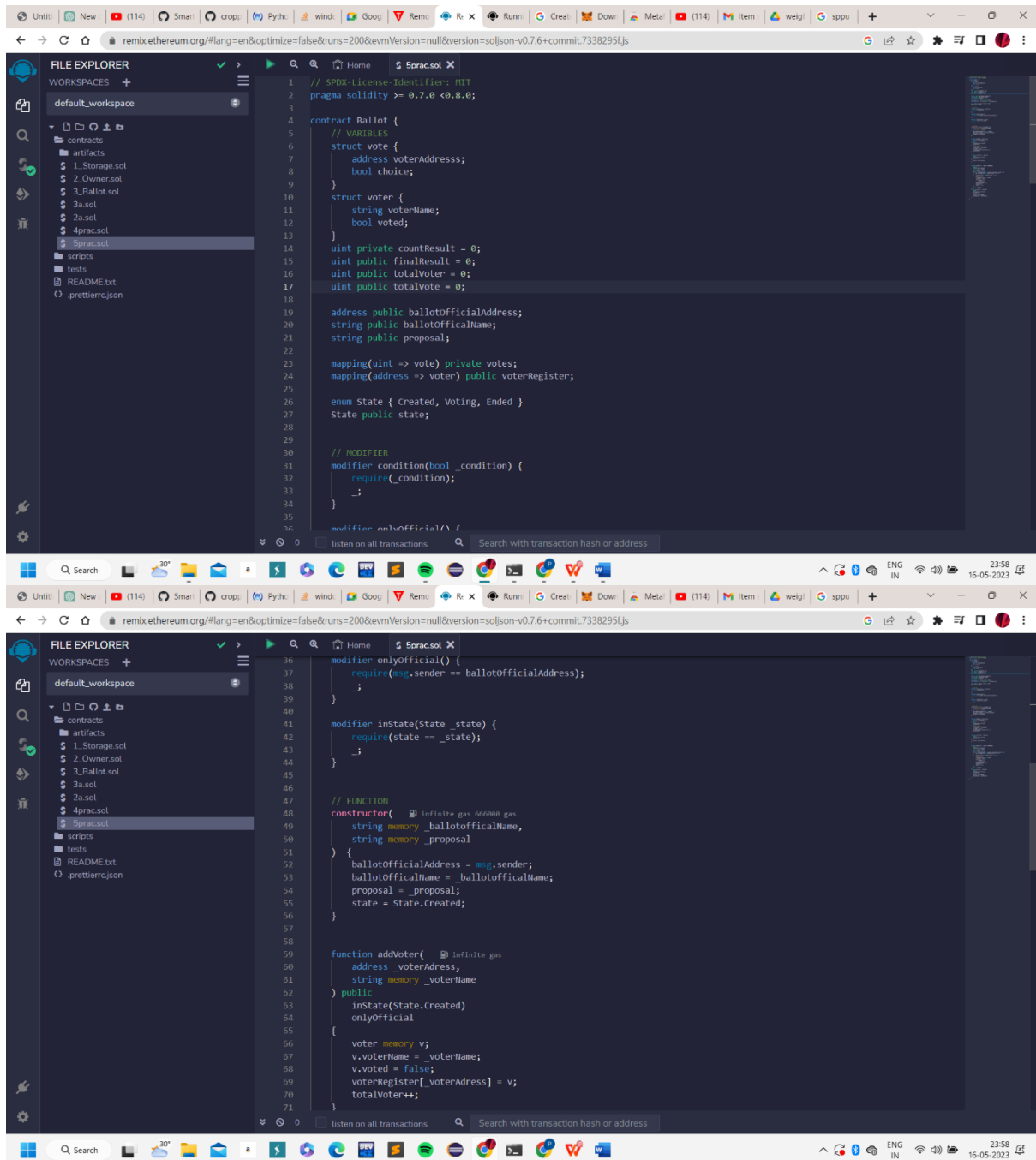


Assignment no.5

Polling / voting system using Solidity, Ethereum and a data structure hashmap(optional)



```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12        bool voted;
13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30    modifier condition(bool _condition) {
31        require(_condition);
32        _;
33    }
34
35    modifier onlyOfficial() {
36        require(msg.sender == ballotOfficialAddress);
37        _;
38    }
39
40
41    modifier inState(State _state) {
42        require(state == _state);
43        _;
44    }
45
46    // FUNCTION
47    constructor() {
48        // infinite gas 6660000 gas
49        string memory _ballotOfficialName;
50        string memory _proposal;
51        {
52            ballotOfficialAddress = msg.sender;
53            ballotOfficialName = _ballotOfficialName;
54            proposal = _proposal;
55            state = State.Created;
56        }
57    }
58
59    function addVoter(
60        address _voterAddress,
61        string memory _voterName
62    ) public {
63        inState(State.Created)
64        onlyOfficial
65        {
66            voter memory v;
67            v.voterName = _voterName;
68            v.voted = false;
69            voterRegister[_voterAddress] = v;
70            totalVoter++;
71        }
72    }
73}
```

