



SavingsVault | Simple ETH Smart Contract

Solidity Blockchain Dev

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1 Application Description

This project consists of a very simple smart contract called SavingsVault.

The idea is straightforward: the contract allows ETH to be deposited and later withdrawn. Any user can deposit ETH, but only the contract owner (defined at deployment) can withdraw the funds.

The goal of this project is not to build a complex application, but to demonstrate the basic use of Solidity and how to deploy and interact with a smart contract on the Ethereum blockchain.

2 Implementation

2.1 List of Functions

`constructor()`

- Function name: constructor
- Purpose: Sets the address that deploys the contract as the owner.
- Input Parameters: None
- Return Type: None
- Access modifier: n/a

`deposit()`

- Function name: deposit
- Purpose: Allows ETH to be sent to the contract.
- Input Parameters: None (ETH is sent using msg.value)
- Return Type: None
- Access modifier: external payable

`withdrawAll()`

- Function name: withdrawAll
- Purpose: Allows the owner to withdraw all ETH stored in the contract.
- Input Parameters: None
- Return Type: None
- Access modifier: external

`getVaultBalance()`

- Function name: getVaultBalance
- Purpose: Returns the current balance of the contract.
- Input Parameters: None
- Return Type: uint256
- Access modifier: external view

2.2 Events & Validations

Events

- **FundsDeposited**
Emitted when ETH is deposited into the contract.
- **FundsWithdrawn**
Emitted when ETH is withdrawn by the owner.

Validations

The require() function is used to keep the contract logic simple and safe:

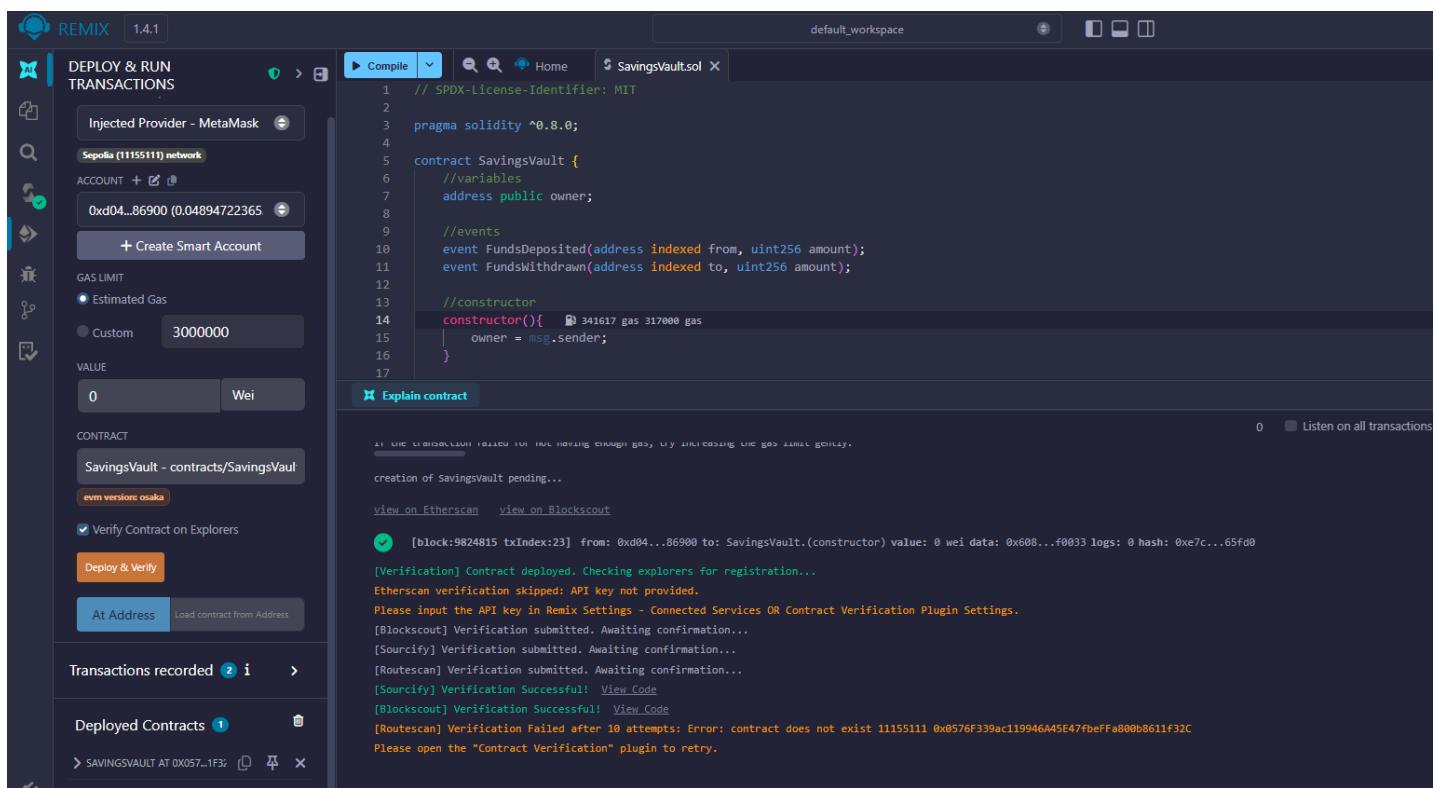
- To avoid depositing zero ETH;
- To make sure only the owner can withdraw from the contract;
- To avoid withdrawing when there are no funds available.

