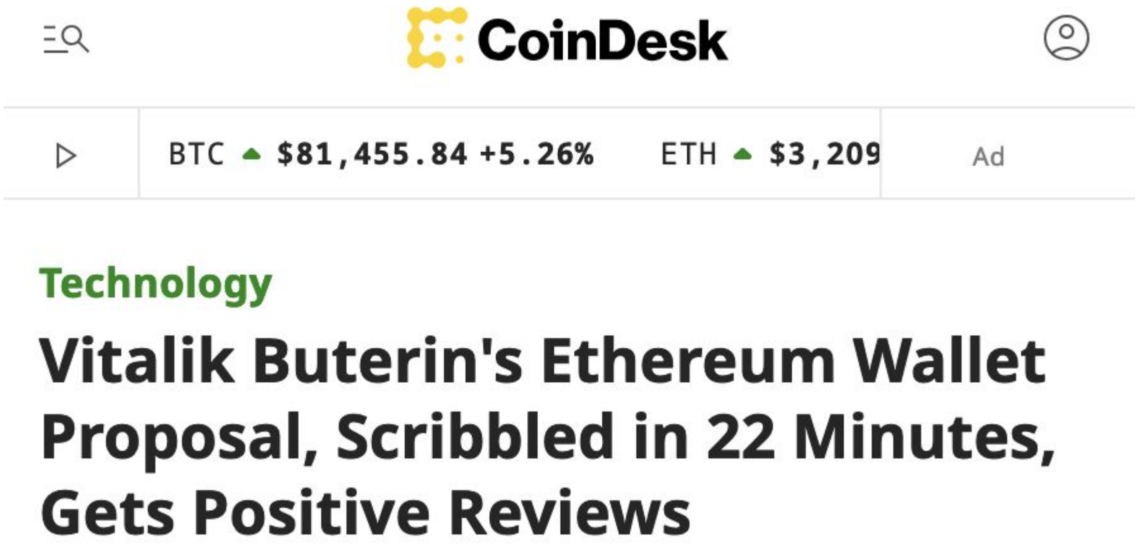
EIP-7702

@lightclients



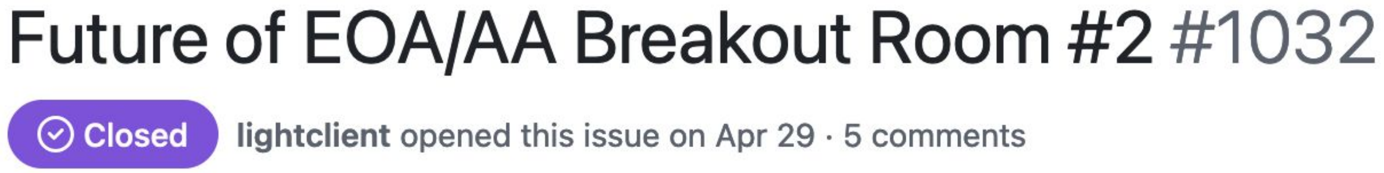
CoinDesk

BTC $81,455.84 +5.26% ETH $3,209

Ad

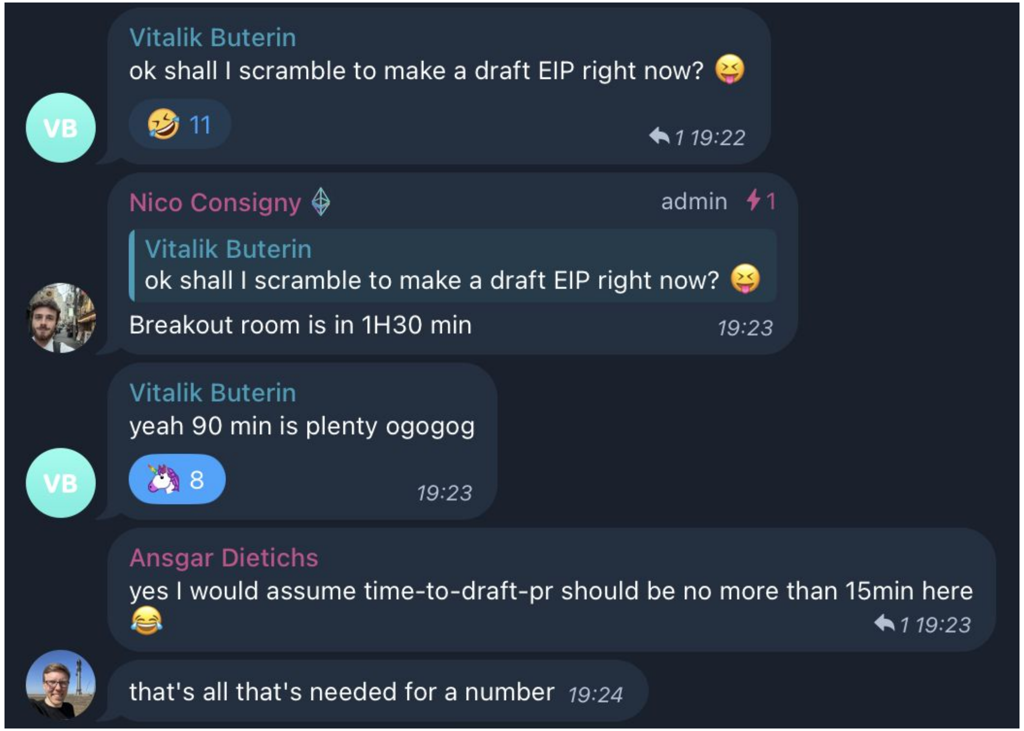
Technology

Vitalik Buterin's Ethereum Wallet Proposal, Scribbled in 22 Minutes, Gets Positive Reviews



Future of EOA/AA Breakout Room #2 #1032

Closed lightclient opened this issue on Apr 29 · 5 comments



Vitalik Buterin
ok shall I scramble to make a draft EIP right now? 😝
🤣 11
1 19:22

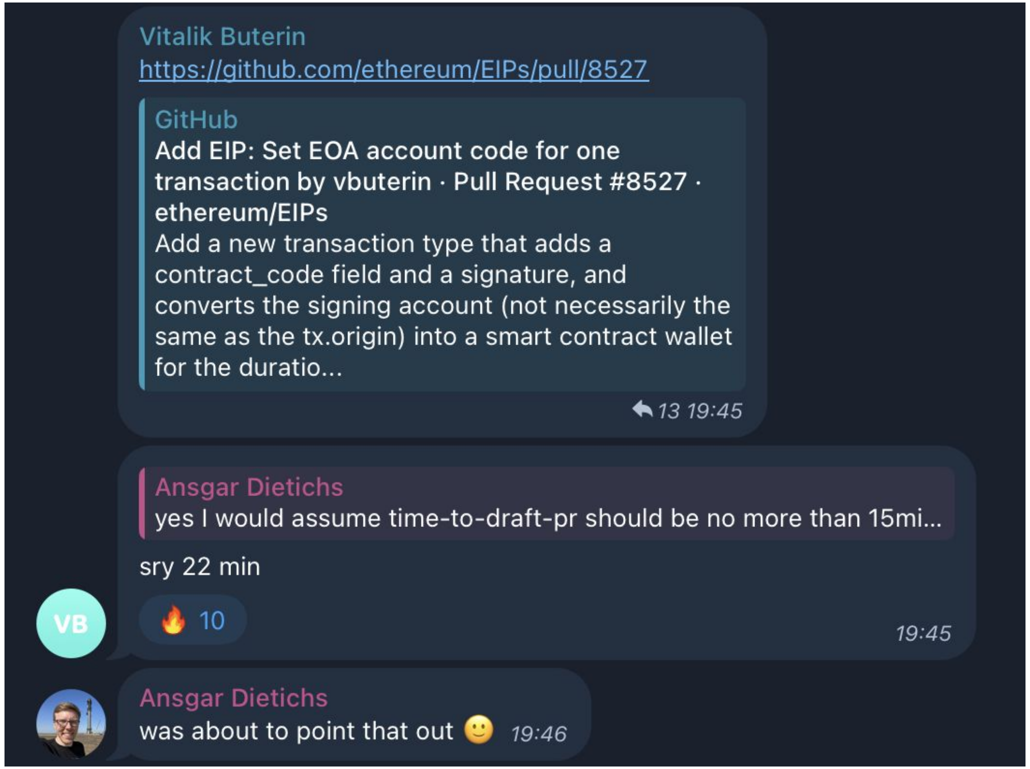
Nico Consigny
admin 1
> Vitalik Buterin
> ok shall I scramble to make a draft EIP right now? 😝

Breakout room is in 1H30 min 19:23

Vitalik Buterin
yeah 90 min is plenty ogogog
🦄 8
19:23

Ansgar Dietichs
yes I would assume time-to-draft-pr should be no more than 15min here 😂
1 19:23

that's all that's needed for a number 19:24



Vitalik Buterin
https://github.com/ethereum/EIPs/pull/8527

GitHub
Add EIP: Set EOA account code for one transaction by vbuterin · Pull Request #8527 · ethereum/EIPs
Add a new transaction type that adds a contract_code field and a signature, and converts the signing account (not necessarily the same as the tx.origin) into a smart contract wallet for the duratio...

13 19:45

> Ansgar Dietichs
> yes I would assume time-to-draft-pr should be no more than 15mi...

