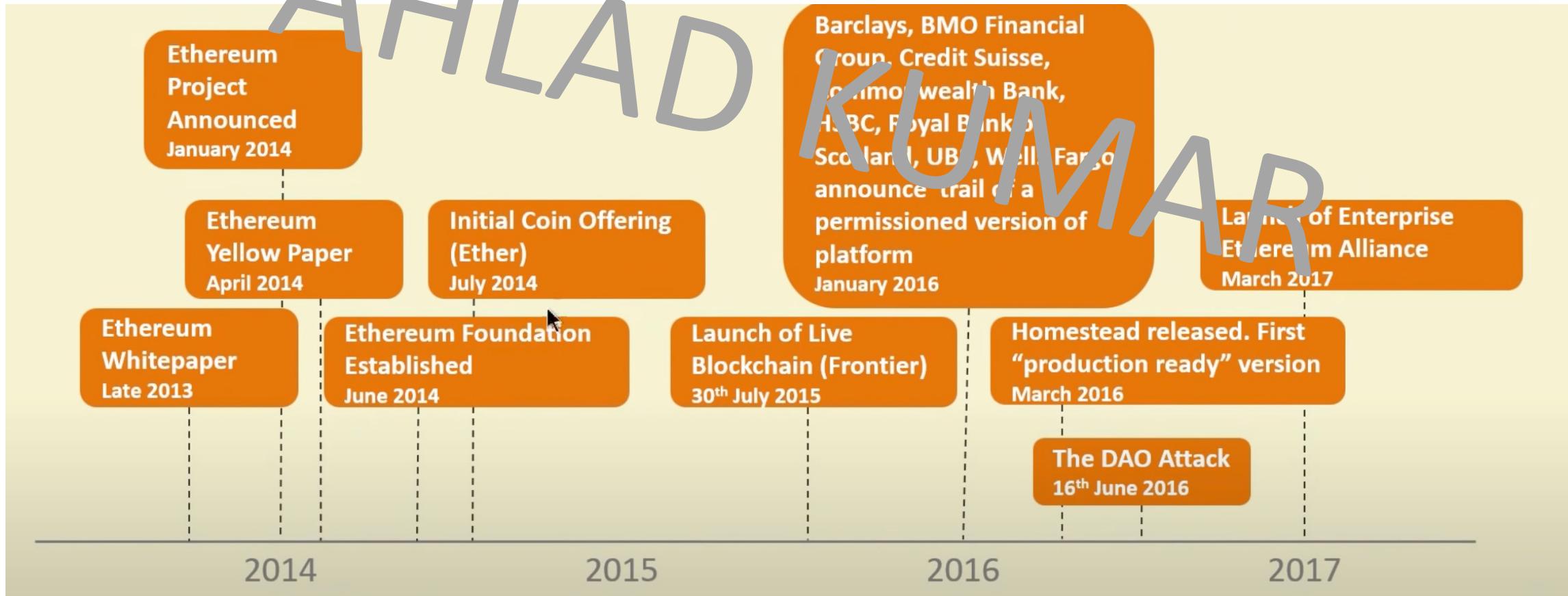
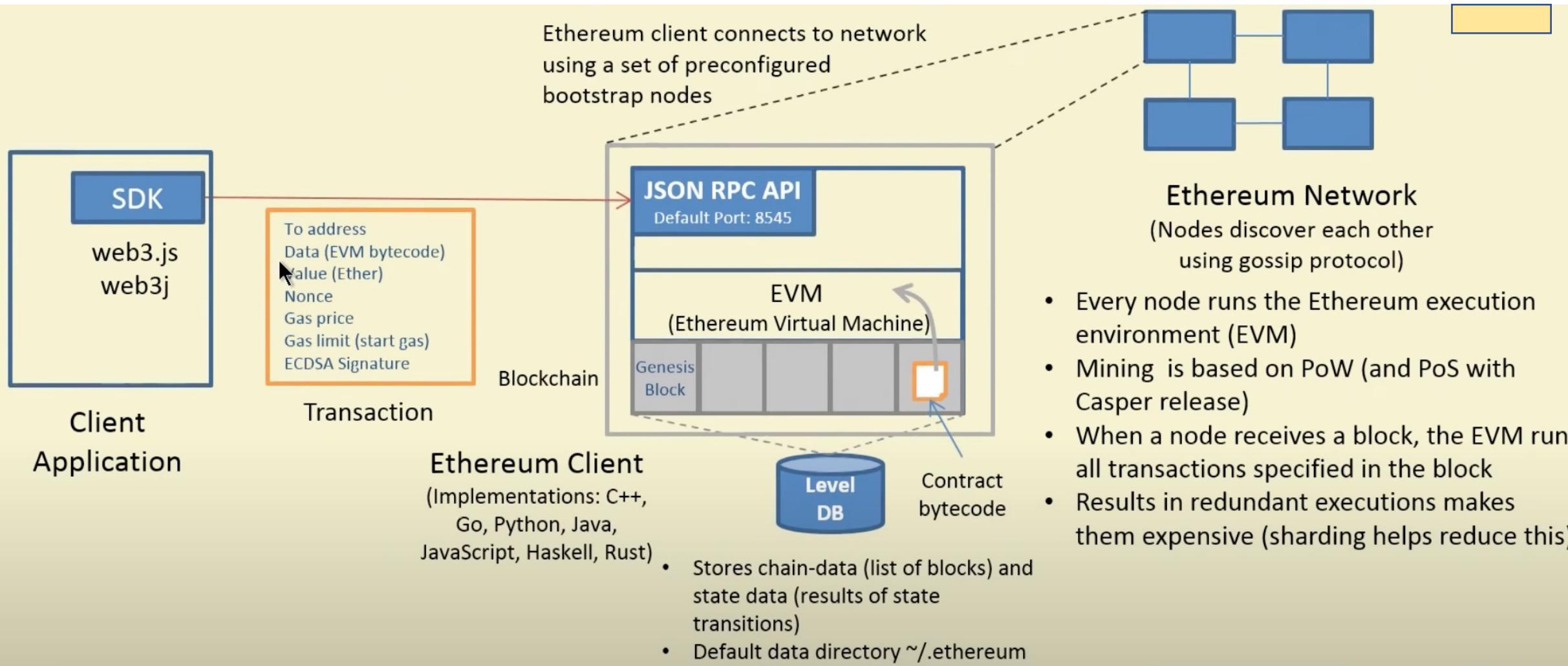
