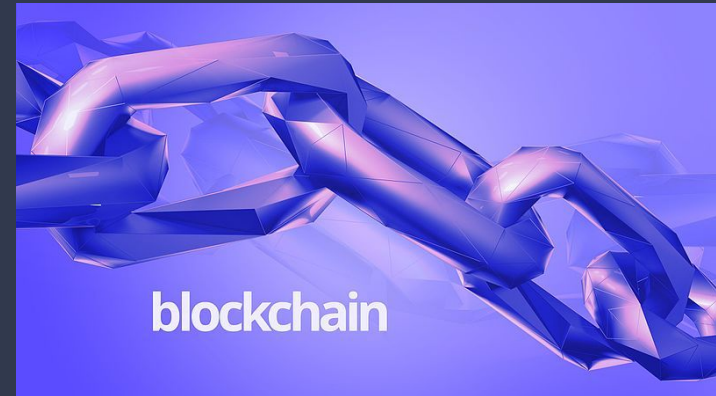


Transparência *para redução das desigualdades*

Vitor Nazário Coelho — vncoelho@gmail.com
Semana do IME e Semana Nacional de Ciência e
Tecnologia (SNCT), "Ciência para a Redução das
Desigualdades" — Rio de Janeiro, Brazil



Quem sou eu?



Scientist, researcher, developer and nature lover. I have been trying to release my research as open-source projects, open for external contributions and suggestions.

Agenda

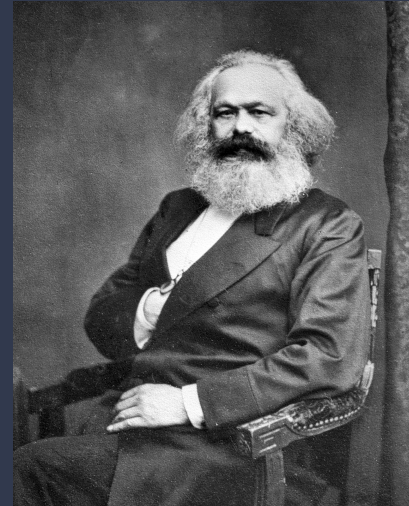
- 0 Capital
- Blockchain
- Smart Economy
- Exemplos
- Blockchain para as cidades



O Capital e Blockchain Supply Chain

"(...)neste não se percebe como ele chegou às mãos de seu possuidor ou qual mercadoria foi nele transformada."

Marx, Karl. "O capital: livro I, vol. 1." Rio de Janeiro: Civilização Brasileira (1980): 189.



OMG...
Satochi
Nakamoto
is here!



Blockchain

- I. Distributed information
(Distributed ledgers)
- II. Multi-agent paradigm
- III. Transparency
- IV. Trust
- V. Smart Contracts



Merkle tree

Allow us to map a large volume of data and easily identify where changes in the data occurs

Q₁:

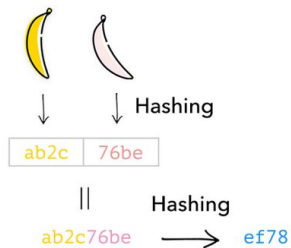
How to encode a banana ?



Representing a small
piece of information

Q₂:

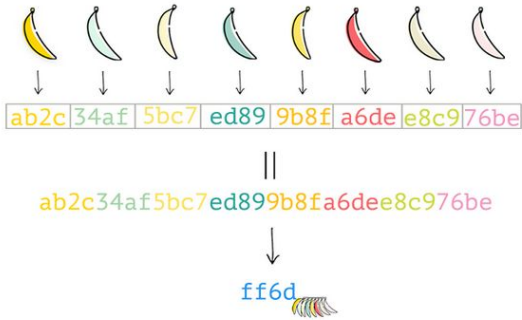
How to encode 2 bananas ?



Merkle tree

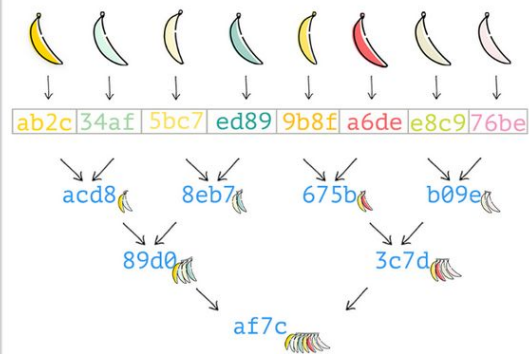
Q_3

How to encode 8 bananas ?



