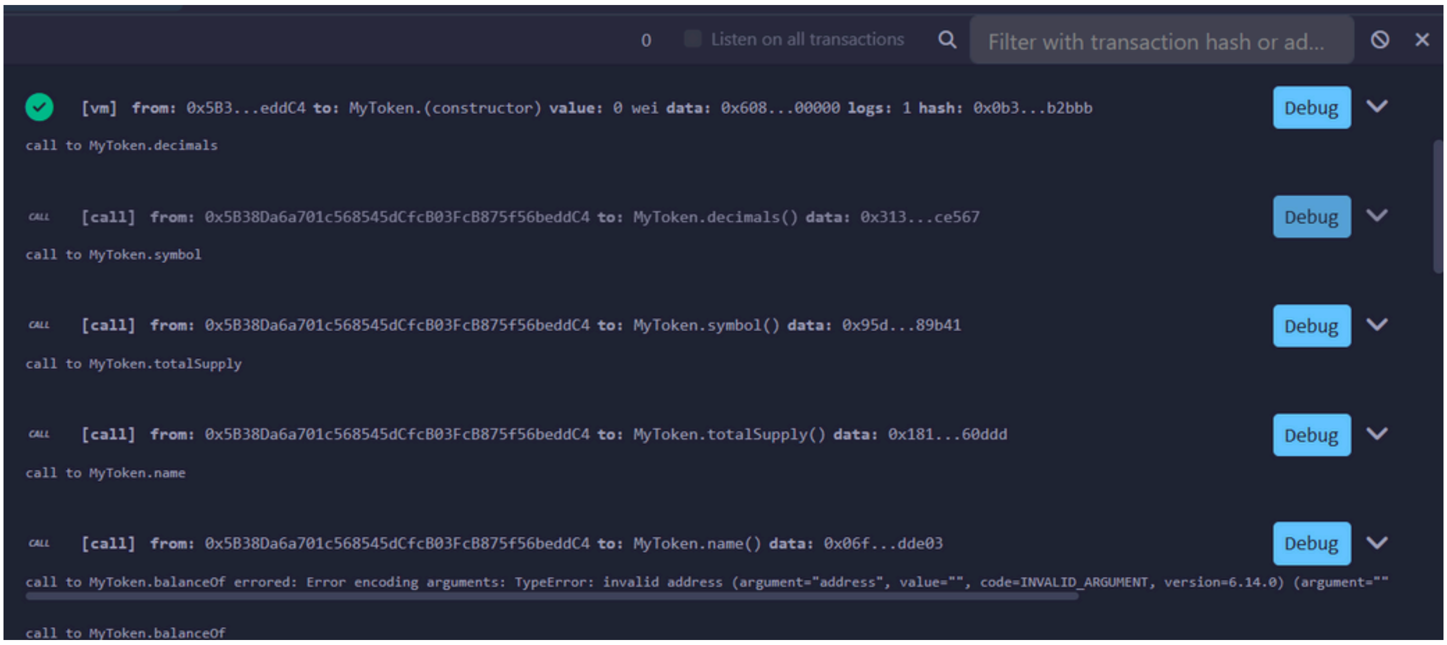
Explain contract AI copilot

0 Listen on all transactions Filter with transaction hash or ad...

```
[vm] from: 0x5B3...eddC4 to: MyToken.(constructor) value: 0 wei data: 0x608...00000 logs: 1 hash: 0x0b3...b2bbb
call to MyToken.decimals

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.decimals() data: 0x313...ce567
call to MyToken.symbol

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.symbol() data: 0x95d...89b41
call to MyToken.totalSupply

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.totalSupply() data: 0x181...60ddd
call to MyToken.name

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.name() data: 0x06f...dde03
call to MyToken.balanceOf errored: Error encoding arguments: TypeError: invalid address (argument="address", value="", code=INVALID_ARGUMENT, version=6.14.0) (argument=""

call to MyToken.balanceOf
```

Scam Alert Initialize as git repo **Did you know?** You can verify your contract using the Sourcify plugin. RemixAI Copilot (enabled)