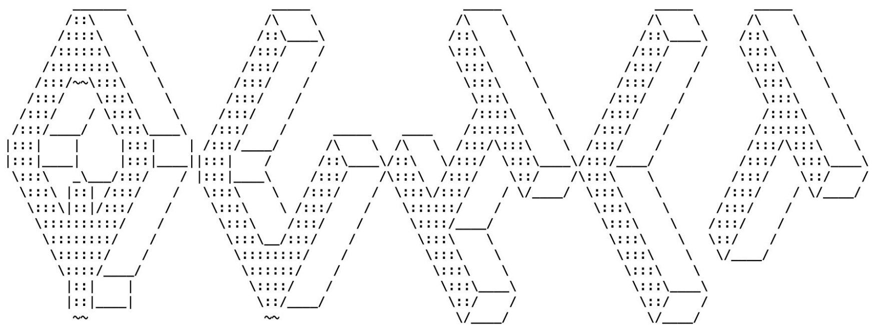
sry 22 min

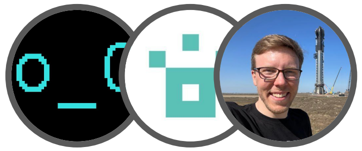
🔥 10

19:45

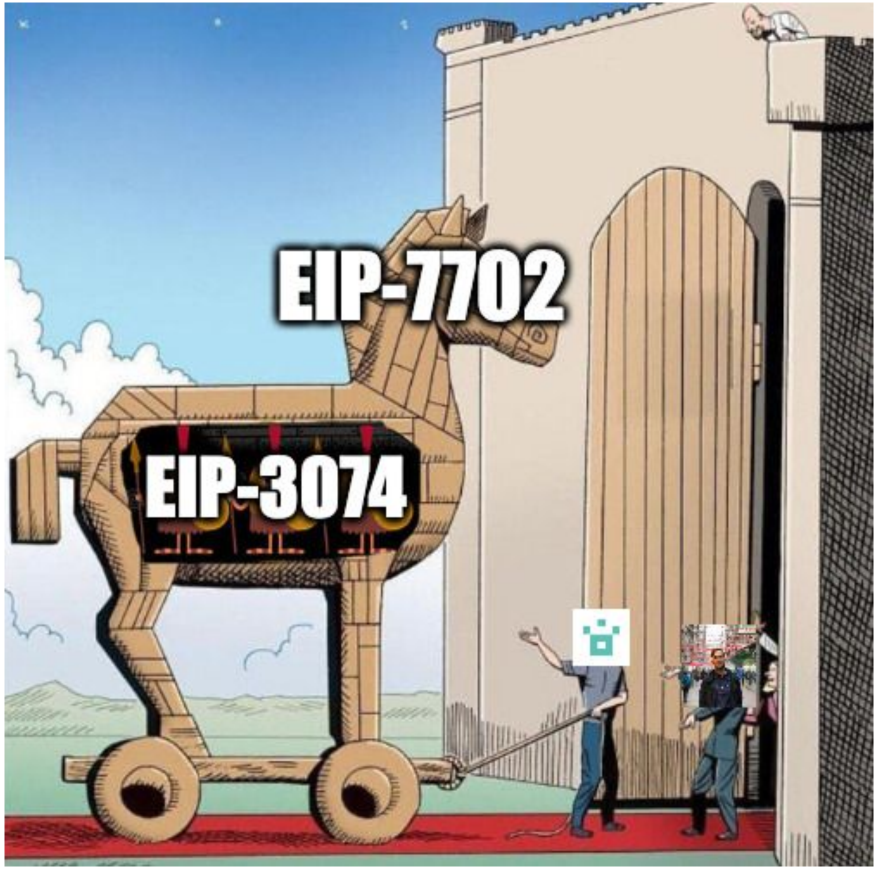
Ansgar Dietichs
was about to point that out 🙂 19:46

pre-7702





3074


EIP-7702
EIP-3074

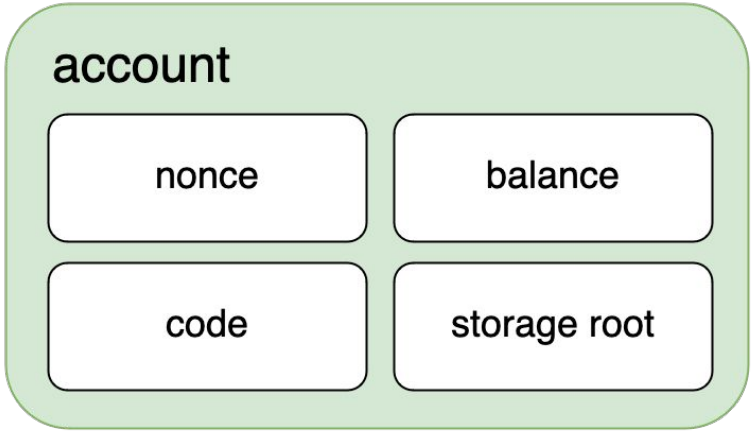
EIP-7702: Set EOA code

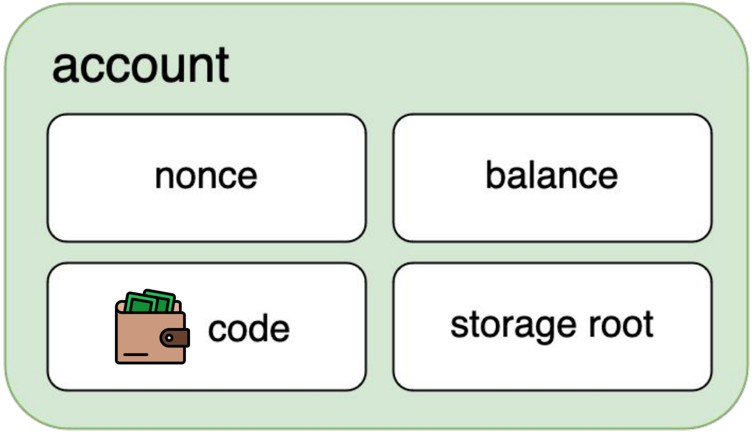
motivation

- batching
- sponsorship
- privilege de-escalation
- bootstrapping

motivation

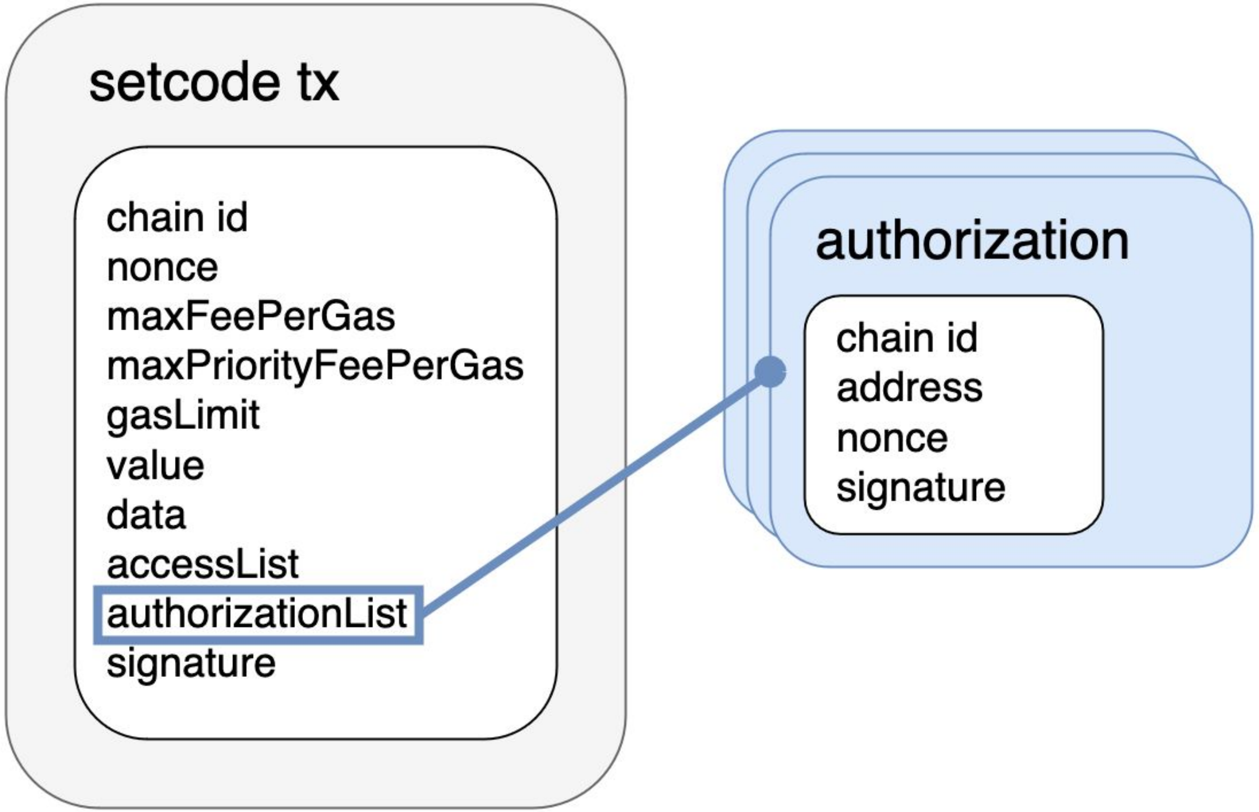
- batching
- sponsorship
- privilege de-escalation
- bootstrapping


account
nonce
balance
code
storage root


account
nonce
balance
code
storage root

setcode tx

chain id
nonce
maxFeePerGas
maxPriorityFeePerGas
gasLimit
value
data
accessList
authorizationList
signature