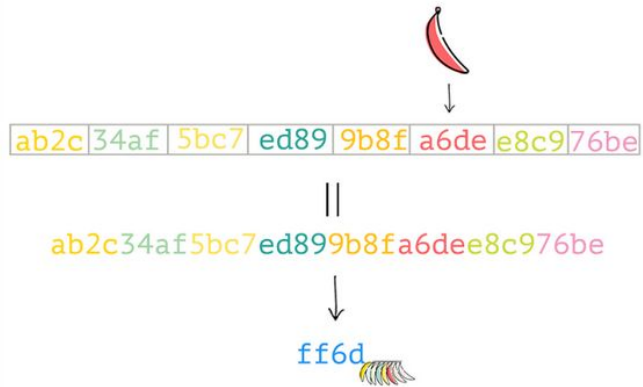
Q_3

How to encode 8 bananas ?

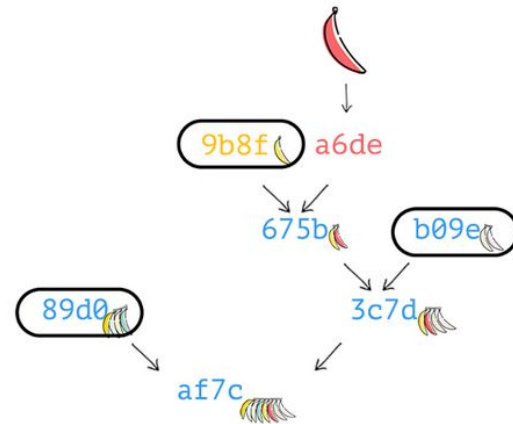


Merkle tree

Verifying membership in the bunch
requires rerunning the entire procedure



Verifying membership in the bunch
requires only a few computations



Smart Economy



Smart Econo



Smart Economy























Smart Economy

Top 100 Cryptocurrencies by Market Capitalization

Cryptocurrencies ▾ Exchanges ▾ Watchlist

USD ▾ Next 100 → View All

#	Name	Market Cap	Price	Volume (24h)	Circulating Supply	Change (24h)	Price Graph (7d)
1	 Bitcoin	\$113,112,840,464	\$6,528.18	\$4,169,087,173	17,326,850 BTC	-1.18%	
2	 Ethereum	\$21,224,582,472	\$206.81	\$1,472,663,467	102,626,667 ETH	-1.65%	
3	 XRP	\$18,541,165,625	\$0.463557	\$601,358,081	39,997,634,397 XRP *	1.94%	
4	 Bitcoin Cash	\$7,790,434,245	\$447.54	\$298,849,949	17,407,163 BCH	-2.56%	
5	 EOS	\$4,872,662,011	\$5.38	\$394,756,048	906,245,118 EOS *	-0.96%	
6	 Stellar	\$4,485,978,309	\$0.237464	\$63,661,816	18,891,162,641 XLM *	5.89%	
7	 Litecoin	\$3,124,532,527	\$53.17	\$296,557,639	58,762,852 LTC	-3.35%	
8	 Tether	\$2,094,077,448	\$0.971089	\$2,590,223,181	2,156,421,736 USDT *	-0.70%	
9	 Cardano	\$1,962,193,998	\$0.075681	\$30,142,795	25,927,070,538 ADA *	0.25%	
10	 Monero	\$1,736,076,552	\$105.24	\$20,047,012	16,495,847 XMR	-1.12%	

Transparency

Etherscan
The Ethereum Block Explorer

Search by Address / Txhash / Block / Token / ENS Language

HOME BLOCKCHAIN **TOKENS** RESOURCES MORE

Token Niobium Home / ERC-20 TokenTracker / Niobium

Sponsored: Spend.com - Download our wallet and order your Spend Visa® Card today! [Start Spending Your Cryptocurrency.](#)

Summary [ERC-20]

