



TP – Smart Contract

Présenté par :

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Classe A2MSI – La blockchain 1

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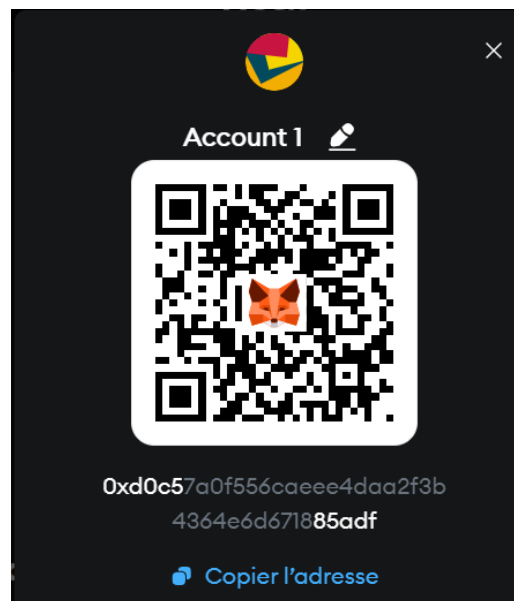
PARIS

2024/2025

1. Prise en main des outils Remix et Metamask

Clé publique de mon portefeuille MetaMask :

0xD0C57A0F556cAeeE4daa2f3b4364e6D671885AdF



g. Voici les détails de la transaction générée sur mon compte :

Transaction Details

Overview

State

[This is a Sepolia Testnet transaction only]

Transaction Hash:	0xb9c1a38c48a3146a567a76895d6d12d1ba28aac337cf3a9ff6afb365349dbafc
Status:	Success
Block:	8000193 7 Block Confirmations
Timestamp:	1 min ago (Mar-28-2025 02:27:12 PM UTC)
From:	0x2a88690AaBB7fC771970A27Cf0784f500cF3aEa5
To:	0xD0C57A0F556cAeeE4daa2f3b4364e6D671885AdF
Value:	0.01 ETH
Transaction Fee:	0.000032679213189 ETH
Gas Price:	1.556153009 Gwei (0.000000001556153009 ETH)

h. Voici les détails de Block :

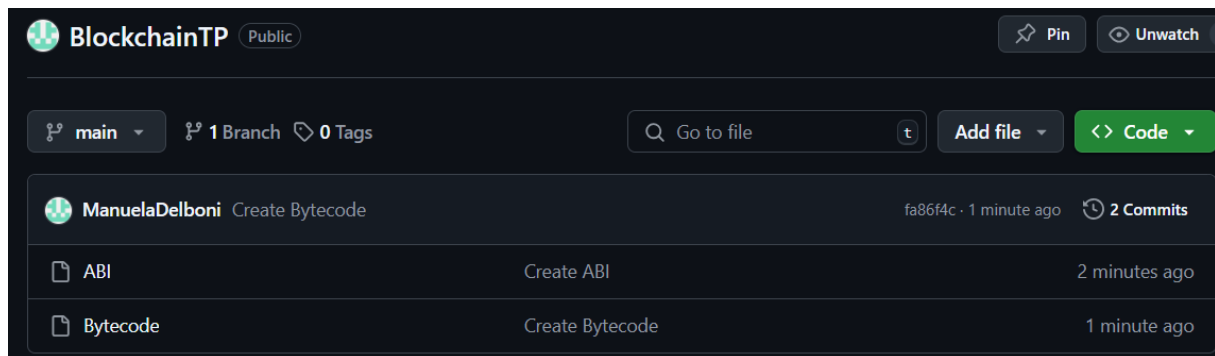
The screenshot shows the Etherscan interface for Block #8000193. The block is identified as a Sepolia Testnet block. Key details include:

- Block Height:** 8000193
- Status:** Unfinalized
- Timestamp:** 2 mins ago (Mar-28-2025 02:27:12 PM +UTC)
- Proposed On:** Block proposed on slot 7286536, epoch 227704
- Transactions:** 209 transactions and 27 contract internal transactions in this block
- Withdrawals:** 16 withdrawals in this block
- Fee Recipient:** 0x6a7aA9b882d50Bb7bc5Da1a244719C99f12F06a3 (in 12 secs)
- Block Reward:** 0.013564806569863194 ETH (0 + 0.014816723811112935 - 0.001251917241249741)
- Total Difficulty:** 0
- Size:** 118,005 bytes
- Gas Used:** 22,294,749 (61.99%) +24% Gas Target
- Gas Limit:** 35,964,775
- Base Fee Per Gas:** 0.000000000056153009 ETH (0.056153009 Gwei)
- Burnt Fees:** 0.001251917241249741 ETH
- Extra Data:** 0xgethgo1.24.1linux (Hex:0xd883010f0684676574688676f312e32342e31856c696e7578)