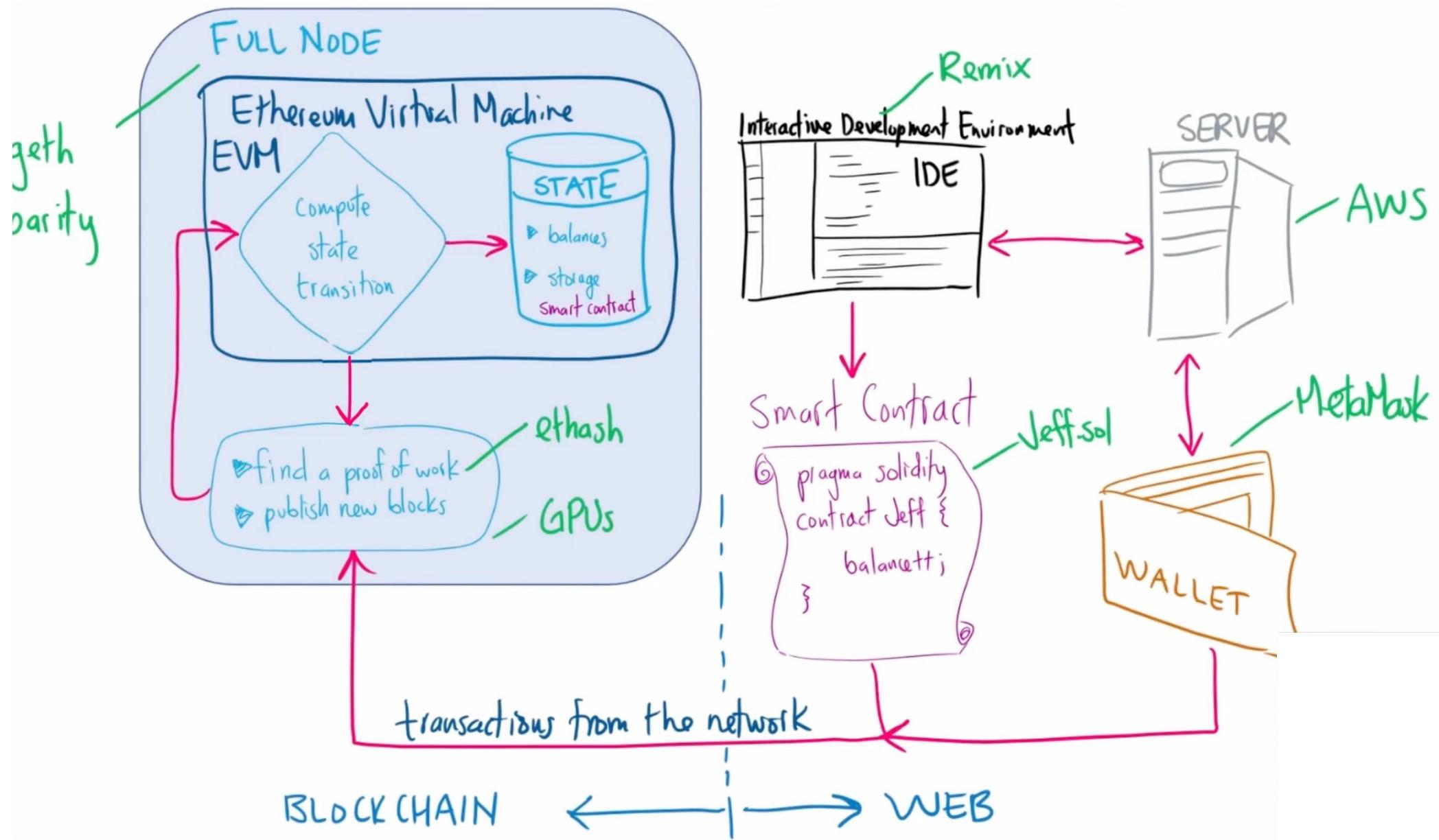
