

Aula 021 - Prática sobre *Ethereum*: Ambiente de Desenvolvimento

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A proposta desta aula é termos uma Visão Geral sobre rede **Ethereum**, componentes do Ecosistema *Ethereum*. Instalando *Wallets* e *softwares* clientes, com a execução de ferramentas e APIs.

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1 Leitura do Capítulo 12: *Further Ethereum*

1. Faça a leitura do [Capítulo 12: *Further Ethereum*](#)

2. Criar a rede privada local:

1. Criar um diretório `mkdir ~/.etherprivate`
2. Criar um arquivo `privategenesis.json` em `~/.etherprivate` com o conteúdo:

```
1 {
2   "nonce": "0x0000000000000042",
3   "timestamp": "0x00",
4   "parentHash": "0x0000000000000000000000000000000000000000000000000000000000000000",
5   "extraData": "0x00",
6   "gasLimit": "0x8000000",
7   "difficulty": "0x0400",
8   "mixhash": "0x0000000000000000000000000000000000000000000000000000000000000000",
9   "coinbase": "0x3333333333333333333333333333333333333333333333333333333333333333",
10  "alloc": {
11  },
12  "config": {
13    "chainId": 786,
14    "homesteadBlock": 0,
15    "eip150Block": 0,
16    "eip155Block": 0,
17    "eip158Block": 0
18  }
19 }
```

3. Execute o `geth` indicando o diretório de dados e o *genesis* file:

```

1 [rag@nitro-ryzen ~]$ geth --datadir ~/.etherprivate init
  ~/.etherprivate/privategenesis.json
2 INFO [10-27|19:59:19.049] Maximum peer count ETH=50 LES=0 total=50
3 INFO [10-27|19:59:19.051] Smartcard socket not found, disabling err="stat
  /run/pcscd/pcscd.comm: no such file or directory"
4 INFO [10-27|19:59:19.053] Set global gas cap cap=50,000,000
5 INFO [10-27|19:59:19.054] Allocated cache and file handles
  database=/home/rag/.etherprivate/geth/chaindata cache=16.00MiB handles=16
6 INFO [10-27|19:59:19.068] Opened ancient database
  database=/home/rag/.etherprivate/geth/chaindata/ancient/chain readonly=false
7 INFO [10-27|19:59:19.068] Writing custom genesis block
8 INFO [10-27|19:59:19.068] Persisted trie from memory database nodes=0 size=0.00B
  time="8.101us" gcnodes=0 gcsize=0.00B gctime=0s livenodes=1 livesize=0.00B
9 INFO [10-27|19:59:19.069] Successfully wrote genesis state database=chaindata
  hash=6650a0..b5c158
10 INFO [10-27|19:59:19.069] Allocated cache and file handles
  database=/home/rag/.etherprivate/geth/lightchaindata cache=16.00MiB handles=16
11 INFO [10-27|19:59:19.080] Opened ancient database
  database=/home/rag/.etherprivate/geth/lightchaindata/ancient/chain readonly=false
12 INFO [10-27|19:59:19.081] Writing custom genesis block
13 INFO [10-27|19:59:19.081] Persisted trie from memory database nodes=0 size=0.00B
  time="7.613us" gcnodes=0 gcsize=0.00B gctime=0s livenodes=1 livesize=0.00B
14 INFO [10-27|19:59:19.082] Successfully wrote genesis state database=lightchaindata
  hash=6650a0..b5c158
15 [rag@nitro-ryzen ~]$

```

4. Inicie a execução:

```

1 $ geth --datadir ~/.etherprivate/ --allow-insecure-unlock --networkid 786 --http
  --http.addr 127.0.0.1 --http.port 8559 --http.api
  "eth,net,web3,personal,engine,admin,debug" --keystore ~/.etherprivate/keystore
  --authrpc.addr localhost --authrpc.port 8551 --authrpc.vhosts localhost
  --authrpc.jwtsecret ~/.etherprivate/geth/jwtsecret --nodiscover --maxpeers 15

```

- Iniciar um console para a interação com a execução:

```

1 $ geth attach ~/.etherprivate/geth.ipc

```

- Criar duas contas, caso não tenha:

```

1 > personal.newAccount("admin1234")
2 "0xedbc36d74d5a1cd64db36e53798bd1781f0c4955"
3
4 > eth.accounts
5 ["0xedbc36d74d5a1cd64db36e53798bd1781f0c4955"]
6
7 > personal.newAccount("admin1234")
8

```

```
9 "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a"
10
11 > eth.accounts
12 ["0xedbc36d74d5a1cd64db36e53798bd1781f0c4955",
    "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a"]
```