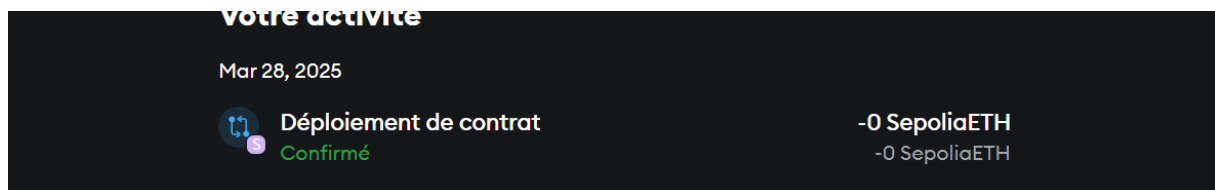
m. Après avoir cloné le code source donné et de l'avoir ajouté dans l'environnement Remix, j'ai compilé le *smart contract* « Election ». J'ai sauvegardé l'ABI et le Bytecode dans un fichier local mais également dans GitHub.

Voici les captures d'écran de la compilation réalisée ainsi que l'ABI et le Bytecode généré :

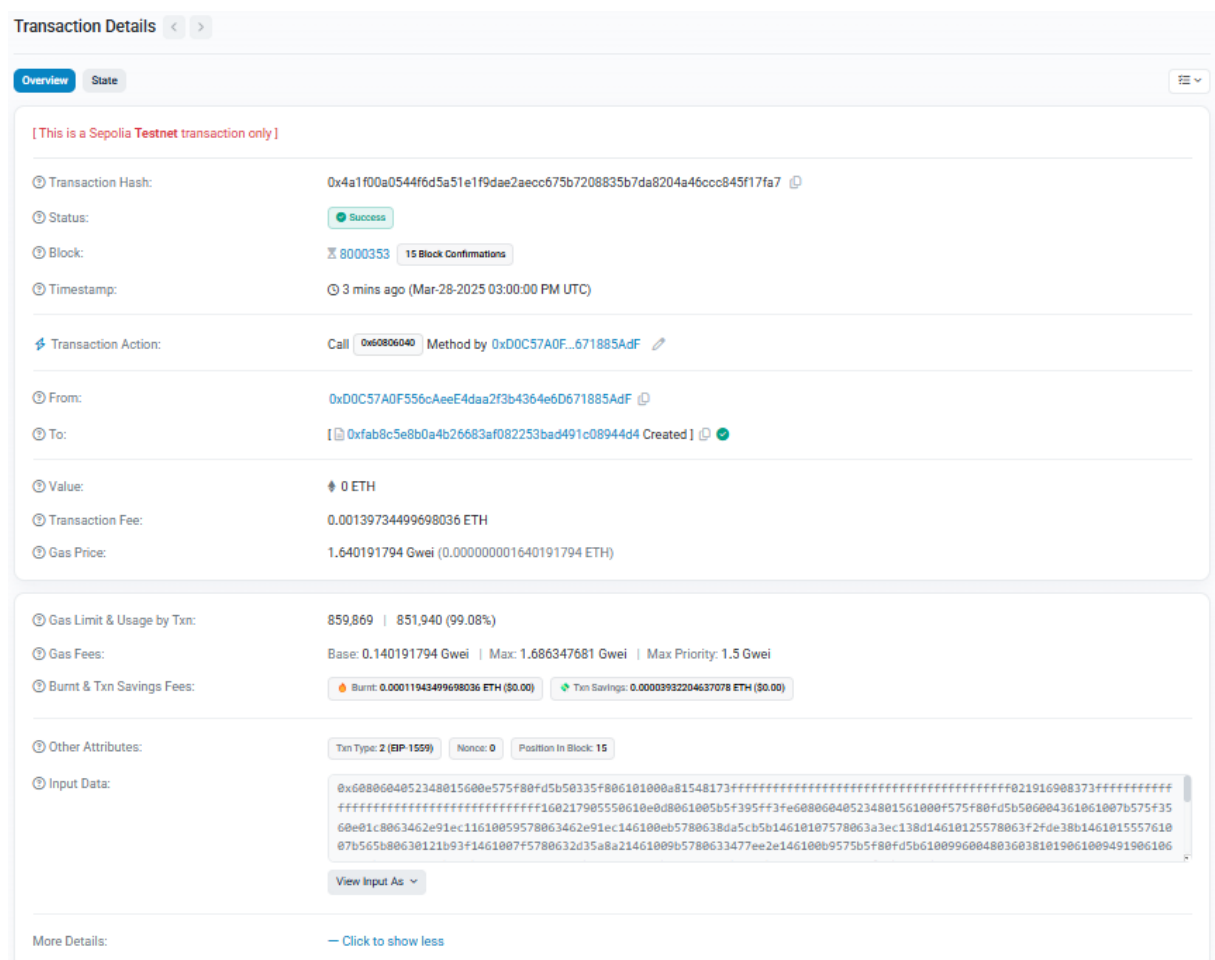
The screenshot displays the Solidity Compiler interface in the Remix IDE. The contract being compiled is `Election.sol`. The compiler settings are set to `0.8.26+commit.8a97fa7a`. The compilation process is shown as completed, with the ABI and Bytecode generated and available for download. The generated code is visible in the editor, showing the `Election` contract structure and its methods.