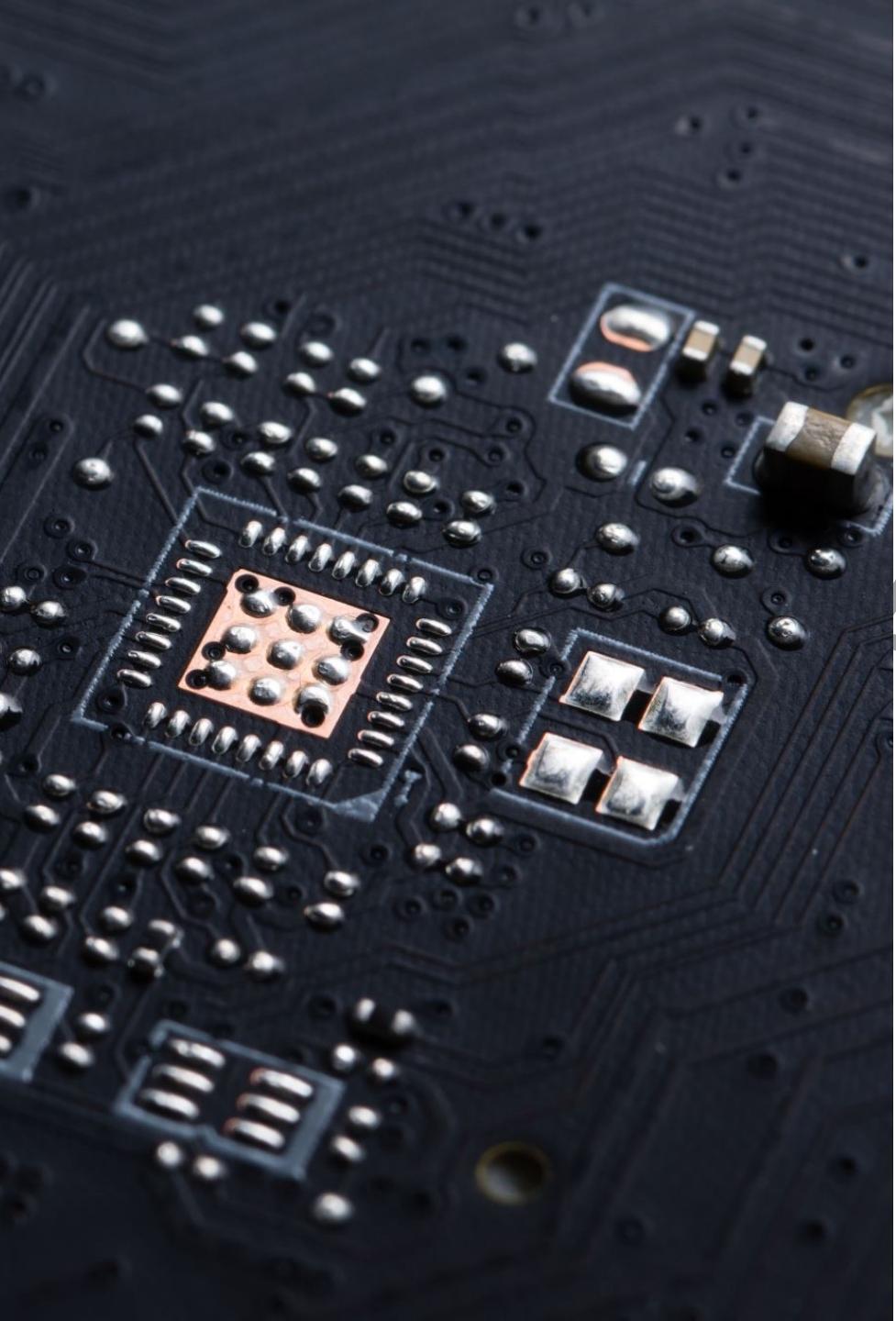


# AHLAD KUMAR









ADKUMAR  
Ethereum