Rep

Total Supply:	102,289,706.277844546896577358 NBC (\$5,514,071.63)	Contract:	0x9f195617fa8fbad9540c5d113a99a0a0172aaedc
Price:	\$0.0539 @ 0.000260 Eth (-11.73%)	Decimals:	18
Holder:	8201 addresses	Links:	f t b c o d e
Transfers:	12758	Filtered By:	<input type="text" value="Enter Address/TxHash"/> <input type="button" value="Apply"/>
Official Site:	https://niobiumcoin.io/		

Transfers Holders Info Chart Exchange ReadContract Write Contract ^{beta} Comments

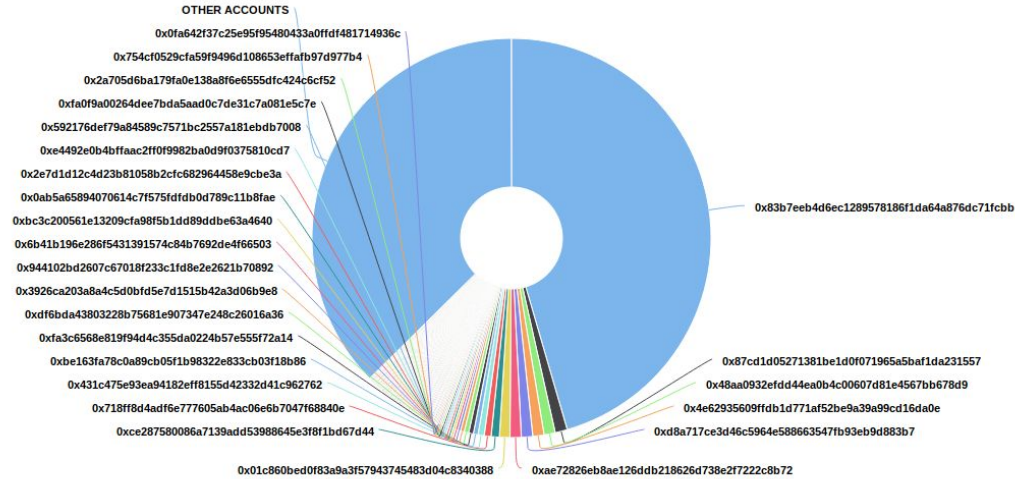
A Total Of 12758 Txns found Page 1 of 511

TxHash	Age	From	To	Quantity
0x9436a89d091899a...	1 hr 3 mins ago	0xc597a5d92f5dc11...	0xdbc089d8f6e1fb0...	3,470
0x815932b7f531f899...	4 hrs 49 mins ago	0xe7ec24d7f53b8e0...	0x431c475e93ea941...	300
0x84b39e78b87ee1a...	6 hrs 7 mins ago	0x7ee088118ff6539...	0xe7ec24d7f53b8e0...	300
0x8985c75c9ff6d58...	7 hrs 37 mins ago	0x46575f2c0b46234...	0x7ee088118ff6539...	300
0xdfcb190f5913e15...	14 hrs 10 mins ago	0x431c475e93ea941...	0x40af5b9ca7dc5eb...	1,869.11395259
0xfcbaac8a6e8d35b...	16 hrs 23 mins ago	0x3f45339759f67ac...	0xde23df4dfcd1b80...	2
0xc9d66bae4b6ae8f...	16 hrs 27 mins ago	0x01c860bed0f83a9...	0x3f45339759f67ac...	100
0xfb1b795f740deba...	16 hrs 34 mins ago	0x01c860bed0f83a9...	0xde23df4dfcd1b80...	100