setcode tx
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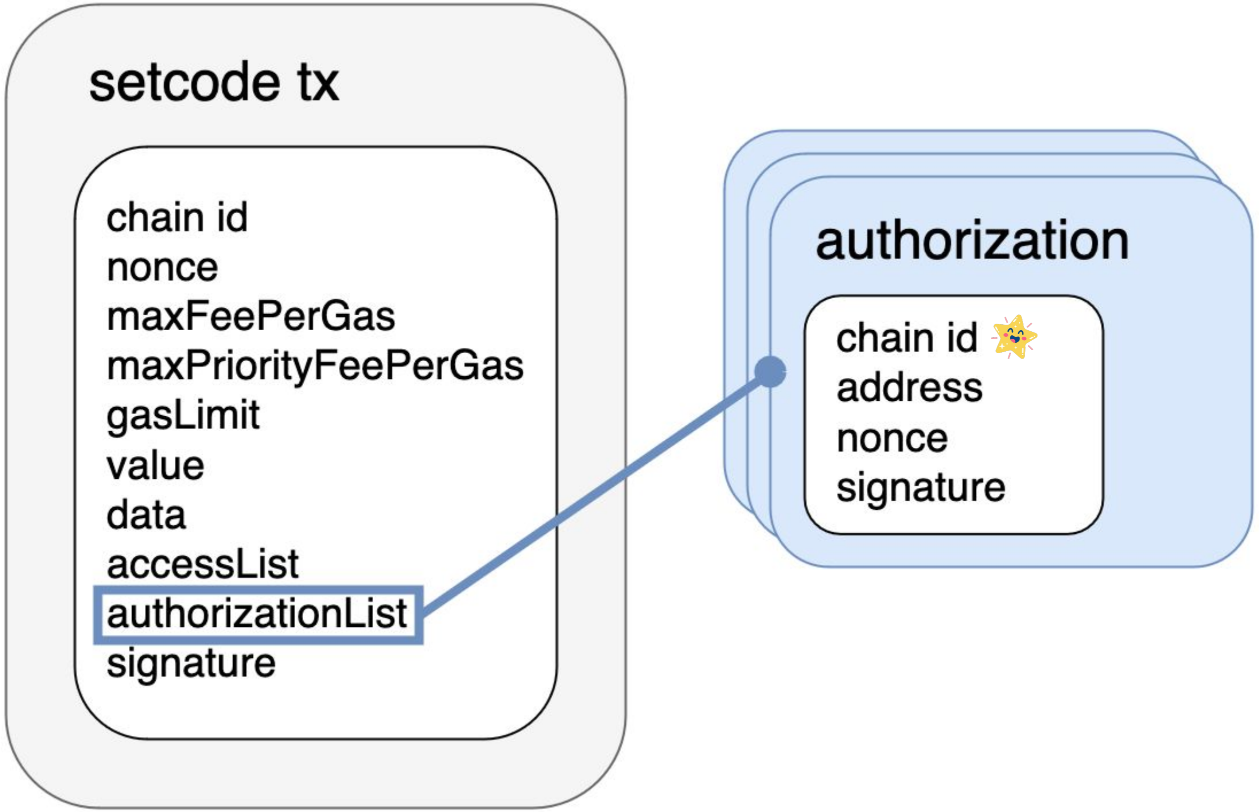
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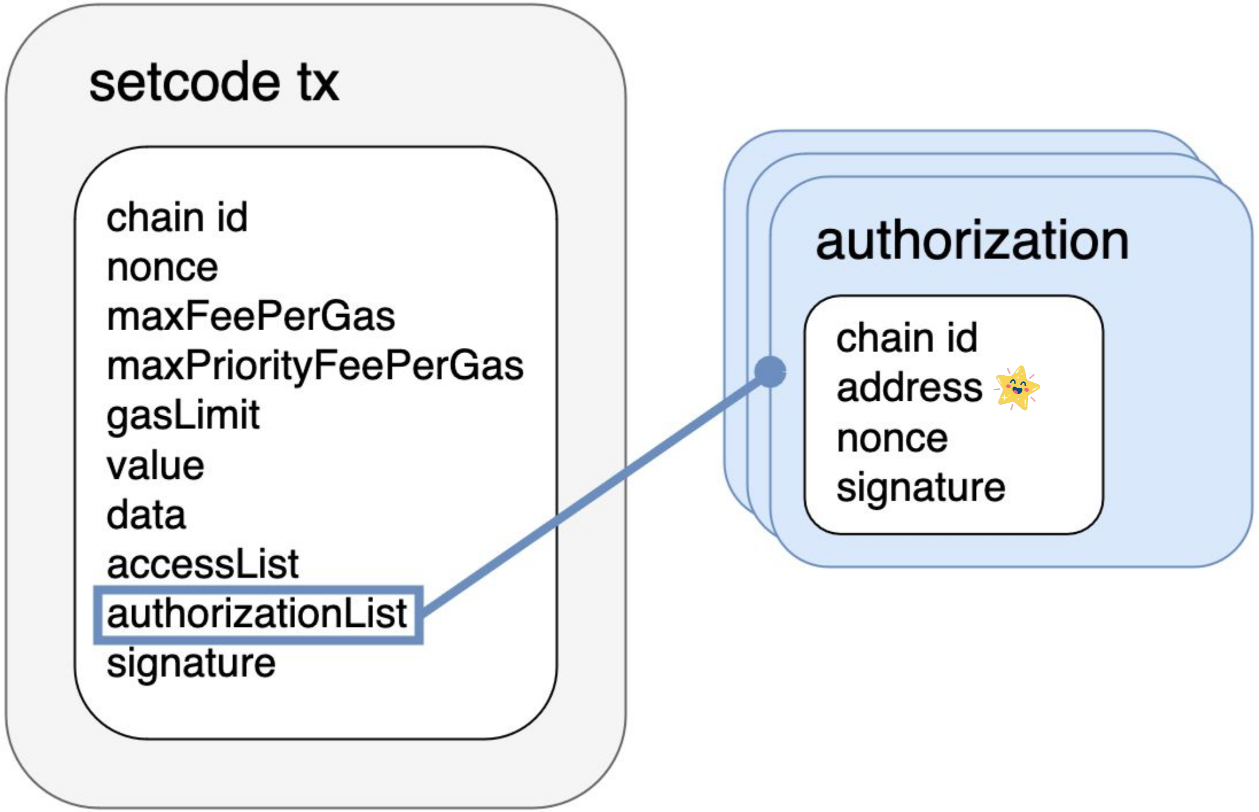
setcode tx
chain id
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nonce
signature

creation by template

- instead of running initcode, write the target template code to the account
  - initialize later via regular call
- less calldata needed -> 20 bytes for template address versus ~25-30 extra bytes for setup
- minimizes odds that users change delegation frequently
- due to EIP-3607, transactions from an account w/ code are invalid
  - need to work around this

delegation designator

```
0xef0100a94f5374fce5edbc8e2a8697c15331677e6ebf0b
```

delegation designator

$$\texttt{0x}\underbrace{\texttt{ef}}_{3541}\texttt{0100a94f5374fce5edbc8e2a8697c15331677e6ebf0b}$$

delegation designator

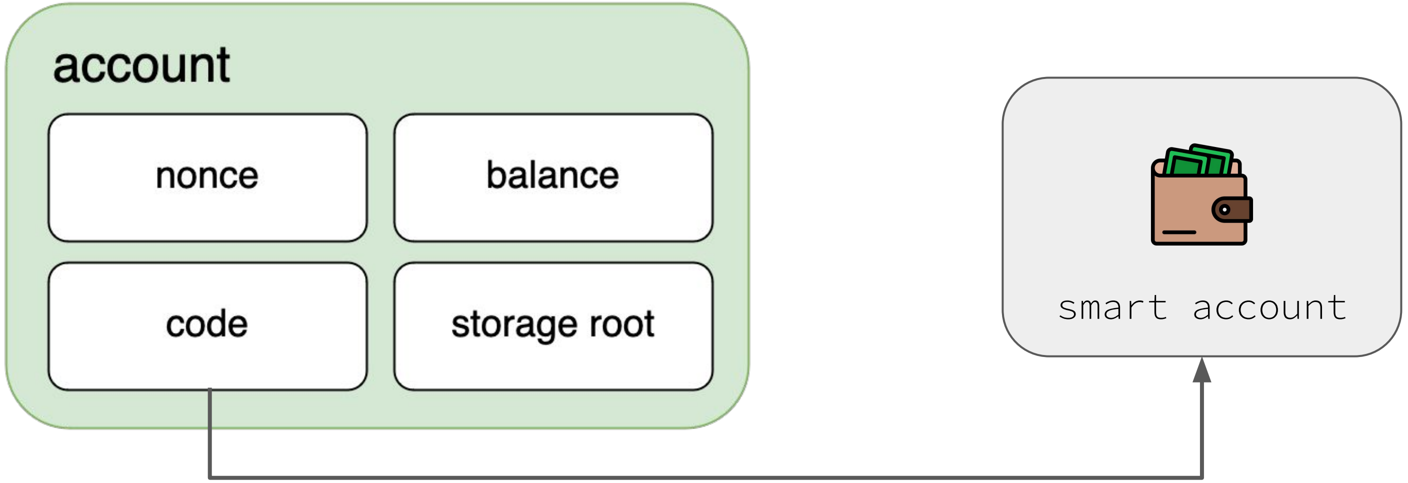
$$\texttt{0x}\underbrace{\texttt{ef}}_{3541}\underbrace{\texttt{0100}}_{7702}\texttt{a94f5374fce5edbc8e2a8697c15331677e6ebf0b}$$