3 Testing

The contract was tested using the Remix IDE and deployed on the Sepolia test network with MetaMask.

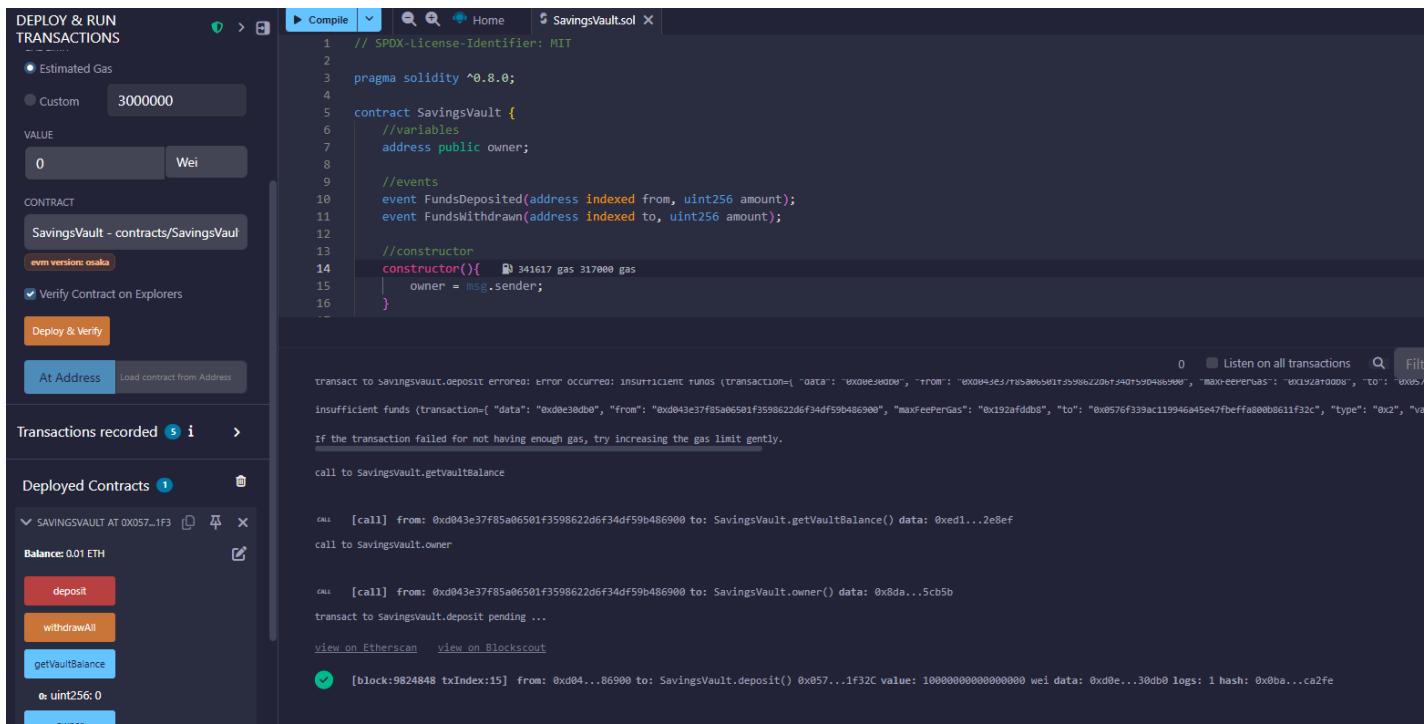
Testing included:

- Compiling and deploying the contract;