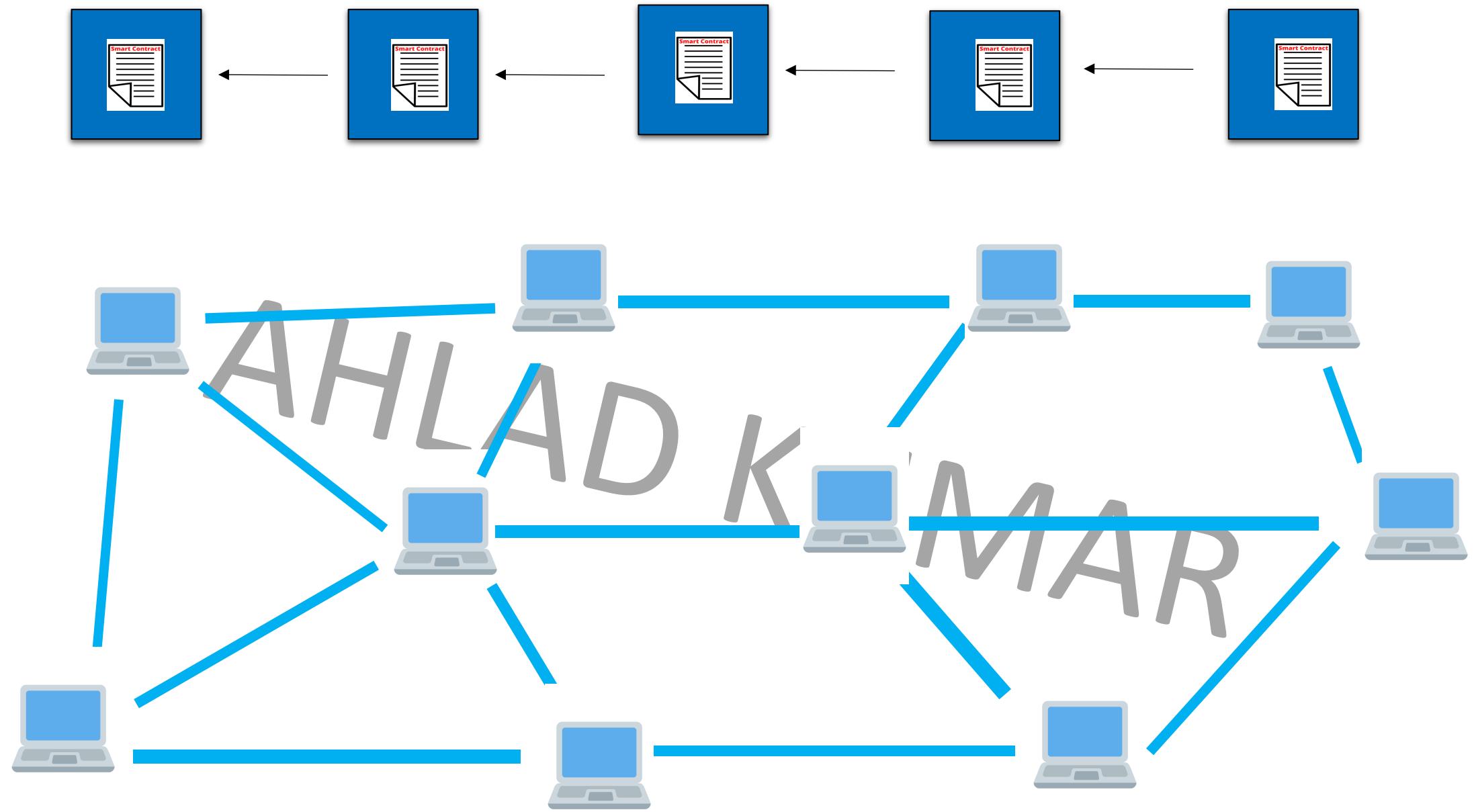
# Ethereum