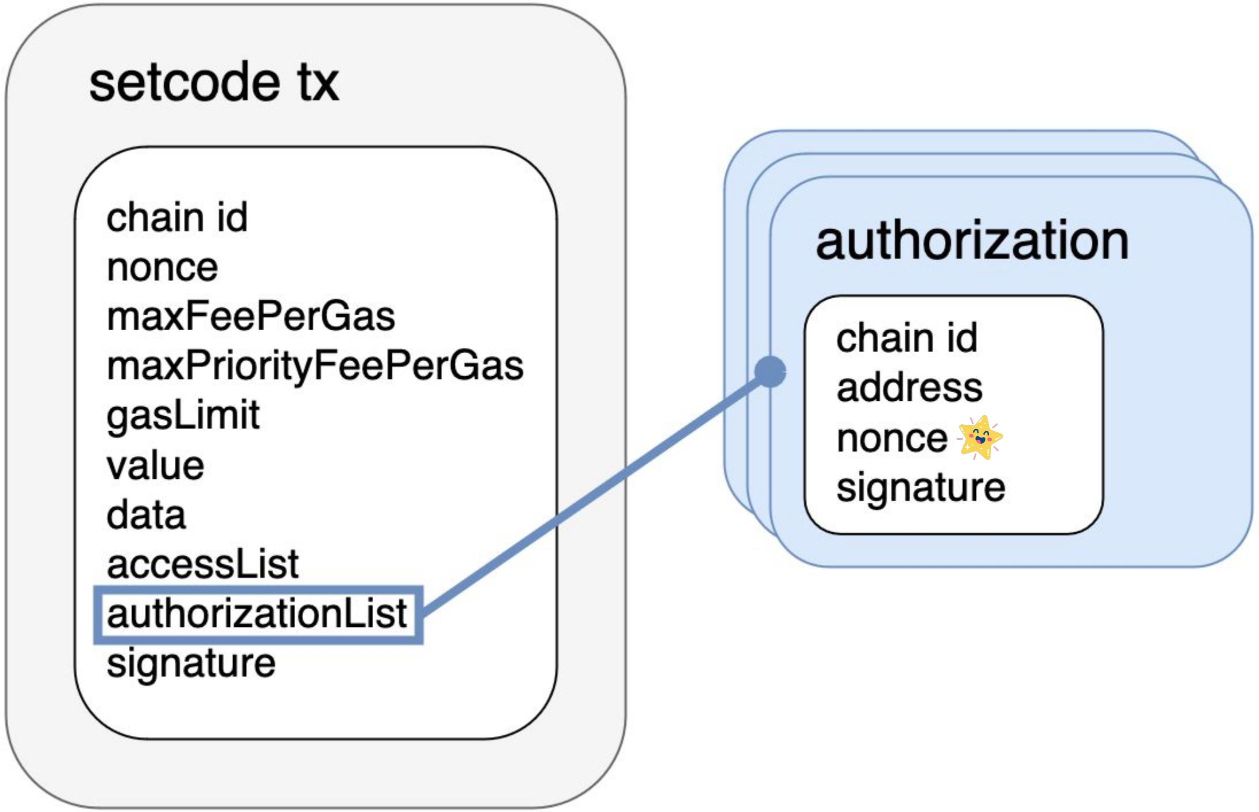
delegation designator

$$\texttt{0x}\underbrace{\texttt{ef}}_{\texttt{3541}}\underbrace{\texttt{0100}}_{\texttt{7702}}\underbrace{\texttt{a94f5374fce5edbc8e2a8697c15331677e6ebf0b}}_{\texttt{target address}}$$

delegation designator

$$\texttt{0x}\underbrace{\texttt{ef}}_{\texttt{3541}}\underbrace{\texttt{0100}}_{\texttt{7702}}\underbrace{\texttt{a94f5374fce5edbc8e2a8697c15331677e6ebf0b}}_{\texttt{target address}}$$




setcode tx
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authorizationList
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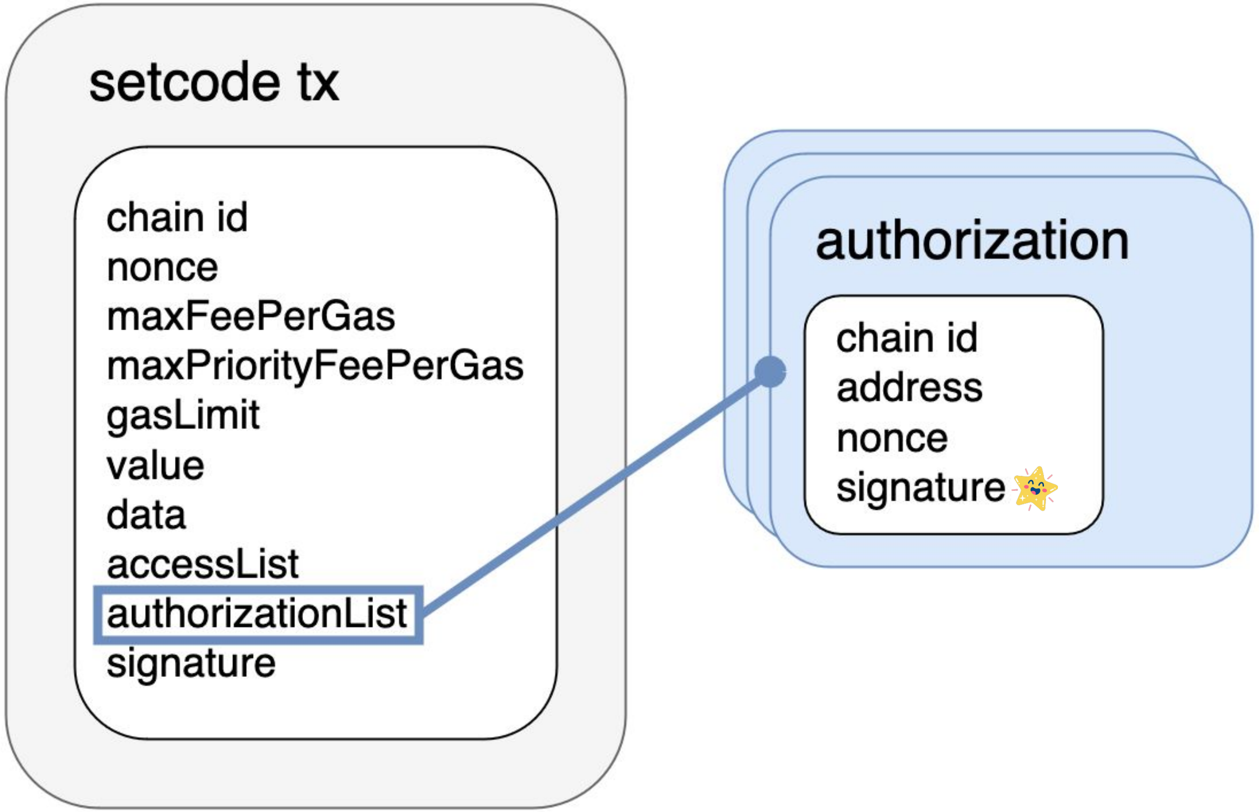
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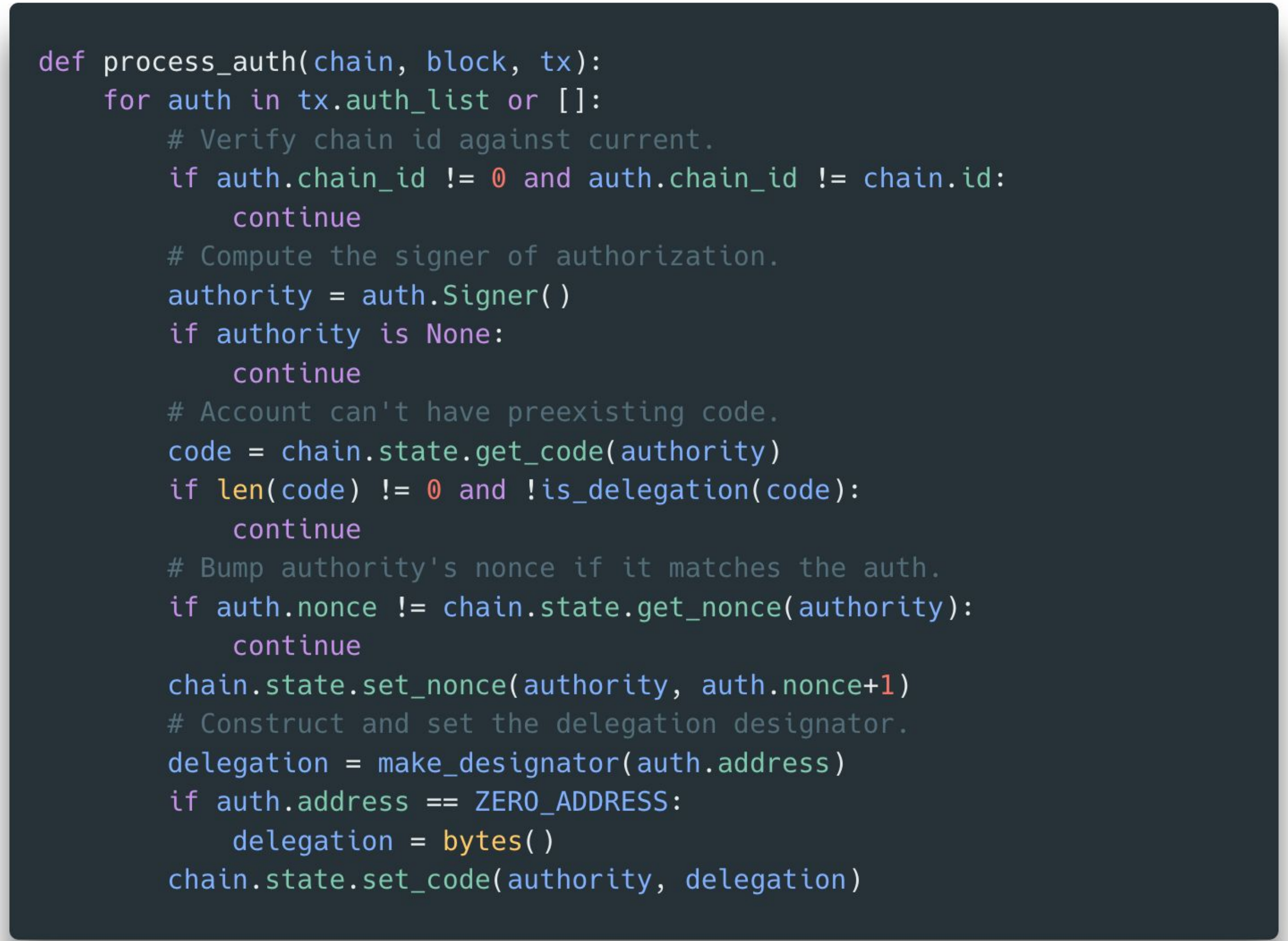