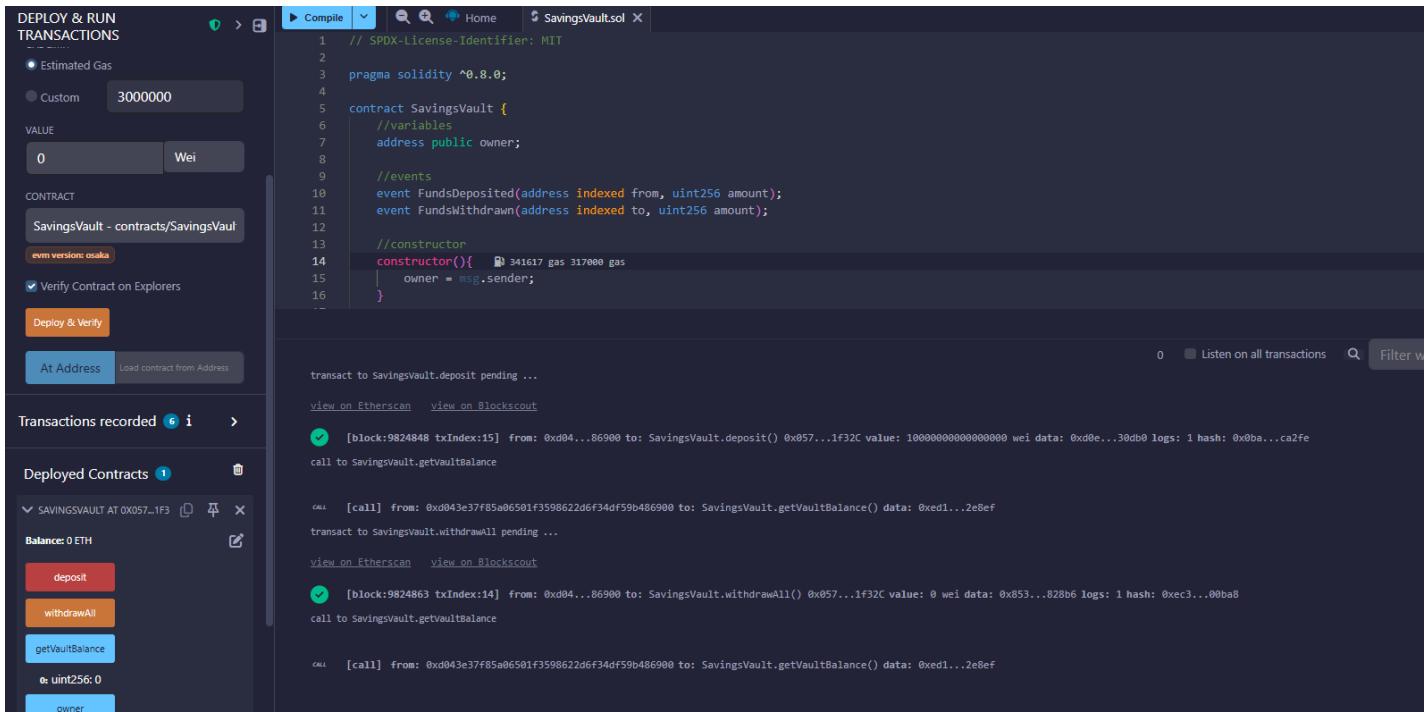
Img 1 - 01_deploy_savingsvault_sepolia

- Calling the deposit() function with test ETH;



Img 2 - 02_deposit_savingsvault_sepolia

- Calling the withdrawAll() function;



Img 3 - 03_withdrawAll_savingsvault_sepolia

- Verifying transactions on Sepolia Etherscan.

The screenshot shows the Etherscan interface for a specific contract. At the top, there's a navigation bar with links to Home, Blockchain, Tokens, NFTs, and More. Below the navigation is a search bar with the text "Contract 0x0576F339ac119946A45E47fbeFFa800b8611f32C". The main content area is divided into three sections: Overview, More Info, and Multichain Info. The Overview section shows an ETH Balance of 0 ETH. The More Info section shows the Contract Creator as 0xd043E37f...59B486900, created 13 mins ago. The Multichain Info section says N/A. Below these sections is a tab bar with "Transactions" selected, followed by Internal Transactions, Token Transfers (ERC-20), Contract, and Events. The Transaction section displays two recent transactions: one withdrawal of 0 ETH from block 9824863 and one deposit of 0.01 ETH to the same block. There are buttons for "Download Page Data" and "CSV Export".

Img 4 - 04_ETHERSCAN_SAVINGSVAULT_SEPOLIA

This screenshot shows the Etherscan interface for a newly created contract. The layout is identical to the previous one, with a navigation bar, a search bar for the contract address 0x0576F339ac119946A45E47fbeFFa800b8611f32C, and three main sections: Overview, More Info, and Multichain Info. The Overview section shows an ETH Balance of 0 ETH. The More Info section shows the Contract Creator as 0xd043E37f...59B486900, created 13 mins ago. The Multichain Info section says N/A. The Transaction section below shows the same two transactions as in Img 4.

Img 5 - 05_ETHERSCAN_CONTRACT_CREATION

This screenshot shows the Etherscan interface for a specific contract, likely the one created in Img 5. The layout is similar, with a navigation bar, a search bar for the contract address 0x0576F339ac119946A45E47fbeFFa800b8611f32C, and three main sections: Overview, More Info, and Multichain Info. The Overview section shows an ETH Balance of 0 ETH. The More Info section shows the Contract Creator as 0xd043E37f...59B486900, created 13 mins ago. The Multichain Info section says N/A. The Transaction section below shows the same two transactions as in Img 4 and Img 5.

Img 6 - 06_ETHERSCAN_TRANSACTIONS