ENG IN 22:53 03-12-2025


0
Listen on all transactions
Filter with transaction hash or ad...
Debug

```
[vm] from: 0x5B3...eddC4 to: MyToken.(constructor) value: 0 wei data: 0x608...00000 logs: 1 hash: 0x0b3...b2bbb
call to MyToken.decimals

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.decimals() data: 0x313...ce567
call to MyToken.symbol

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.symbol() data: 0x95d...89b41
call to MyToken.totalSupply

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.totalSupply() data: 0x181...60ddd
call to MyToken.name

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: MyToken.name() data: 0x06f...dde03
call to MyToken.balanceOf errored: Error encoding arguments: TypeError: invalid address (argument="address", value="", code=INVALID_ARGUMENT, version=6.14.0) (argument=""

call to MyToken.balanceOf
```

📸 5.5 Approve & Allowance Test

🔷 Step 1: Approve Spender

I used the **approve()** function to allow another address to spend my tokens.

- **Owner Address:** 0x5B38...edC4
- **Spender Address:** 0xAb84...35cb2
- **Approved Amount:** 3000000000000000000000

After clicking **transact**, the transaction succeeded and generated an **Approval event**.

🔷 Step 2: Check Allowance

Next, I used the **allowance()** function to confirm the approved amount.

- **Owner:** 0x5B38...edC4
- **Spender:** 0xAb84...35cb2
- **Returned Allowance:** 3000000000000000000000

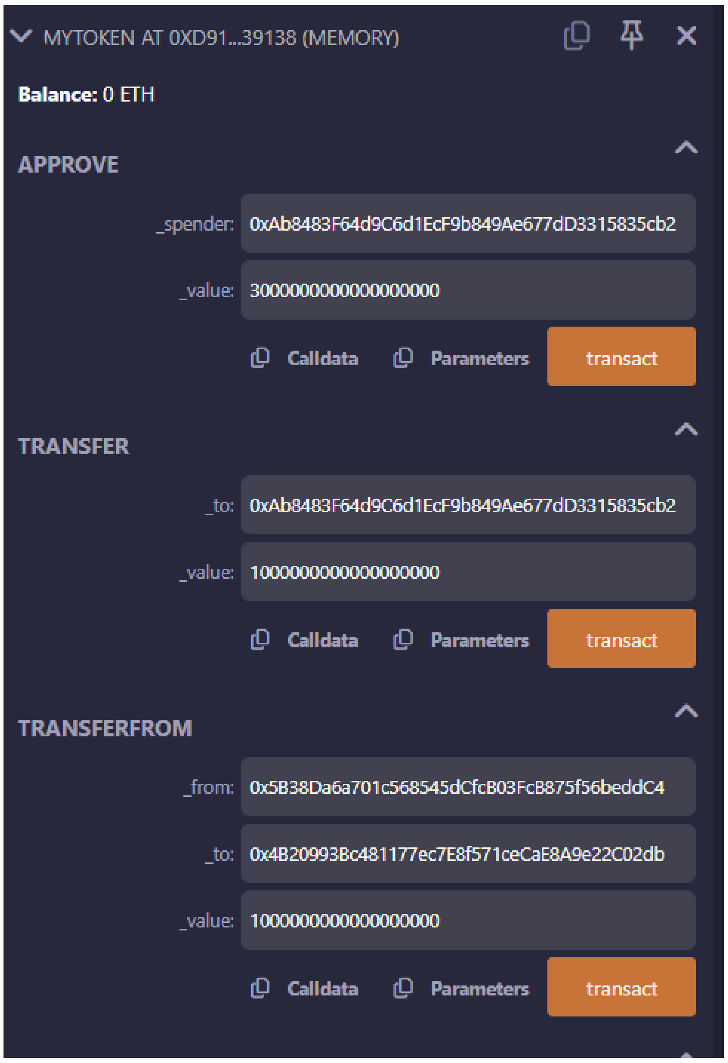
This confirms the spender is allowed to transfer the approved number of tokens.

🔷 Step 3: transferFrom Test

Finally, I performed **transferFrom()**, where the spender transfers tokens from the owner to another account.