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def process_auth(chain, block, tx):
    for auth in tx.auth_list or []:
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            continue
        # Compute the signer of authorization.
        authority = auth.Signer()
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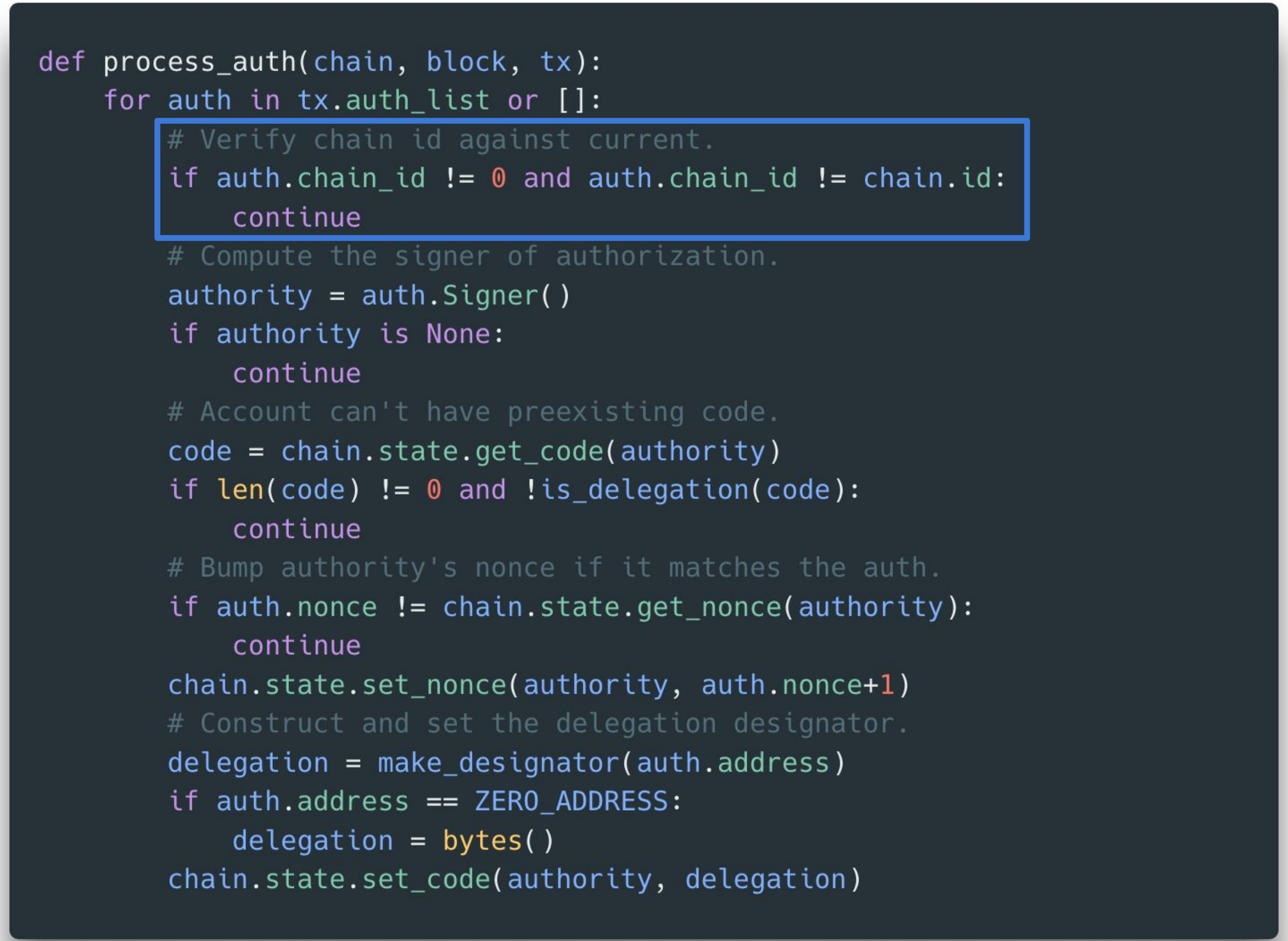

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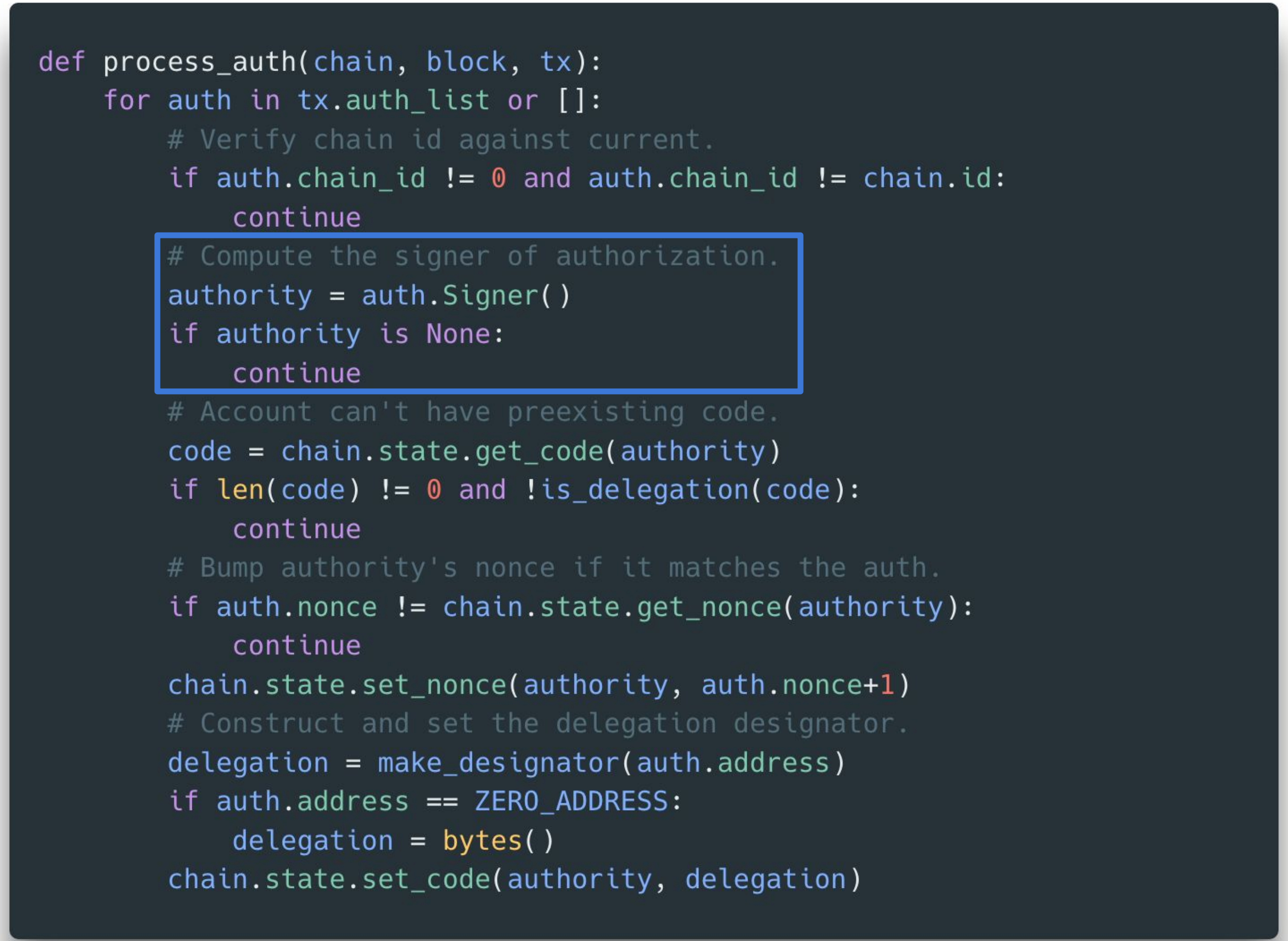

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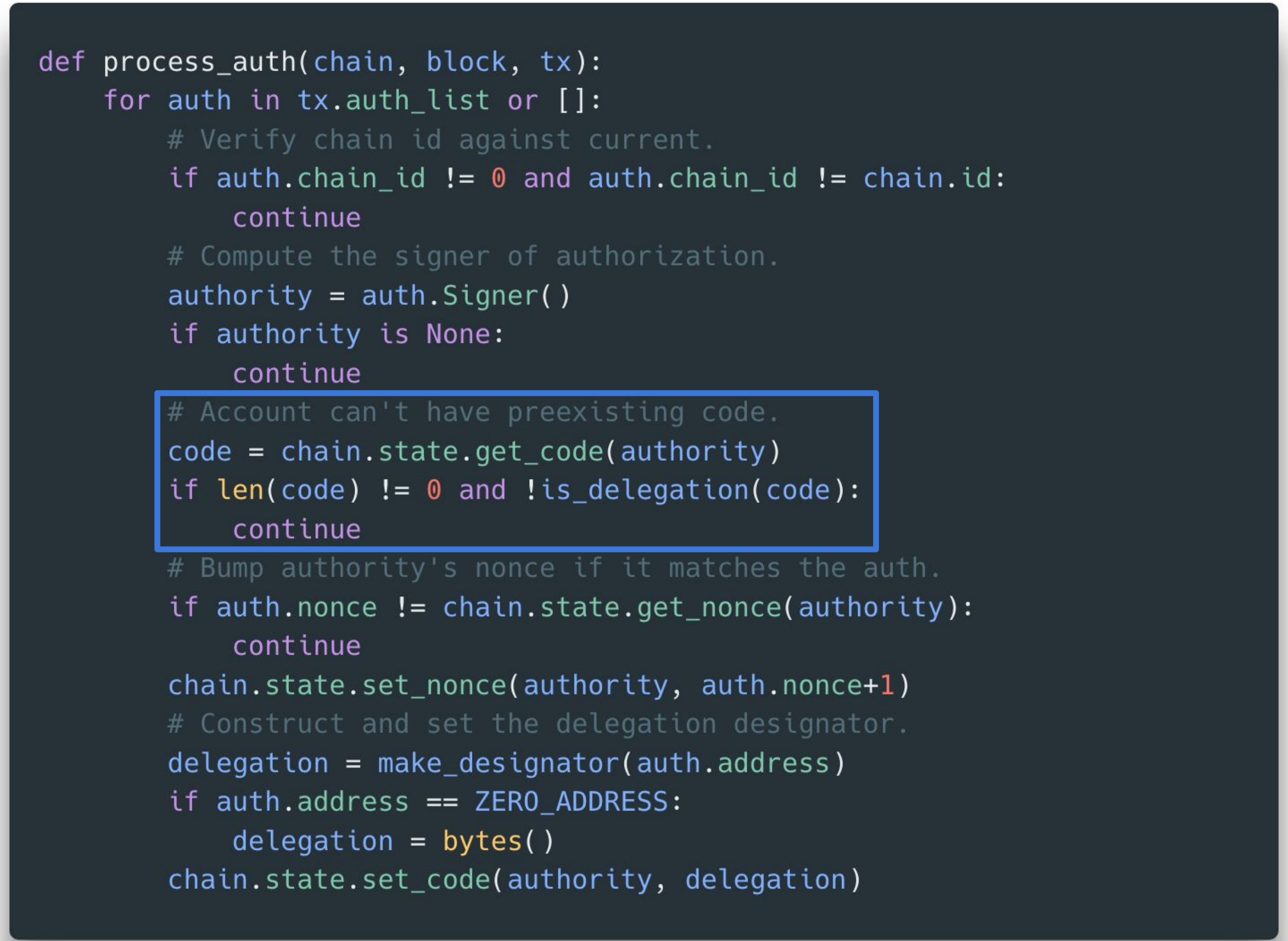