- Desbloquear as contas:

```
1 > eth.accounts
2 ["0xedbc36d74d5a1cd64db36e53798bd1781f0c4955",
   "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a"]
3 > personal.unlockAccount("0xedbc36d74d5a1cd64db36e53798bd1781f0c4955")
4 Unlock account 0xedbc36d74d5a1cd64db36e53798bd1781f0c4955
5 Passphrase:
6 true
7 > personal.unlockAccount("0x1478d95f8754b3ba7127100dd0bb46578fe7d22a")
8 Unlock account 0x1478d95f8754b3ba7127100dd0bb46578fe7d22a
9 Passphrase:
10 true
```

- Verificação dos valores em cada carteira:

```
1 > web3.fromWei(eth.getBalance("0xedbc36d74d5a1cd64db36e53798bd1781f0c4955"), "ether")
2 320
3 > web3.fromWei(eth.getBalance("0x1478d95f8754b3ba7127100dd0bb46578fe7d22a"), "ether")
4 0
5 > web3.fromWei(eth.getBalance(eth.coinbase), "ether")
6 320
```

- Enviar 100 ethers da primeira para a segunda carteira:

```
1 > eth.sendTransaction({from: "0xedbc36d74d5a1cd64db36e53798bd1781f0c4955" to:
    "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a", value: 100})
2
3 > eth.sendTransaction({from: "0xedbc36d74d5a1cd64db36e53798bd1781f0c4955" to:
    "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a", value: web3.toWei(100, "ether") })
4
5 SyntaxError: SyntaxError: (anonymous): Line 1:73 Unexpected identifier (and 6 more
  errors)
```

- Estava ocorrendo esse erro: `SyntaxError: SyntaxError: (anonymous): Line 1:73 Unexpected identifier (and 6 more errors)` quando tentava enviar uma transação.

```
1 > personal.unlockAccount(personal.listAccounts[0])
2 Unlock account 0xedbc36d74d5a1cd64db36e53798bd1781f0c4955
3 Passphrase:
```

```

4 true
5 > personal.unlockAccount(personal.listAccounts[1])
6 Unlock account 0x1478d95f8754b3ba7127100dd0bb46578fe7d22a
7 Passphrase:
8 true
9 > eth.sendTransaction({from: personal.listAccounts[0], to: personal.listAccounts[1],
    value: 100})
10 "0x797c2a303974e365bf48ac1620da9d3a1e8ad0d53138c3ba06a4cddbe19e67b2"
11 > eth.sendTransaction({from: "0xedbc36d74d5a1cd64db36e53798bd1781f0c4955" to:
    "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a", value:100})
12 SyntaxError: SyntaxError: (anonymous): Line 1:73 Unexpected identifier (and 6 more
    errors)
13
14 > personal.unlockAccount(personal.listAccounts[0])
15
16 Unlock account 0xedbc36d74d5a1cd64db36e53798bd1781f0c4955
17 Passphrase:
18 true
19 > eth.sendTransaction({from: "0xedbc36d74d5a1cd64db36e53798bd1781f0c4955" to:
    "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a", value:100})
20 SyntaxError: SyntaxError: (anonymous): Line 1:73 Unexpected identifier (and 6 more
    errors)
21
22 > personal.unlockAccount(personal.listAccounts[1])
23 Unlock account 0x1478d95f8754b3ba7127100dd0bb46578fe7d22a
24 Passphrase:
25 true
26 > eth.sendTransaction({from: "0xedbc36d74d5a1cd64db36e53798bd1781f0c4955" to:
    "0x1478d95f8754b3ba7127100dd0bb46578fe7d22a", value:100})
27 SyntaxError: SyntaxError: (anonymous): Line 1:73 Unexpected identifier (and 6 more
    errors)
28
29 > eth.sendTransaction({from: personal.listAccounts[0], to: personal.listAccounts[1],
    value: 100})
30 "0x5c599cc300072c38544fa2a8869cf9928b17345b2d75ab43e6a3f23d4b6c0458"
31 >

```

- Usando `personal.unlockAccount(personal.listAccounts[1])` para desbloquear funcionou o envio de transações.
- Verificando os valores nas carteiras:

```

1 > web3.fromWei(eth.getBalance("0xedbc36d74d5a1cd64db36e53798bd1781f0c4955"), "ether")
2 9709.999999999999999
3 > web3.fromWei(eth.getBalance("0x1478d95f8754b3ba7127100dd0bb46578fe7d22a"), "ether")
4 2e-16

```

- Recuperar o recibo da transação:

```

1 eth.getTransactionReceipt("0x797c2a303974e365bf48ac1620da9d3a1e8ad0d53138c3ba06a4cddbe19e67b2")
2 {

```

[illegible]

Referências

Imran, Bashir. 2018. *Mastering Blockchain : Distributed Ledger Technology, Decentralization, and Smart Contracts Explained, 2nd Edition*. Packt Publishing. <https://search.ebscohost.com/login.aspx?direct=true&db=e000xww&AN=1789486&lang=pt-br&site=eds-live&scope=site>.