- **From:** 0x5B38...edC4
- **To:** 0x4B20...02db
- **Value:** 1000000000000000000000

The transaction was successful and emitted a **Transfer event**.



MYTOKEN AT 0XD91...39138 (MEMORY)

Balance: 0 ETH

APPROVE

_spender: 0xAb8483F64d9C6d1EcF9b849Ae677dD3315835cb2

_value: 3000000000000000000

Calldata Parameters transact

TRANSFER

_to: 0xAb8483F64d9C6d1EcF9b849Ae677dD3315835cb2

_value: 1000000000000000000

Calldata Parameters transact

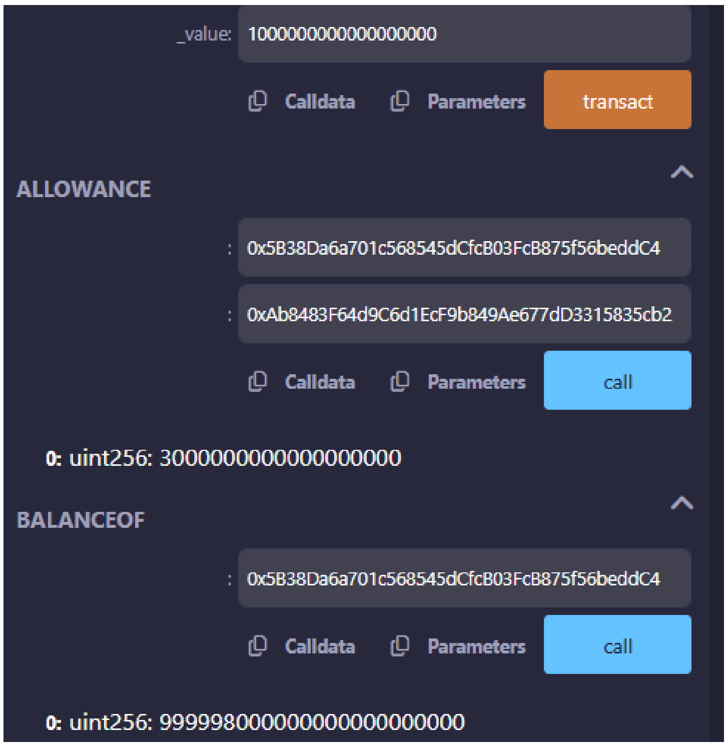
TRANSFERFROM

_from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

_to: 0x4B20993Bc481177ec7E8f571ceCaE8A9e22C02db

_value: 1000000000000000000

Calldata Parameters transact



_value: 1000000000000000000

Calldata Parameters transact

ALLOWANCE

: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