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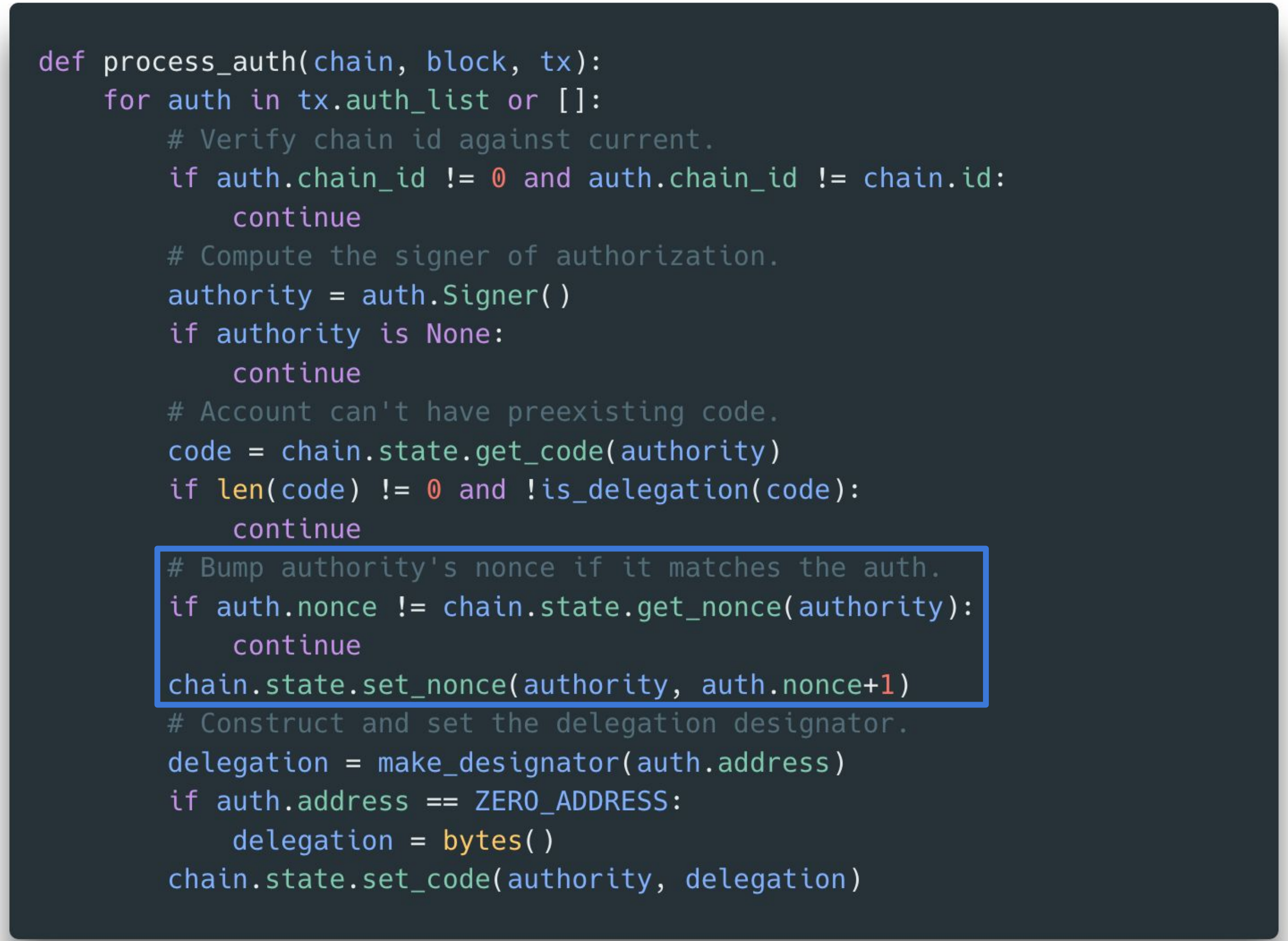

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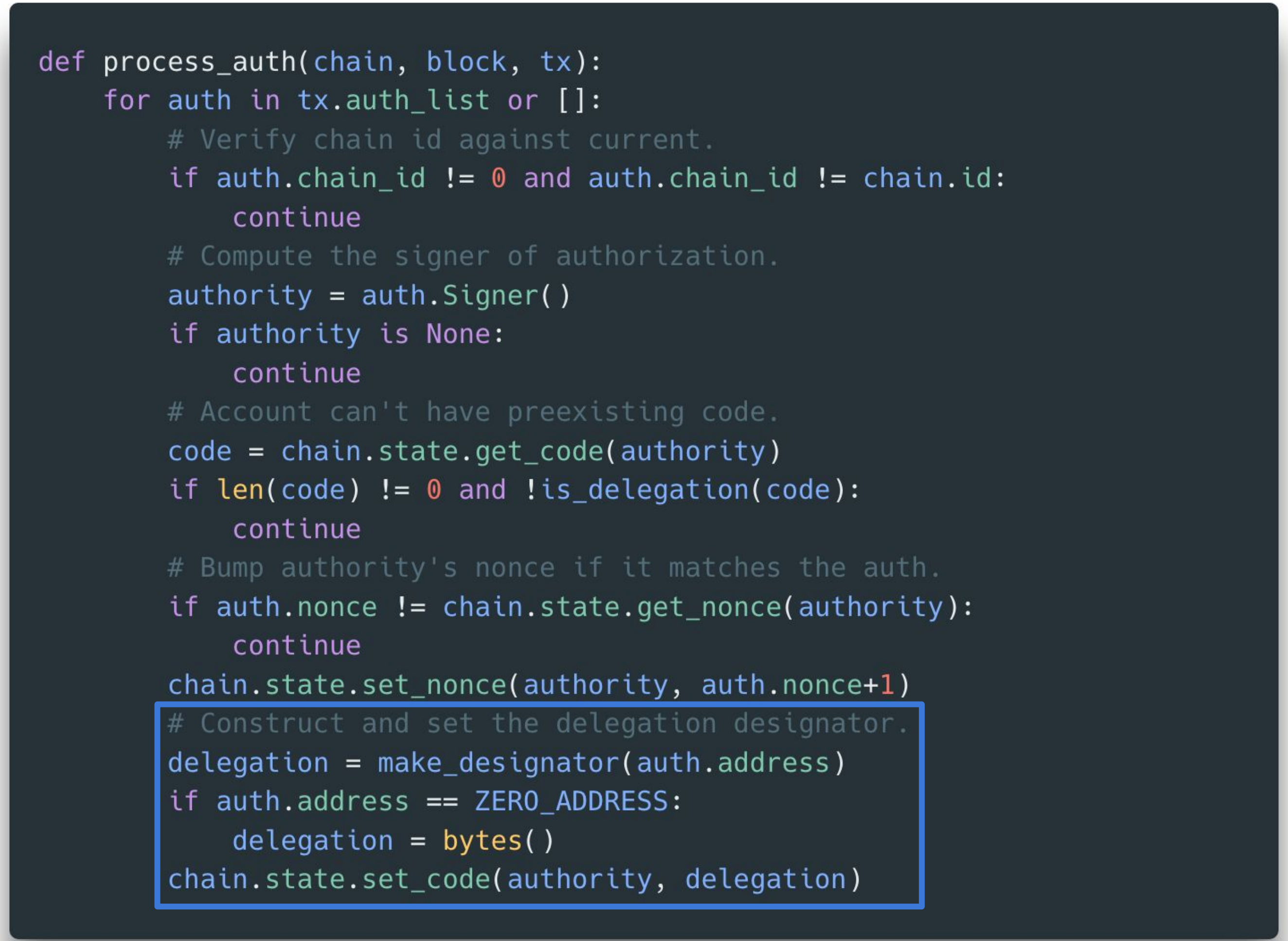

