Etherscan

In this article, you'll learn about Etherscan, a blockchain explorer to inspect the Blockchain state and activity.

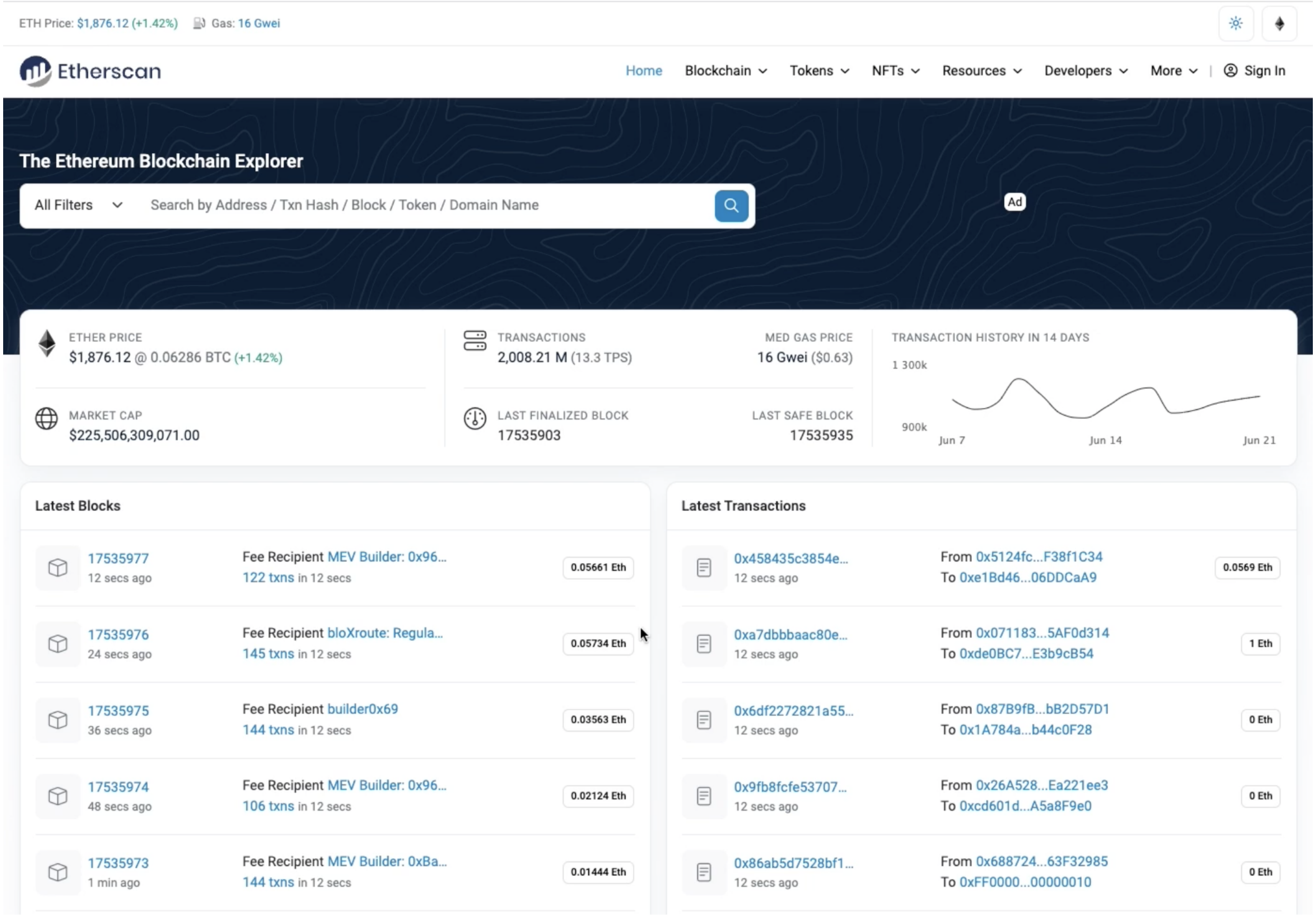
Objectives

By the end of this lesson, you should be able to:

- List some of the features of Etherscan
- Read data from the Bored Apes Yacht Club contract on Etherscan
- Write data to a contract using Etherscan.