: 0xAb8483F64d9C6d1EcF9b849Ae677dD3315835cb2

Calldata Parameters call

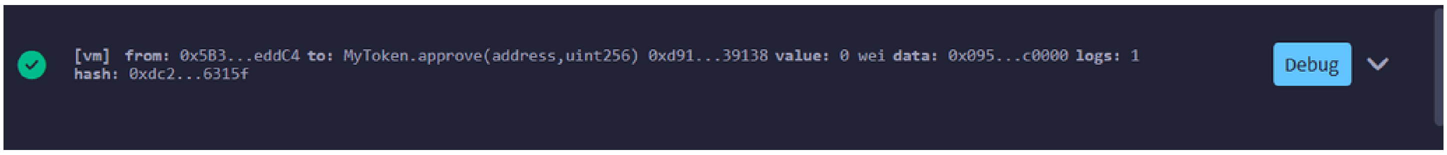
0: uint256: 3000000000000000000

BALANCEOF

: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

Calldata Parameters call

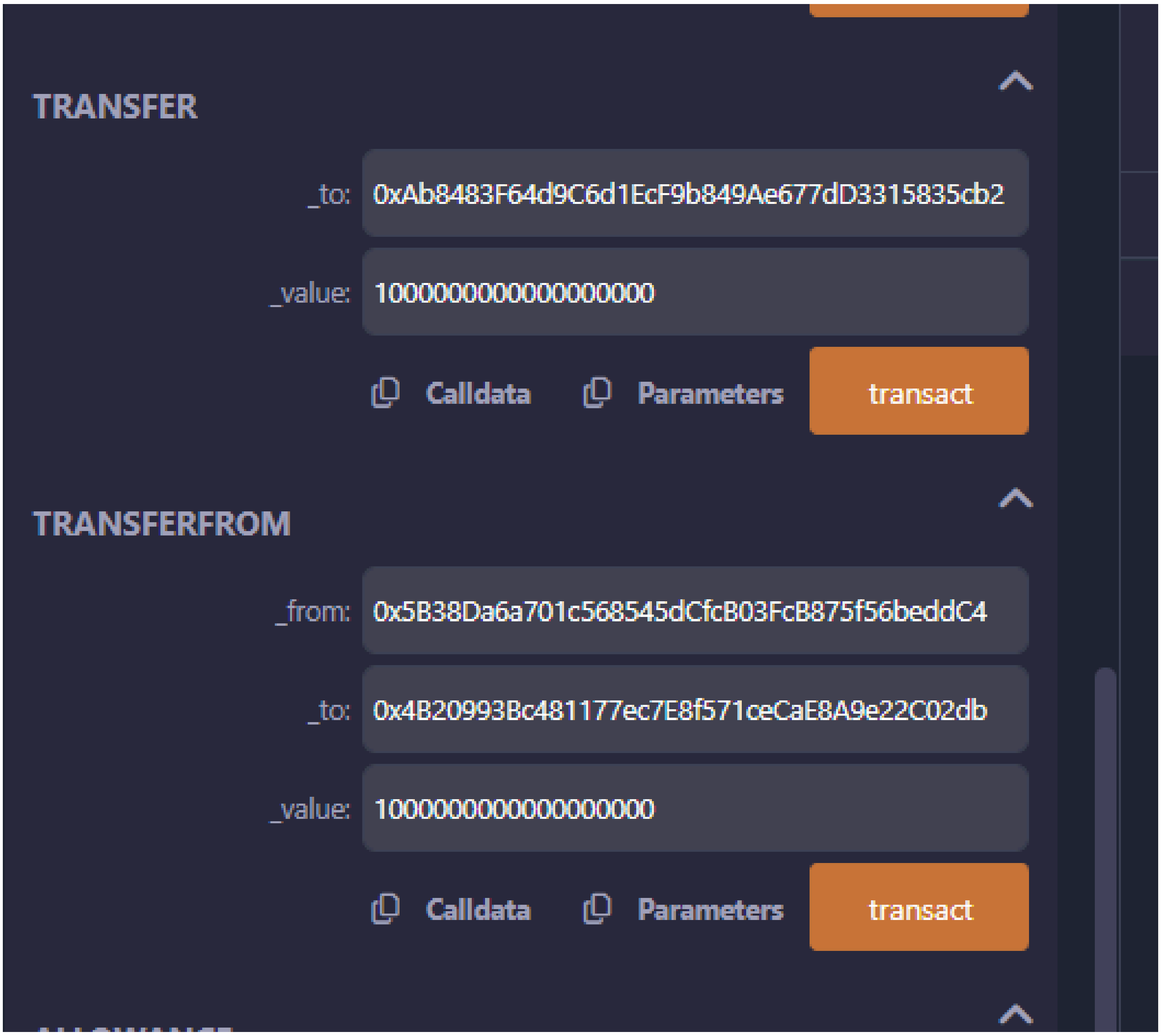
0: uint256: 999998000000000000000000



```
[vm] from: 0x5B3...eddC4 to: MyToken.approve(address,uint256) 0xd91...39138 value: 0 wei data: 0x095...c0000 logs: 1
hash: 0xdc2...6315f
```

Debug

5.6 transferFrom



TRANSFER

_to: 0xAb8483F64d9C6d1EcF9b849Ae677dD3315835cb2

_value: 1000000000000000000

Calldata Parameters transact

TRANSFERFROM

_from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

_to: 0x4B20993Bc481177ec7E8f571ceCaE8A9e22C02db

_value: 1000000000000000000

Calldata Parameters transact