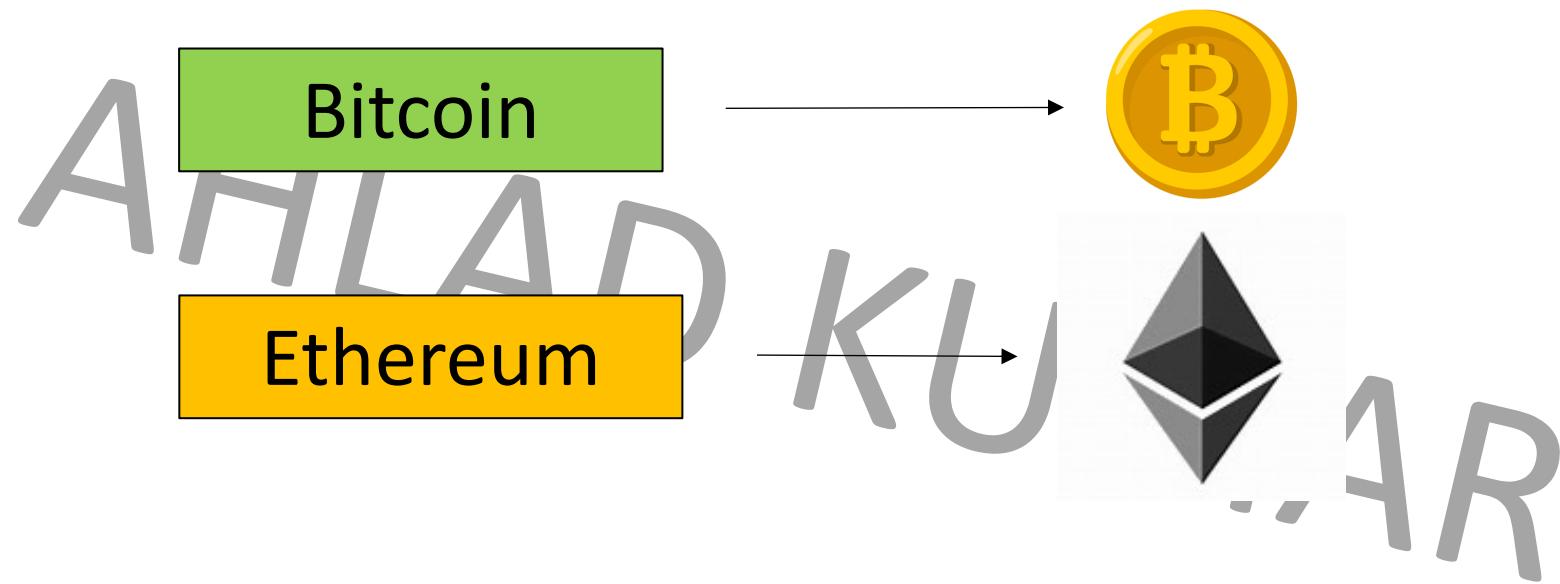


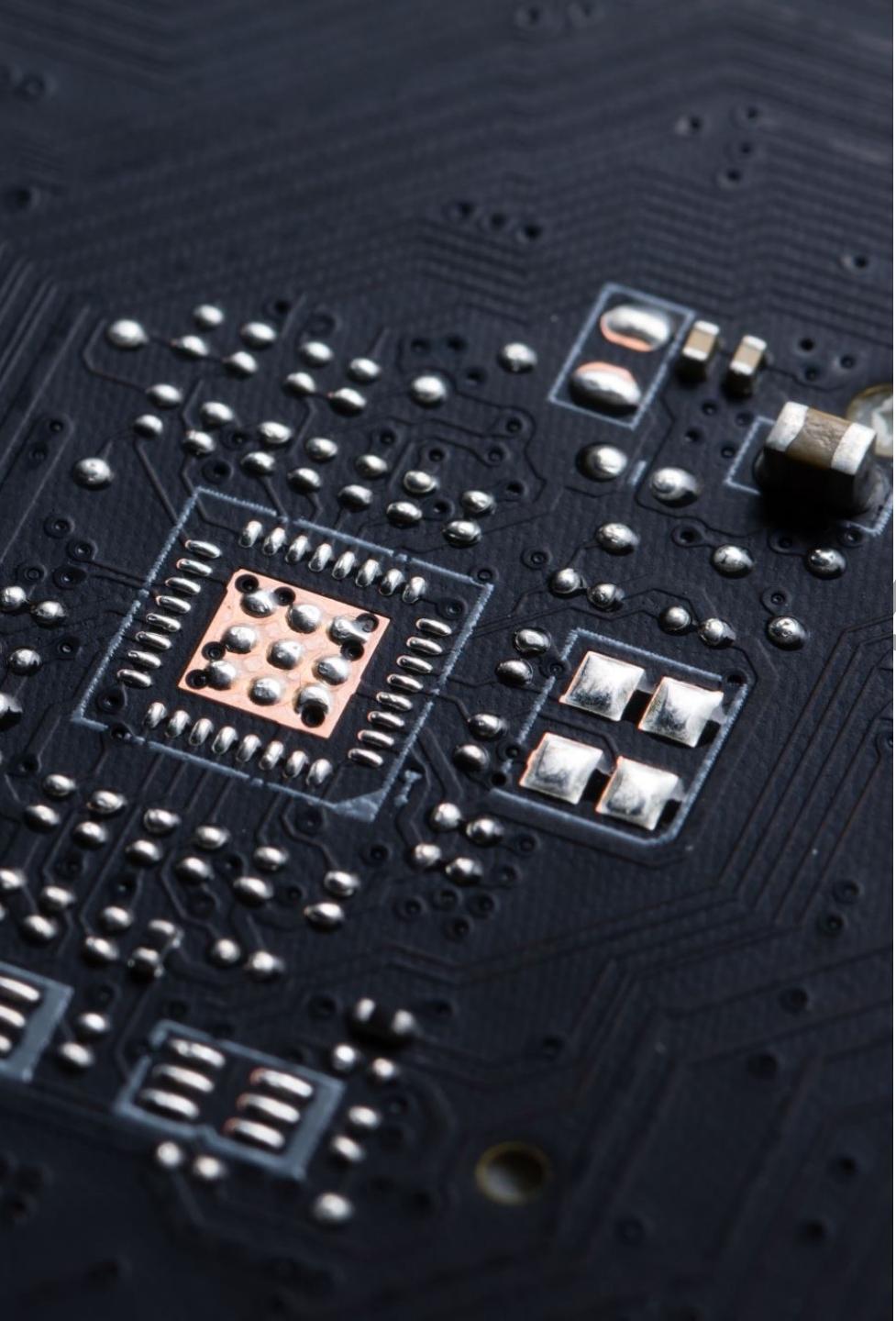