Overview

Etherscan is a popular Blockchain explorer that works for several different networks. In it, you can explore the state and activity of a particular network.


ETH Price: $1,876.12 (+1.42%)
Gas: 16 Gwei
Etherscan
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The Ethereum Blockchain Explorer
All Filters
Search by Address / Txn Hash / Block / Token / Domain Name
Ad
TRANSACTION HISTORY IN 14 DAYS
1 300k
900k
Jun 7
Jun 14
Jun 21

ETHER PRICE
$1,876.12 @ 0.06286 BTC (+1.42%)

TRANSACTIONS
2,008.21 M (13.3 TPS)

MED GAS PRICE
16 Gwei ($0.63)

MARKET CAP
$225,506,309,071.00

LAST FINALIZED BLOCK
17535903

LAST SAFE BLOCK
17535935

Latest Blocks

17535977 12 secs ago	Fee Recipient MEV Builder: 0x96... 122 txns in 12 secs	0.05661 Eth
17535976 24 secs ago	Fee Recipient bloXroute: Regula... 145 txns in 12 secs	0.05734 Eth
17535975 36 secs ago	Fee Recipient builder0x69 144 txns in 12 secs	0.03563 Eth
17535974 48 secs ago	Fee Recipient MEV Builder: 0x96... 106 txns in 12 secs	0.02124 Eth
17535973 1 min ago	Fee Recipient MEV Builder: 0xBa... 144 txns in 12 secs	0.01444 Eth