Transparency

Niobium Top 100 Token Holders

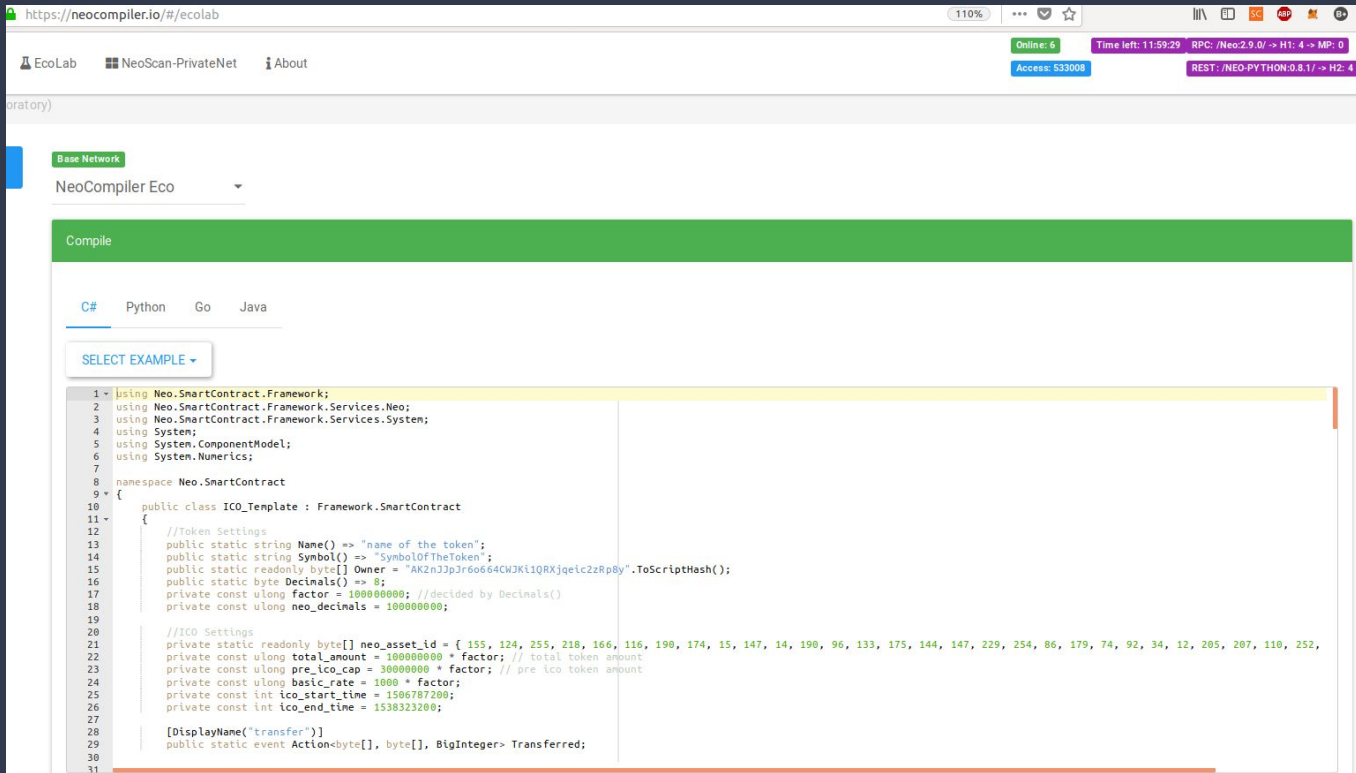
Source: Etherscan.io



(A Total 64,030,058.06 Tokens Held By The Top 100 Accounts From The Total Supply Of 102,289,706.28 Token)

Rank	Address	Quantity (Token)	Percentage
1	0x83b7eeb4d6ec1289578186f1da64a876dc71fcbb	46548578	45.5066%
2	0x87cd1d05271381be1d0f071965a5baf1da231557	1000000	0.9776%