**Vitalik Buterin**



**Ethereum**



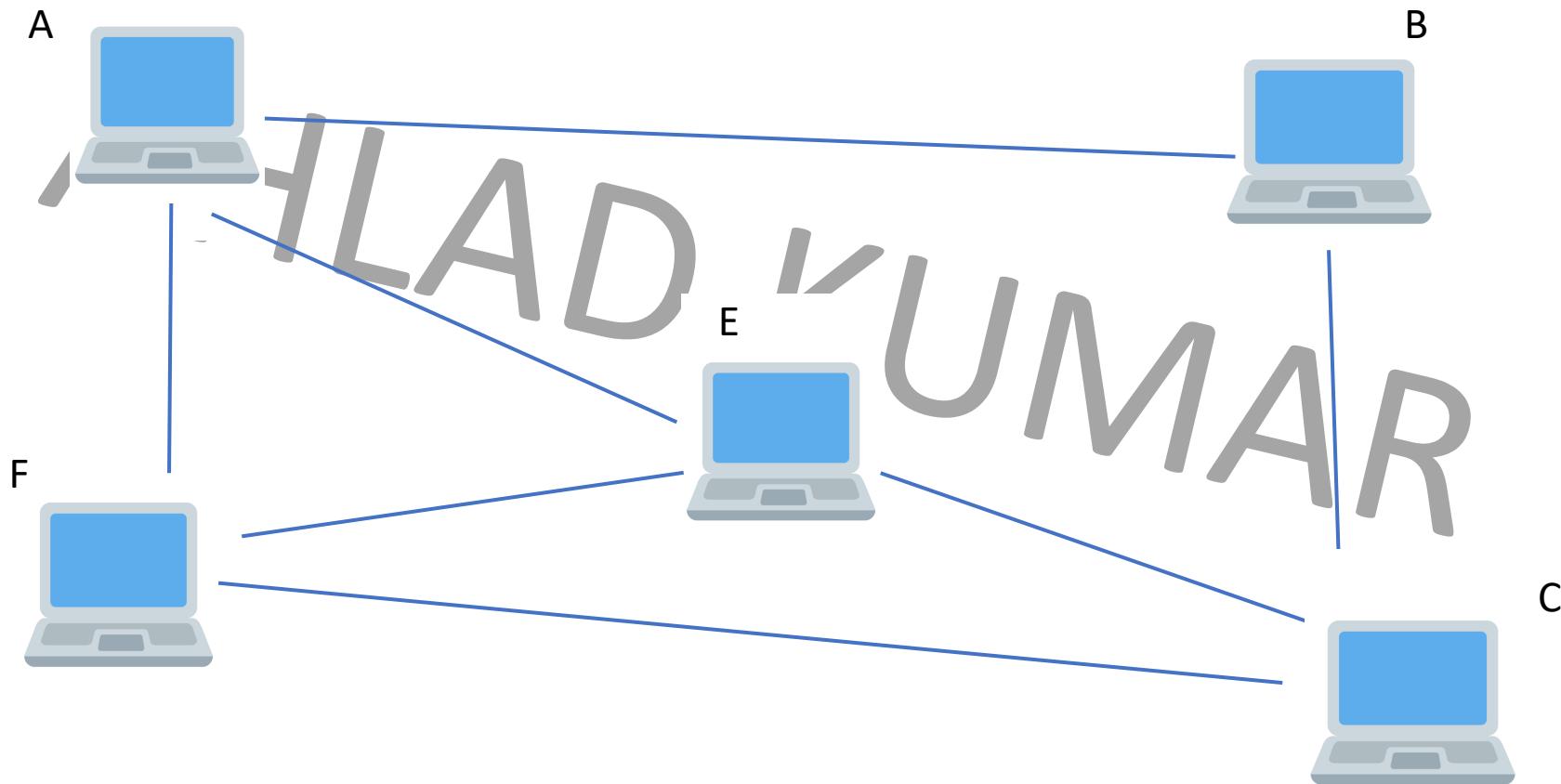