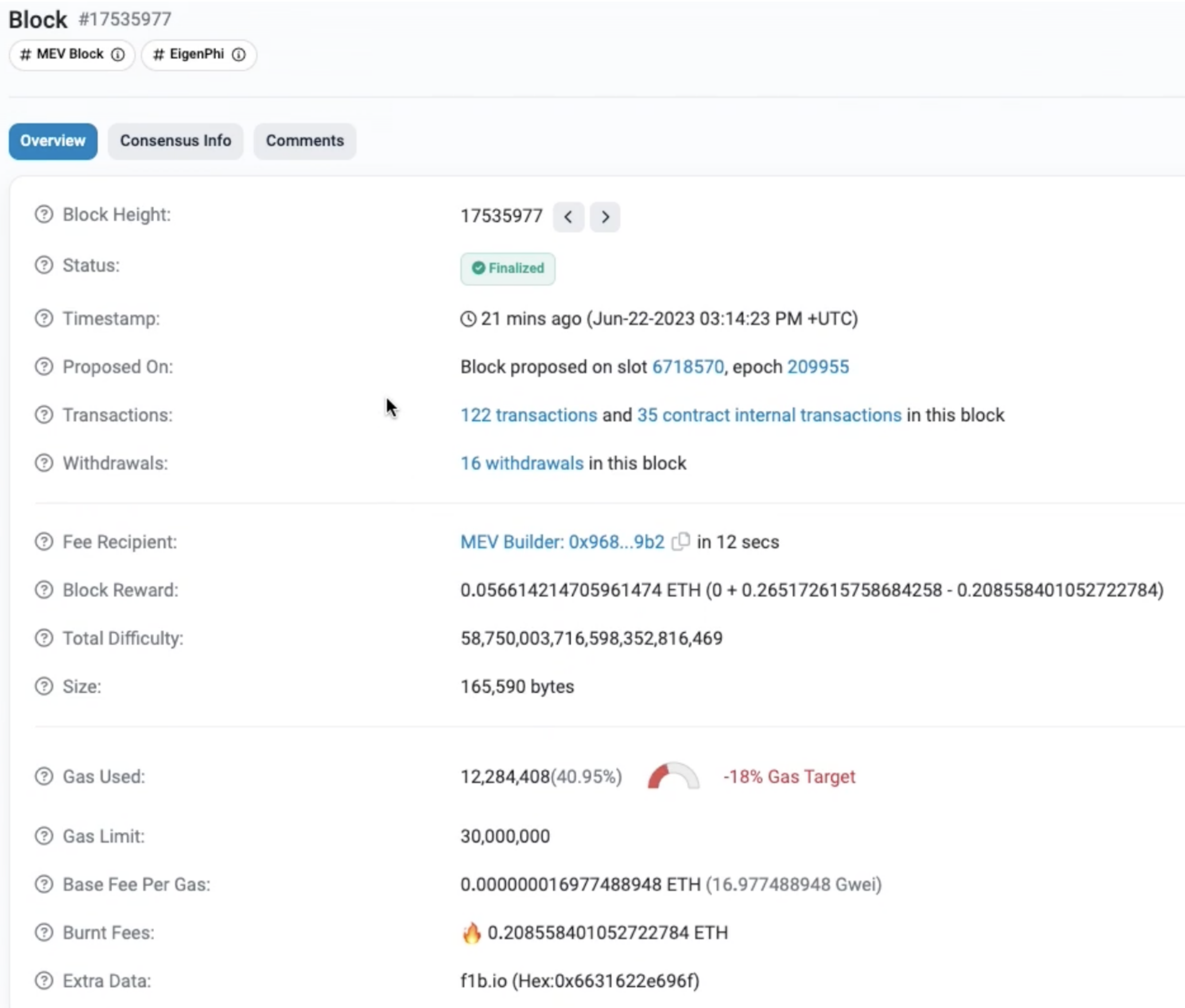
Latest Transactions

0x458435c3854e... 12 secs ago	From 0x5124fc...F38f1C34 To 0xe1Bd46...06DDCaA9	0.0569 Eth
0xa7dbbbaac80e... 12 secs ago	From 0x071183...5AF0d314 To 0xde0BC7...E3b9cB54	1 Eth
0x6df2272821a55... 12 secs ago	From 0x87B9fB...bB2D57D1 To 0x1A784a...b44c0F28	0 Eth
0x9fb8fcfe53707... 12 secs ago	From 0x26A528...Ea221ee3 To 0xcd601d...A5a8F9e0	0 Eth
0x86ab5d7528bf1... 12 secs ago	From 0x688724...63F32985 To 0xFF0000...00000010	0 Eth

You can explore:

- Blocks
- Transactions
- Smart contracts
- And more!

For instance, the following shows the details of a Block:



Block #17535977

MEV Block # EigenPhi

Block Height: 17535977

Status: Finalized

Timestamp: 21 mins ago (Jun-22-2023 03:14:23 PM +UTC)

Proposed On: Block proposed on slot 6718570, epoch 209955

Transactions: 122 transactions and 35 contract internal transactions in this block

Withdrawals: 16 withdrawals in this block

Fee Recipient: MEV Builder: 0x968...9b2 in 12 secs

Block Reward: 0.056614214705961474 ETH (0 + 0.265172615758684258 - 0.208558401052722784)

Total Difficulty: 58,750,003,716,598,352,816,469

Size: 165,590 bytes

Gas Used: 12,284,408(40.95%) -18% Gas Target

Gas Limit: 30,000,000

Base Fee Per Gas: 0.000000016977488948 ETH (16.977488948 Gwei)

Burnt Fees: 🔥 0.208558401052722784 ETH

Extra Data: f1b.io (Hex:0x6631622e696f)

Where you see information such as:

Timestamp
Transactions
Block height
And other details

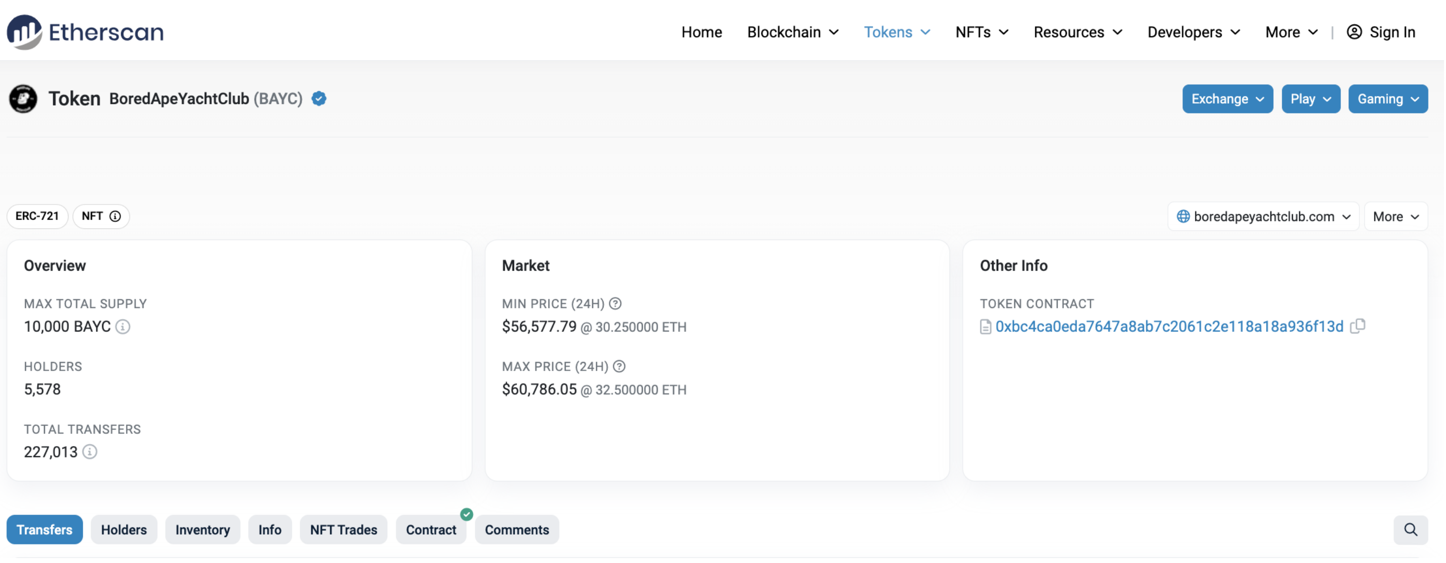
There are many variations of Etherscan for different networks. For example:

Base
Base Sepolia
Sepolia Etherscan

Reading data from smart contracts using Etherscan

One of the things you can do with Etherscan is interact with already-deployed contracts.

For example, if you want to read information from a famous contract such as BAYC, you can simply go to Etherscan and explore the contract:



Token BoredApeYachtClub (BAYC)