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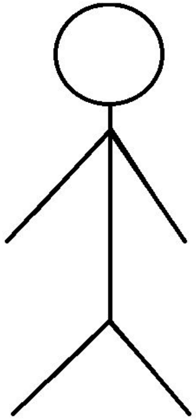
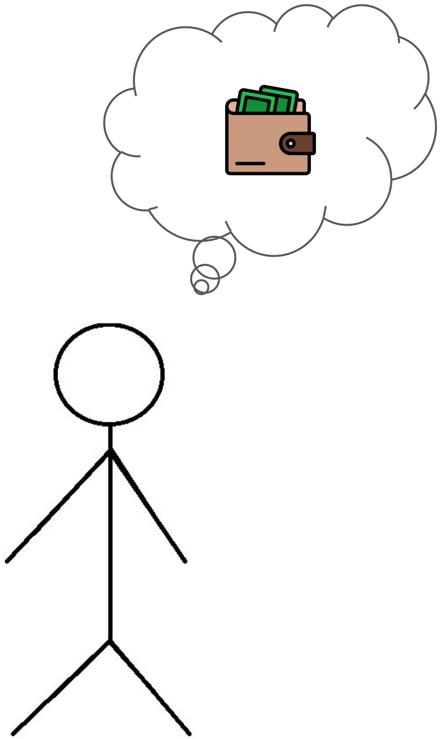
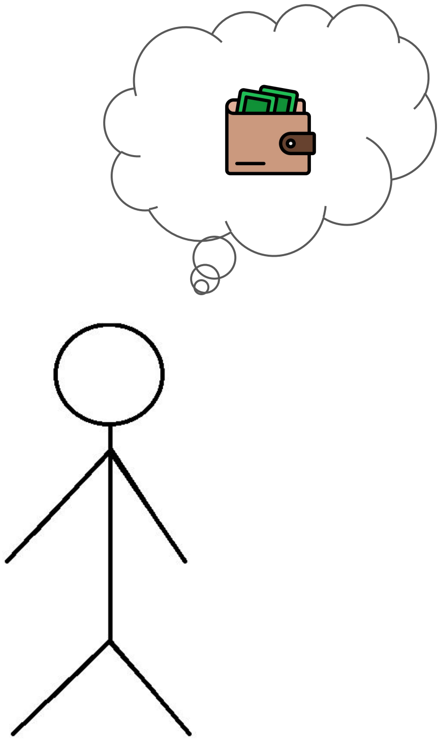
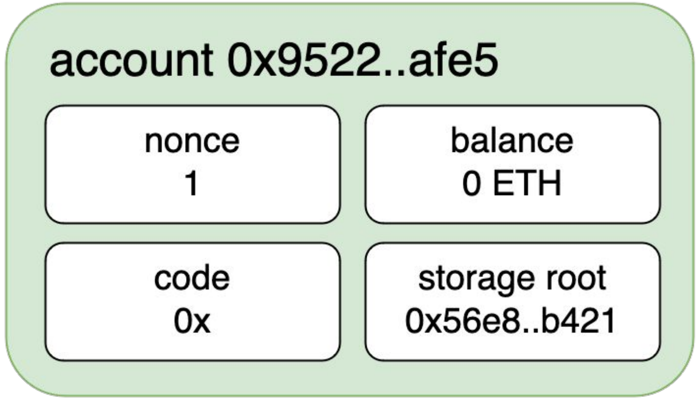
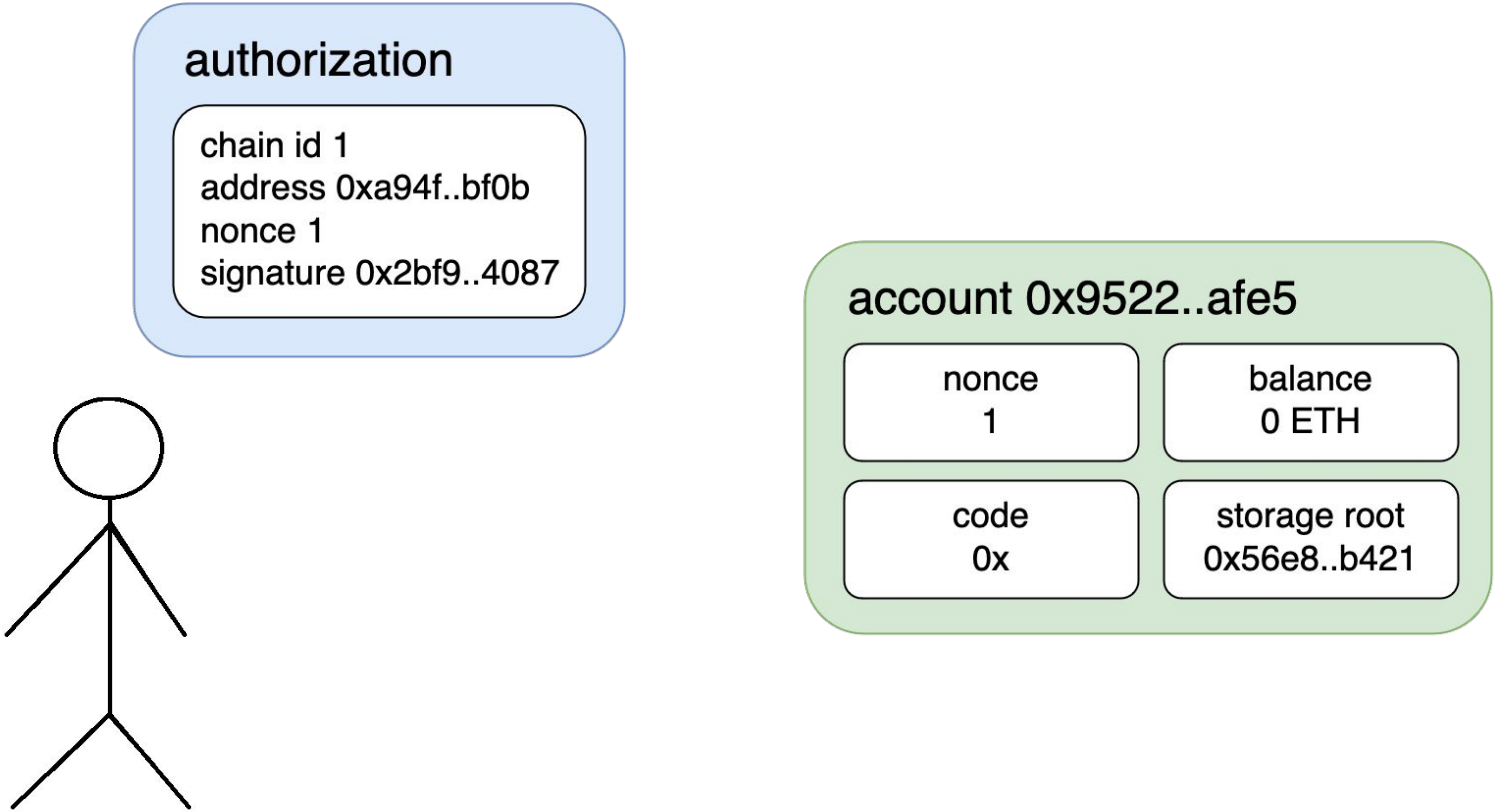
example








account 0x9522..afe5
nonce
1
balance
0 ETH
code
0x
storage root
0x56e8..b421


authorization
chain id 1
address 0xa94f..bf0b
nonce 1
signature 0x2bf9..4087
account 0x9522..afe5
nonce
1
balance
0 ETH
code
0x
storage root
0x56e8..b421

authorization

chain id 1
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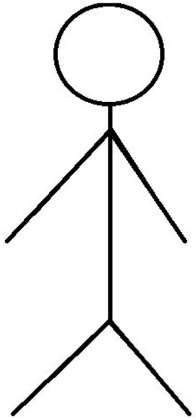

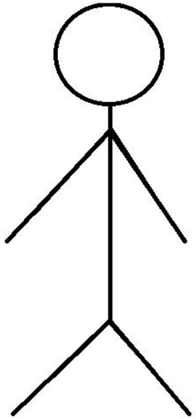

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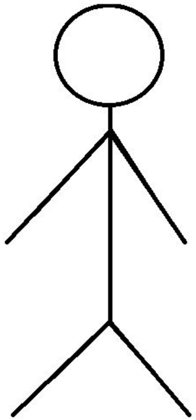
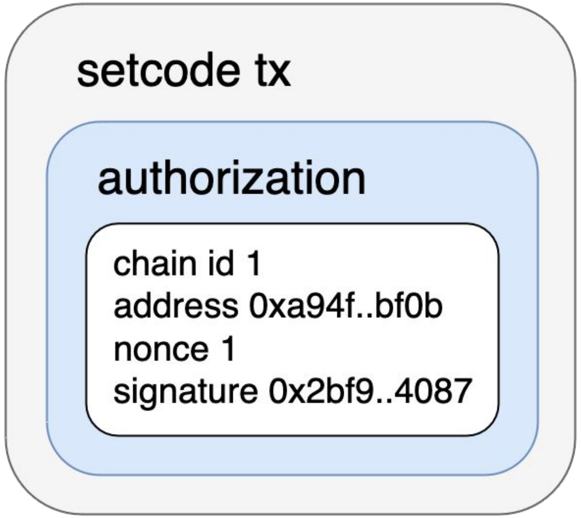
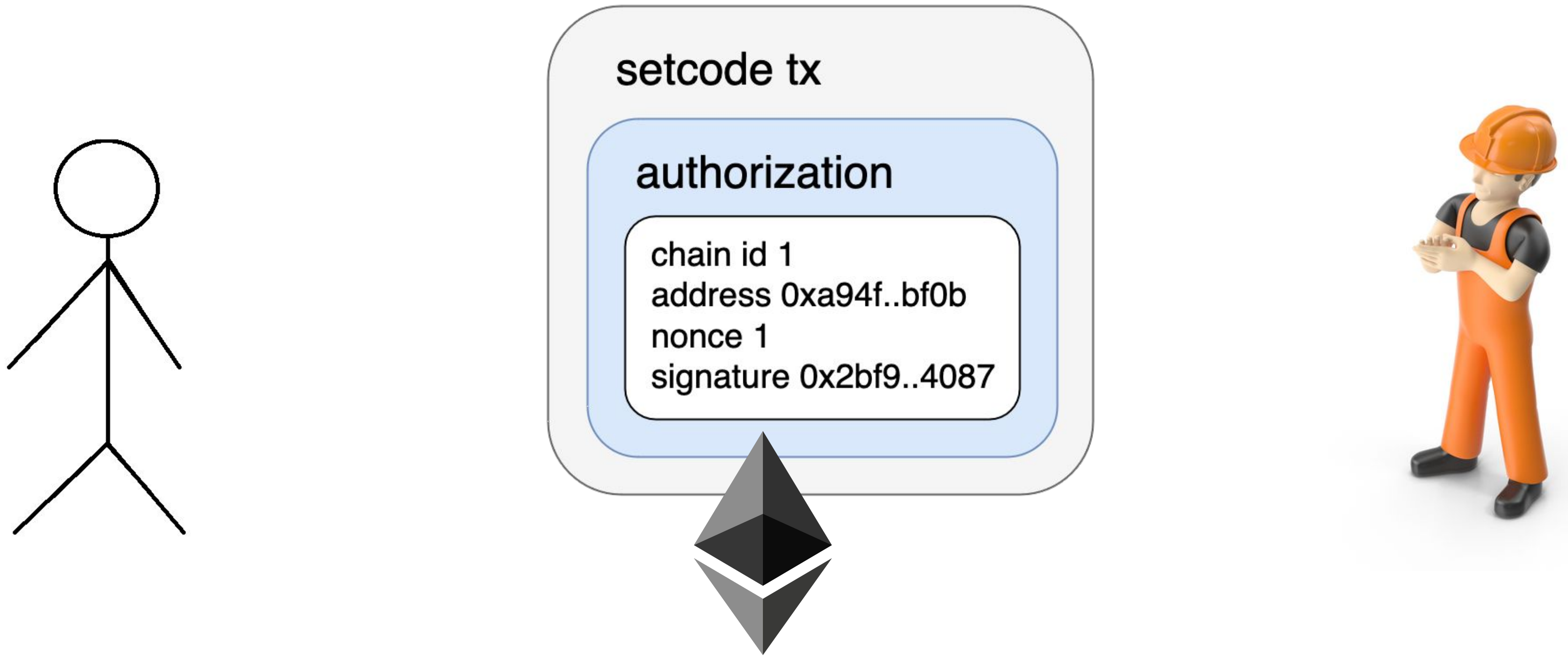