Rules throughout Smart Contracts



The screenshot displays the NeoCompiler Eco web interface. At the top, the browser address bar shows <https://neocompiler.io/#/ecolab>. The page header includes navigation links for 'EcoLab', 'NeoScan-PrivateNet', and 'About'. A status bar at the top right indicates 'Online: 6', 'Time left: 11:59:29', 'RPC: /Neo-2.9.0/ -> H1: 4 -> MP: 0', 'Access: 533008', and 'REST: /NEO-PYTHON-0.8.1/ -> H2: 4'. Below the header, a dropdown menu is set to 'Base Network' and 'NeoCompiler Eco'. A green 'Compile' button is visible. Underneath, there are tabs for 'C#', 'Python', 'Go', and 'Java', with 'C#' selected. A 'SELECT EXAMPLE' dropdown is also present. The main area contains a C# code editor with the following code:

```
1 - using Neo.SmartContract.Framework;
2 using Neo.SmartContract.Framework.Services.Neo;
3 using Neo.SmartContract.Framework.Services.System;
4 using System;
5 using System.ComponentModel;
6 using System.Numerics;
7
8 namespace Neo.SmartContract
9 {
10     public class ICO_Template : Framework.SmartContract
11     {
12         //Token Settings
13         public static string Name() => "name of the token";
14         public static string Symbol() => "SymbolOfTheToken";
15         public static readonly byte[] Owner = "AK2nJp3r66664CNJKi1QRXj6ic2zRp8y".ToScriptHash();
16         public static byte Decimals() => 8;
17         private const ulong factor = 100000000; //decided by Decimals()
18         private const ulong neo_decimals = 100000000;
19
20         //ICO Settings
21         private static readonly byte[] neo_asset_id = { 155, 124, 255, 218, 166, 116, 190, 174, 15, 147, 14, 190, 96, 133, 175, 144, 147, 229, 254, 86, 179, 74, 92, 34, 12, 205, 207, 110, 252,
22         private const ulong total_amount = 100000000 * factor; // total token amount
23         private const ulong pre_ico_cap = 30000000 * factor; // pre ico token amount
24         private const ulong basic_rate = 1000 * factor;
25         private const int ico_start_time = 1506787200;
26         private const int ico_end_time = 1538323200;
27
28         [DisplayName("transfer")]
29         public static event Action<byte[], byte[], BigInteger> Transferred;
30
31 }
```


Examples I: Supply Chain - Coffee trip



Examples II: Distributed energy generation through mini/microgrid



Tokens

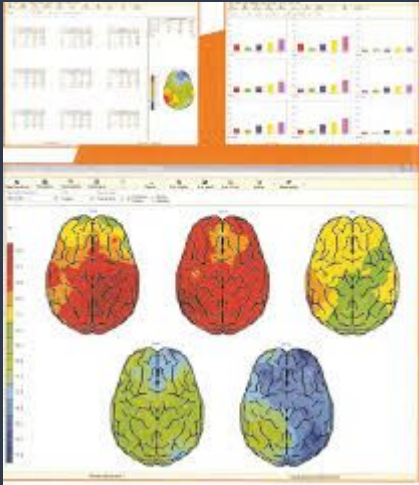


Exchanges
Agreements



Multi-agent
connections

Examples III: Digital Identity



Examples IV: Registry/Notary's Office



Examples V: Smart Guns



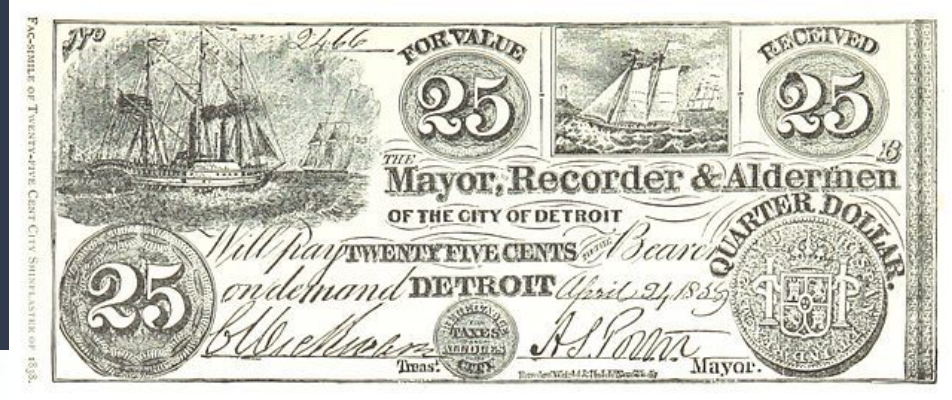
Cities are
shining



Cities are
the core
of
society



Cities are
where
the
money
is..