Overview

MAX TOTAL SUPPLY
10,000 BAYC

HOLDERS
5,578

TOTAL TRANSFERS
227,013

Market

MIN PRICE (24H)
$56,577.79 @ 30.250000 ETH

MAX PRICE (24H)
$60,786.05 @ 32.500000 ETH

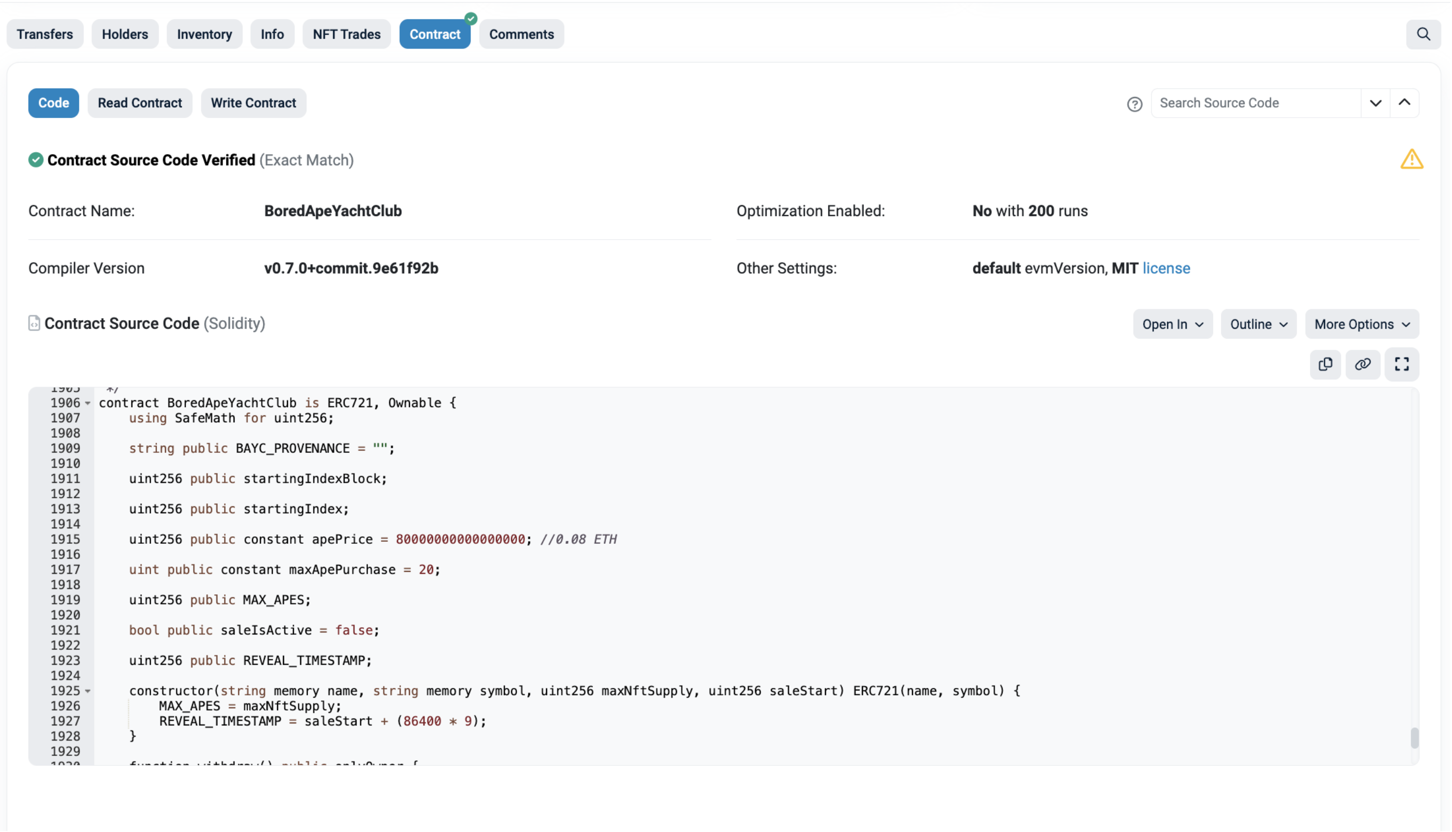
Other Info

TOKEN CONTRACT
0xbc4ca0eda7647a8ab7c2061c2e118a18a936f13d

You are able to see information such as:

The ETH balance it holds
The contract creator
The transaction when it was created
Latest transactions
And the verified contract

In the Contract tab, you can see the full source code of BAYC:



Contract Source Code Verified (Exact Match)

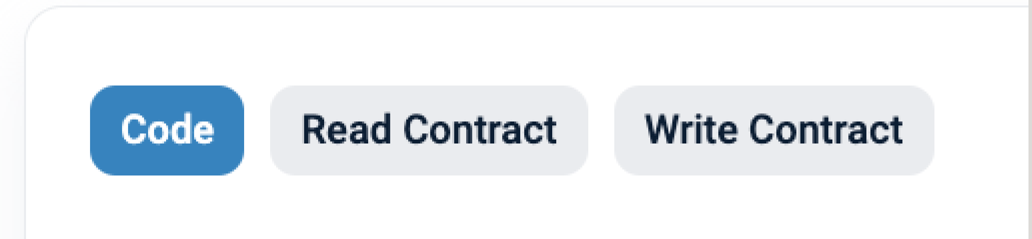
Contract Name: BoredApeYachtClub
Optimization Enabled: No with 200 runs
Compiler Version v0.7.0+commit.9e61f92b
Other Settings: default evmVersion, MIT license