setcode tx

authorization

chain id 1
address 0xa94f..bf0b
nonce 1
signature 0x2bf9..4087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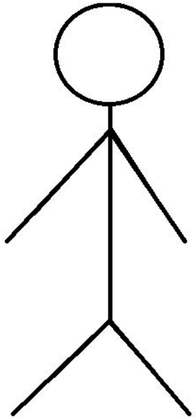
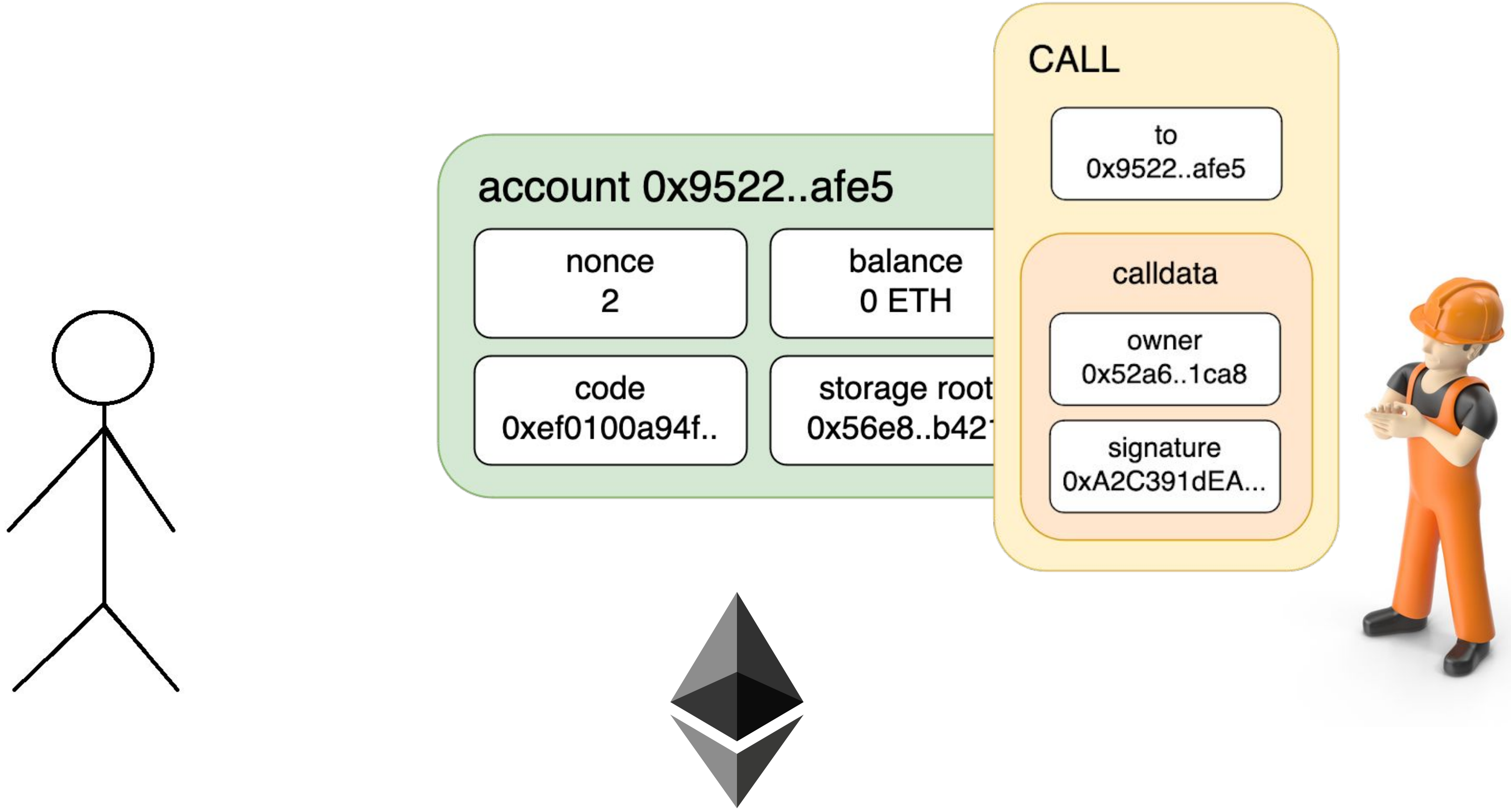
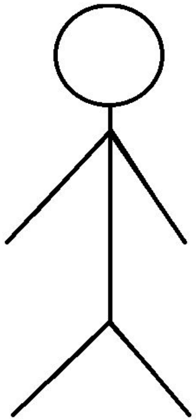
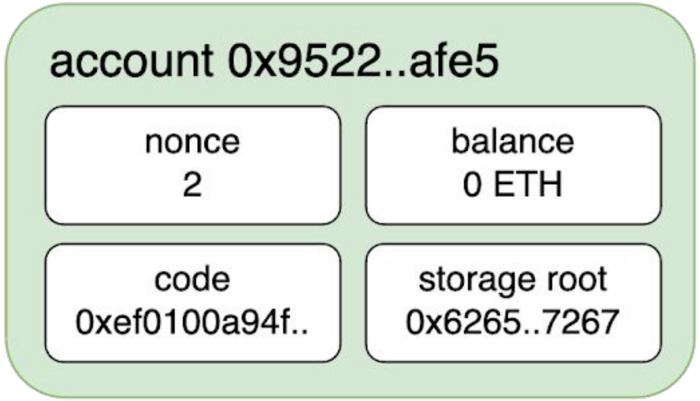


account 0x9522..afe5

nonce 2	balance 0 ETH
code 0xef0100a94f..	storage root 0x56e8..b421


account 0x9522..afe5
nonce
2
balance
0 ETH
code
0xef0100a94f..
storage root
0x56e8..b421
CALL
to
0x9522..afe5
calldata
owner
0x52a6..1ca8
signature
0xA2C391dEA...

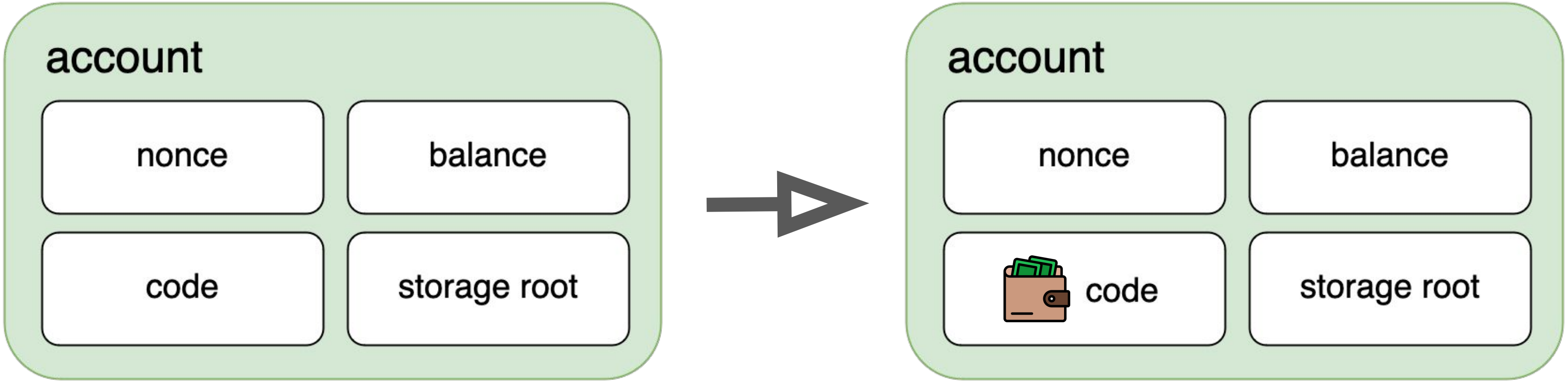



account 0x9522..afe5
nonce
2
balance
0 ETH
code
0xef0100a94f..
storage root
0x6265..7267

gas costs

- intrinsic costs is extended to charge 25k gas per each authorization
    - if the account already exists, a refund of 12.5k gas is issued
    - refund is subject to global refund mechanics, i.e. 20% of the total gas used by the tx
- if tx destination is has a delegation designator, the target of the delegation is warmed
- during evm execution, if an account with a delegation designator is executed it is charged to warm both the target and the delegation target (if either is cold)

Prague (tbd, early 2025)



what comes next

- lot’s of talks and events this week on EIP-7702 x AA
- experiment!
  - rolling devnets with 7702
  - ithaca exp-0001
- contribute to application standards
  - need to formalize communication pattern dapp <> wallet that supports this new functionality

questions?

@lightclients