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

FILE EXPLORER

WORKSPACES +

default_workspace

contracts

artifacts

1.Storage.sol

2.Owner.sol

3.Ballot.sol

3a.sol

2a.sol

4pracs.sol

5pracs.sol

scripts

tests

README.txt

.prettierrc.json

```
74 function startVote() 22849 gas
75 public
76   inState(State.Created)
77   onlyOfficial
78 {
79   state = State.Voting;
80 }
81
82
83
84
85 function doVote(bool _choice) 100819 gas
86 public
87   inState(State.Voting)
88   returns (bool voted)
89 {
90   bool isFound = false;
91   if(bytes(voterRegister[msg.sender].votername).length != 0
92     && voterRegister[msg.sender].voted == false )
93   {
94     voterRegister[msg.sender].voted = true;
95     vote memory v;
96     v.voterAddress = msg.sender;
97     v.choice = _choice;
98     if(_choice) {
99       countResult++;
100     }
101     votes[totalVote] = v;
102     totalVote++;
103     isFound = true;
104   }
105   return isFound;
106 }
107 function endVote() 43653 gas
108 public
109   inState(State.Voting)
110   onlyOfficial
111 {
112   state = State.Ended;
113   finalResult = countResult;
114 }
115 }
```

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

FILE EXPLORER

WORKSPACES +

default_workspace

contracts

artifacts

1.Storage.sol

2.Owner.sol

3.Ballot.sol

3a.sol

2a.sol

4pracs.sol

5pracs.sol

scripts

tests

README.txt

.prettierrc.json

```
87 returns (bool voted)
88 {
89   bool isFound = false;
90   if(bytes(voterRegister[msg.sender].votername).length != 0
91     && voterRegister[msg.sender].voted == false )
92   {
93     voterRegister[msg.sender].voted = true;
94     vote memory v;
95     v.voterAddress = msg.sender;
96     v.choice = _choice;
97     if(_choice) {
98       countResult++;
99     }
100     votes[totalVote] = v;
101     totalVote++;
102     isFound = true;
103   }
104   return isFound;
105 }
106 function endVote() 43653 gas
107 public
108   inState(State.Voting)
109   onlyOfficial
110 {
111   state = State.Ended;
112   finalResult = countResult;
113 }
114 }
115 }
```

Output:

The screenshot displays the Remix IDE interface, which is used for developing and deploying smart contracts on the Ethereum blockchain. The interface is divided into several panels:

- Left Panel (Environment):** Contains settings for the development environment. It shows "Remix VM (Shanghai)" as the environment, "0x5B3...eddC4 (99.999999%) as the account, and "3000000" as the gas limit. The value is set to "0" in Wei. The contract being deployed is "Ballot - contracts/5prac.sol".
- Center Panel (Code Editor):** Displays the Solidity code for the "Ballot" contract. The code includes a pragma statement for Solidity version, a contract definition with variables and functions, and a mapping for votes.
- Right Panel (Console):** Shows the execution results. A transaction was successfully executed, with the call data being "0x909...49747".

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12        bool voted;
13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30
```

The console output shows a successful transaction execution:

```
CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875F56beddC4 to: Ballot.ballotOfficialAddress() data: 0x909...49747
```

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

DEPLOY & RUN TRANSACTIONS

BALLOT AT 0XD91...39138 (MEM)

Balance: 0 ETH

addVoter

doVote

endVote

startVote

ballotOfficialN

ballotOfficialA

finalResult

proposal

state

totalVote

totalVoter

voterRegister

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12        bool voted;
13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30
```

CALL [call] from: 0x5838Da6a701c568545dCfcB03FcB875f56beddC4 to: Ballot.totalVote() data: 0xf1c...ea4c7

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

DEPLOY & RUN TRANSACTIONS

compilation result

Save Run

Deployed Contracts

BALLOT AT 0XD91...39138 (MEM)

Balance: 0 ETH

addVoter

doVote

endVote

startVote

ballotOfficialN

ballotOfficialA

finalResult

proposal

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12        bool voted;
13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30
```

[vm] from: 0x583...eddC4 to: Ballot.addVoter(address,string) 0xd91...39138 value: 0 wei data: 0xd9e...00000 logs: 0 hash: 0x5b4...f7bd0

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

DEPLOY & RUN TRANSACTIONS

startVote

ballotOfficialN

0: string: john

ballotOfficialA

0: address: 0x5B38Da6a701c56854dCfcB03Fc8875f56beddC4

finalResult

proposal

0: string: should i vote?

state

0: uint8: 0

totalVote

0: uint256: 0

totalVoter

voterRegister

0: string: voterName Kevin

1: bool: voted false

call

Low level interactions

CALLDATA

Transact

5prac.sol

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12        bool voted;
13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30
```

0 ☐ listen on all transactions

Search with transaction hash or address

CALL [call] from: 0x5B38Da6a701c56854dCfcB03Fc8875f56beddC4 to: Ballot.voterRegister(address) data: 0xaf1...35cb2