Contract Source Code (Solidity)

```
 */
contract BoredApeYachtClub is ERC721, Ownable {
    using SafeMath for uint256;

    string public BAYC_PROVENANCE = "";

    uint256 public startingIndexBlock;

    uint256 public startingIndex;

    uint256 public constant apePrice = 80000000000000000; //0.08 ETH

    uint public constant maxApePurchase = 20;

    uint256 public MAX_APES;

    bool public saleIsActive = false;

    uint256 public REVEAL_TIMESTAMP;

    constructor(string memory name, string memory symbol, uint256 maxNftSupply, uint256 saleStart) ERC721(name, symbol) {
        MAX_APES = maxNftSupply;
        REVEAL_TIMESTAMP = saleStart + (86400 * 9);
    }

    function withdraw() public onlyOwner {
```

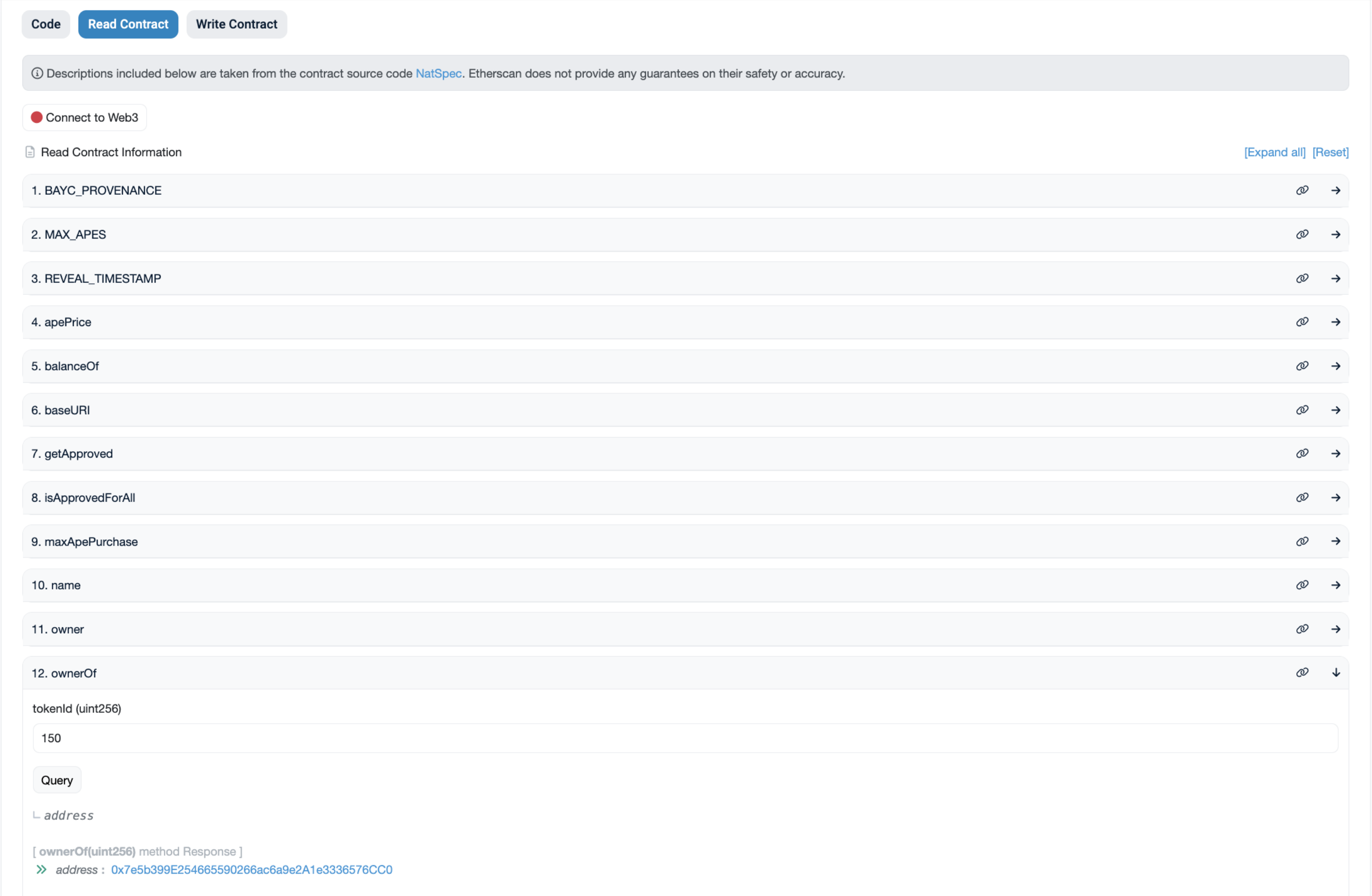
For a developer, verifying contracts is important since it gives transparency to your users. However, there are some risks because this means that bad actors can see the full source code and can try to exploit it.