Transparency for public profit

Digital/Trustable
cities management

Transparency for public profit

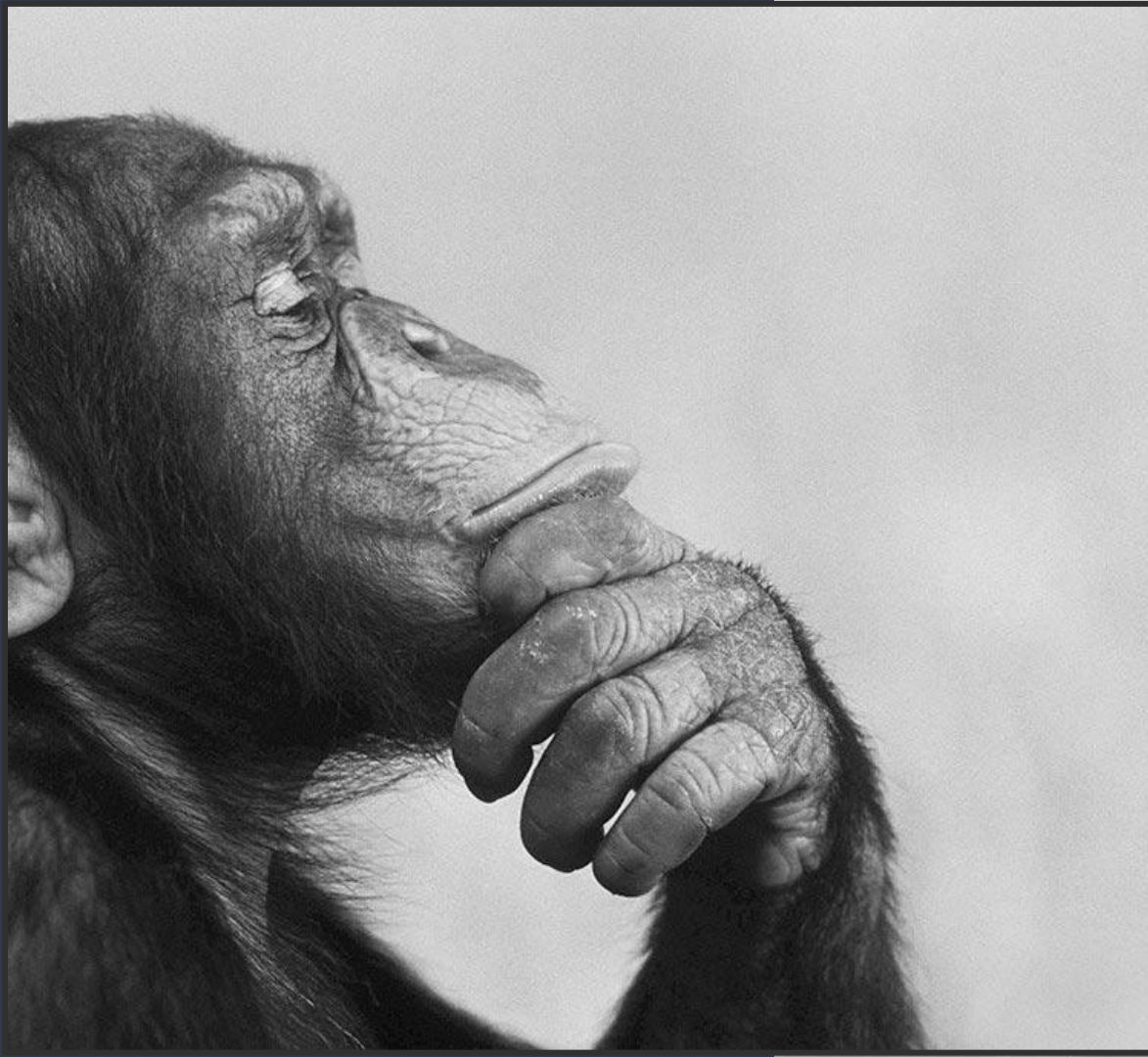
My motto is: “if you
are asking
something is wrong”

Transparency for public profit

I will use a Blockchain
explorer before asking
dumb questions. I will
use a Blockchain



Nature
deserves
better



Where are we going next?

- I. World urges for trust
- II. Distributed solutions are entering by the edges
- III. CI showing up as something intrinsic in humans daily life
- IV. Services should be more efficient
- V. "Life quality"

Transparência
*para redução das
desigualdades*

Vitor Nazário Coelho
vncoelho@gmail.com