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

DEPLOY & RUN TRANSACTIONS

doVote

endVote

startVote

ballotOfficialN

0: string: john

ballotOfficialA

0: address: 0x5B38Da6a701c56854dCfcB03Fc8875f56beddC4

finalResult

proposal

0: string: should i vote?

state

0: uint8: 0

totalVote

0: uint256: 0

totalVoter

0: uint256: 2

voterRegister

0: string: voterName Kevin

1: bool: voted false

call

Low level interactions

CALLDATA

Transact

5prac.sol

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12        bool voted;
13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30
```

0 ☐ listen on all transactions

Search with transaction hash or address

CALL [call] from: 0x5B38Da6a701c56854dCfcB03Fc8875f56beddC4 to: Ballot.totalVoter() data: 0x633...2abc9

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

DEPLOY & RUN TRANSACTIONS ✓

Deployed Contracts

BALLOT AT 0xD91...39138 (MEM)

Balance: 0 ETH

addVoter

_voterAddress: 0x4B20993Bc481177ec7E8f571

_voterName: "David"

Calldata Parameters **transact**

doVote bool_choice

endVote

startVote startVote - transact (not payable)

ballotOfficialN

0: string: john

ballotOfficialA

0: address: 0x5B38Da6a701c56854dCfC803FcB875f56beddC4

finalResult

proposal

0: string: should i vote?

state

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12        bool voted;
13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30}
```

CALL [call] from: 0x5B38Da6a701c56854dCfC803FcB875f56beddC4 to: Ballot.totalVoter() data: 0x633...2abc9

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

DEPLOY & RUN TRANSACTIONS ✓

Deployed Contracts

BALLOT AT 0xD91...39138 (MEM)

Balance: 0 ETH

addVoter

_voterAddress: 0x4B20993Bc481177ec7E8f571

_voterName: "David"

Calldata Parameters **transact**

doVote

_choice: true

Calldata Parameters **transact** doVote - transact (not payable)

endVote

startVote

ballotOfficialN

0: string: john

ballotOfficialA

0: address: 0x5B38Da6a701c56854dCfC803FcB875f56beddC4

finalResult

proposal

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
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13    }
14    uint private countResult = 0;
15    uint public finalResult = 0;
16    uint public totalVoter = 0;
17    uint public totalVote = 0;
18
19    address public ballotOfficialAddress;
20    string public ballotOfficialName;
21    string public proposal;
22
23    mapping(uint => vote) private votes;
24    mapping(address => voter) public voterRegister;
25
26    enum State { Created, Voting, Ended }
27    State public state;
28
29    // MODIFIER
30}
```

[vm] from: 0xAb8...35cb2 to: Ballot.doVote(bool) 0xd91...39138 value: 0 wei data: 0x87c...00001 logs: 0 hash: 0xfac...ed02f

UnittlNew (114)SmartcropPythowindGoogRemoReRunniCreatDownMetal (114)Itemweiglsppu

remix.ethereum.org/#lang=en&optimize=false&runs=200&evmVersion=null&version=soljson-v0.7.6+commit.7338295f.js

DEPLOY & RUN TRANSACTIONS

Deployed Contracts

BALLOT AT 0XD91...39138 (MEM)

Balance: 0 ETH

addVoter

..voterAddress:0x4B20993Bc481177ec7E8f571

..voterName:"David"

CalldataParameterstransact

doVote

..choice:true

CalldataParameterstransact

endVote

startVote

ballotOfficialN

0: string: john

ballotOfficialA

0: address: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

finalResult

proposal

5prac.sol

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity >= 0.7.0 <0.8.0;
3
4 contract Ballot {
5     // VARIABLES
6     struct vote {
7         address voterAddress;
8         bool choice;
9     }
10    struct voter {
11        string voterName;
12    }
13 }
```

listen on all transactions

Search with transaction hash or address

[vm] from: 0x583...eddC4 to: Ballot.addVoter(address,string) 0xd91...39138 value: 0 wei data: 0xd9e...00000 logs: 0 hash: 0x6cf...4a6ef

call to Ballot.totalVote

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: Ballot.totalVote() data: 0xf1c...ea4c7

call to Ballot.totalVoter

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: Ballot.totalVoter() data: 0x633...2abc9

transact to Ballot.startVote pending ...

[vm] from: 0x583...eddC4 to: Ballot.startVote() 0xd91...39138 value: 0 wei data: 0x4c0...a6af0 logs: 0 hash: 0xe19...ff9b6

transact to Ballot.doVote pending ...

[vm] from: 0xAb8...35cb2 to: Ballot.doVote(bool) 0xd91...39138 value: 0 wei data: 0x87c...00000 logs: 0 hash: 0x2b1...2d659

transact to Ballot.doVote pending ...

[vm] from: 0xAb8...35cb2 to: Ballot.doVote(bool) 0xd91...39138 value: 0 wei data: 0x87c...00001 logs: 0 hash: 0xfac...ed02f

Search

30°

ENG IN