In order to read the state of the BAYC, you can go to the main menu and select the option Read Contract:



After you select that option, you are able to see all of the read functions of the contract.

You can also query who is the owner of the BAYC with id 150:



ⓘ Descriptions included below are taken from the contract source code NatSpec. Etherscan does not provide any guarantees on their safety or accuracy.

Read Contract Information

1. BAYC_PROVENANCE
2. MAX_APES
3. REVEAL_TIMESTAMP
4. apePrice
5. balanceOf
6. baseURI
7. getApproved
8. isApprovedForAll
9. maxApePurchase
10. name
11. owner
12. ownerOf

tokenId (uint256)

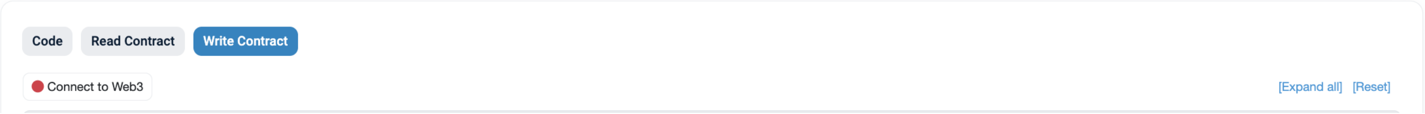
150

```
└ address

[ ownerOf(uint256) method Response ]
>> address : 0x7e5b399E254665590266ac6a9e2A1e3336576CC0
```

Writing data to smart contracts using Etherscan

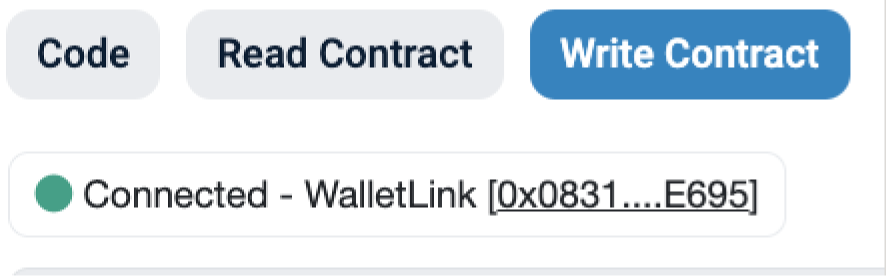
In a similar fashion, you can read data from smart contracts using Etherscan. It is also possible to write data.

To write data, go to the Write Contract tab:



From there, connect your wallet by clicking the Connect with web3 button.

After you connect, the following UI appears:



● Connected - WalletLink [0x0831....E695]

You can then call the functions you wish to write to.

INFO

Be aware that you may need to have real Ethereum in case you want to write to a contract in Ethereum mainnet. Also, any logic that the smart contract defines will be respected. This means that if you try to write to a contract that verifies certain conditions during the transaction (e.g., a function where only the owner of the contract can write information), then you won't be able to execute the transaction if you are not the owner.

Conclusion

In this lesson, you've learned some of the main features of Etherscan, including interacting with already-deployed contracts such as BAYC in order to read and write data.