n. Déploiement du smart contract « Election.sol » sur le réseau :



Voici les détails de la transaction :



ⓘ A transaction is a cryptographically signed instruction that changes the blockchain state. Block explorers track the details of all transactions in the network. Learn more about transactions in our [Knowledge Base](#).

Justifier les frais de transactions « Transaction fees » que vous avez payés. Sont-elles identiques à celle de la précédente transaction ?

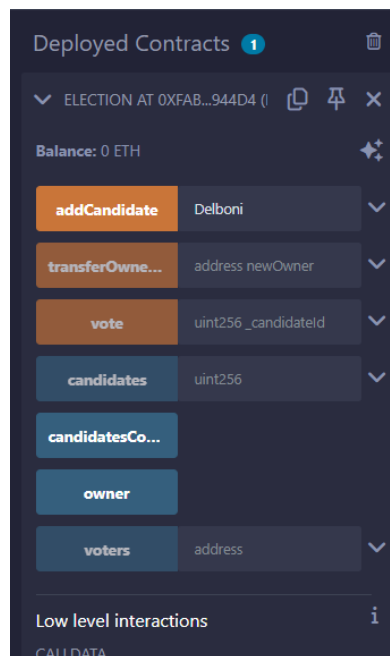
Les *transactions fees* sont de « 0.00139734499698036 ETH », ce frais pour le déploiement du smart contract est plus élevée que celle de la transaction précédente, qui était de « 0.000032679213189 ETH », donc elles ne sont pas identiques. Cela peut être dû à la différence de complexité entre les deux actions.

Quelle est l'adresse public de votre smart contract ?

Voici l'adresse public du *smart contract* :

0xFab8c5E8B0A4b26683Af082253bad491c08944D4

o. Ajout du premier candidat :



p. Détails de la transaction de l'ajout du premier candidat :

Transaction Details < >

Overview State

[This is a Sepolia Testnet transaction only]

Transaction Hash:

0xa4e8e3754630b00cfbbd3c800b487410a246812cc30c6dbcd3d5481243595f04

Status:

Success

Block:

8000455 3 Block Confirmations

Timestamp:

29 secs ago (Mar-28-2025 03:20:36 PM UTC)

Transaction Action:

Call Add Candidate Function by 0xD0C57A0F...671885AdF on 0xFab8c5E8...1c08944D4

From:

0xD0C57A0F556cAeeE4daa2f3b4364e6D671885AdF

To:

0xFab8c5E8B0A4b26683Af082253bad491c08944D4

Value:

0 ETH

Transaction Fee:

0.00012360530383026 ETH

Gas Price:

1.601187935 Gwei (0.000000001601187935 ETH)

Gas Limit & Usage by Txn:

78,085 | 77,196 (98.86%)

Gas Fees:

Base: 0.101187935 Gwei | Max: 1.639765401 Gwei | Max Priority: 1.5 Gwei

Burnt & Txn Savings Fees:

Burnt: 0.00000781130383026 ETH (\$0.00) Txn Savings: 0.000002978026065336 ETH (\$0.00)

Other Attributes:

Txn Type: 2 (EIP-1559) Nonce: 2 Position In Block: 75

Input Data:

Function: addCandidate(string name) ***

MethodID: 0x462e91ec

[0]: 00

[1]: 0004

[2]: 4772617300

View Input As

Decode Input Data

View In Decoder

More Details:

Click to show less

s. Valeur du deuxième *CandidateID* sur Remix :

candidates

2

0: uint256: id 2

1: string: name Gras

2: uint256: voteCount 0

t. Adresse du propriétaire du contrat : 0xD0C57A0F556cAeeE4daa2f3b4364e6D671885AdF

owner

0: address: 0xD0C57A0F556cAeeE4daa2f3b4364e6D671885AdF

u. Premier vote pour l'un des candidats à travers Remix :

Transaction Details < >

Overview Logs (1) State

[This is a Sepolia Testnet transaction only]

Transaction Hash:

0x81e9b771e9124261d32cbcc5a6f0e9a2c2ac4daeb0722636ab19c4c72e1ef759

Status:

Success

Block:

8000488 1 Block Confirmation

Timestamp:

6 secs ago (Mar-28-2025 03:27:12 PM UTC)

Transaction Action:

Call ☒ Vote Function by 0xD0C57A0F...671885AdF on 0xFab8c5E8...1c08944D4

From:

0xD0C57A0F556cAeeE4daa2f3b4364e6D671885AdF

To:

0xFab8c5E8B0A4b26683Af082253bad491c08944D4

Value:

0 ETH

Transaction Fee:

0.00010962982200492 ETH

Gas Price:

1.57179879 Gwei (0.00000000157179879 ETH)

Gas Limit & Usage by Txn:

70,608 | 69,748 (98.78%)

Gas Fees:

Base: 0.07179879 Gwei | Max: 1.613888642 Gwei | Max Priority: 1.5 Gwei

Burnt & Txn Savings Fees:

Burnt: 0.00000900782200492 ETH (\$0.00)

Txn Savings: 0.000002935682997296 ETH (\$0.00)

Other Attributes:

Txn Type: 2 (EIP-1559)

Nonce: 3

Position In Block: 48

Input Data:

Function: vote(uint256 yes) ***

MethodID: 0x0121b93f

[0]: 0001

View Input As Decode Input Data View In Decoder

More Details:

Click to show less

v. Vérification que le vote a été pris en compte sur le candidat 1 :

candidates

1

▼

0: uint256: id 1

1: string: name Delboni

2: uint256: voteCount 1

candidates

2

▼

0: uint256: id 2

1: string: name Gras

2: uint256: voteCount 0

w. Après avoir fourni l'adresse de mon contrat à Clémence, elle a réalisé un vote :

candidates

1

▼

0: uint256: id 1

1: string: name Delboni

2: uint256: voteCount 2

candidates

2

▼

0: uint256: id 2

1: string: name Gras

2: uint256: voteCount 0

x. Transfert de la propriété à Clémence :

Transaction Details

OverviewLogs (1)State

[This is a Sepolia Testnet transaction only]

Transaction Hash:

0xcdf115283295835b92d7db89a01a562c2d4b6c6dd830b98c7f629867c6514bbe

Status:

Success

Block:

80005261 Block Confirmation

Timestamp:

5 secs ago (Mar-28-2025 03:35:00 PM UTC)

Transaction Action:

CallTransfer OwnershipFunction by 0xD0C57A0F...671885AdF on 0xFab8c5E8...1c08944D4

From:

0xD0C57A0F556cAeeE4daa2f3b4364e6D671885AdF

To:

0xFab8c5E8B0A4b26683Af082253bad491c08944D4

Value:

0 ETH

Transaction Fee:

0.00004481673533874 ETH

Gas Price:

1.551288866 Gwei (0.000000001551288866 ETH)

Gas Limit & Usage by Txn:

29,238 | 28,890 (98.81%)

Gas Fees:

Base: 0.051288866 Gwei | Max: 1.573819974 Gwei | Max Priority: 1.5 Gwei

Burnt & Txn Savings Fees:

Burnt: 0.00000148173533874 ETH (\$0.00)Txn Savings: 0.00000065092371012 ETH (\$0.00)

Other Attributes:

Txn Type: 2 (BIP-1559)Nonce: 5Position In Block: 41

Input Data:

Function: transferOwnership(address newOwner) ***
MethodID: 0xf2fde38b
[0]: 00000000000000000000000093577d30ee25166f5433bb1fdd4bf86d8feaa194

More Details:

Click to show less

A transaction is a cryptographically signed instruction that changes the blockchain state. Block explorers track the details of all transactions in the network. Learn more about transactions in our Knowledge Base.

Nous pouvons voir donc que l'adresse du propriétaire a changé : 0x93577D30eE25166f5433BB1fDd4Bf86D8FEAA194