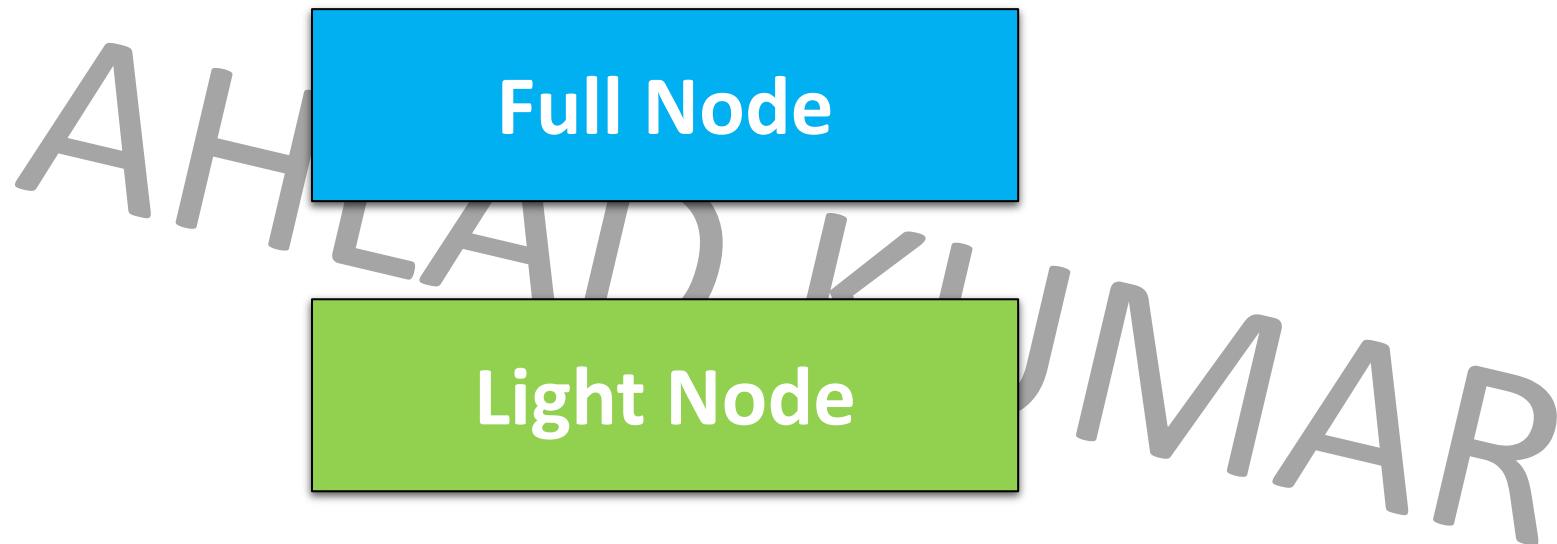
# Ethereum Nodes

AD KUMAR

# Ethereum Nodes



# Types of Nodes



# Full Node

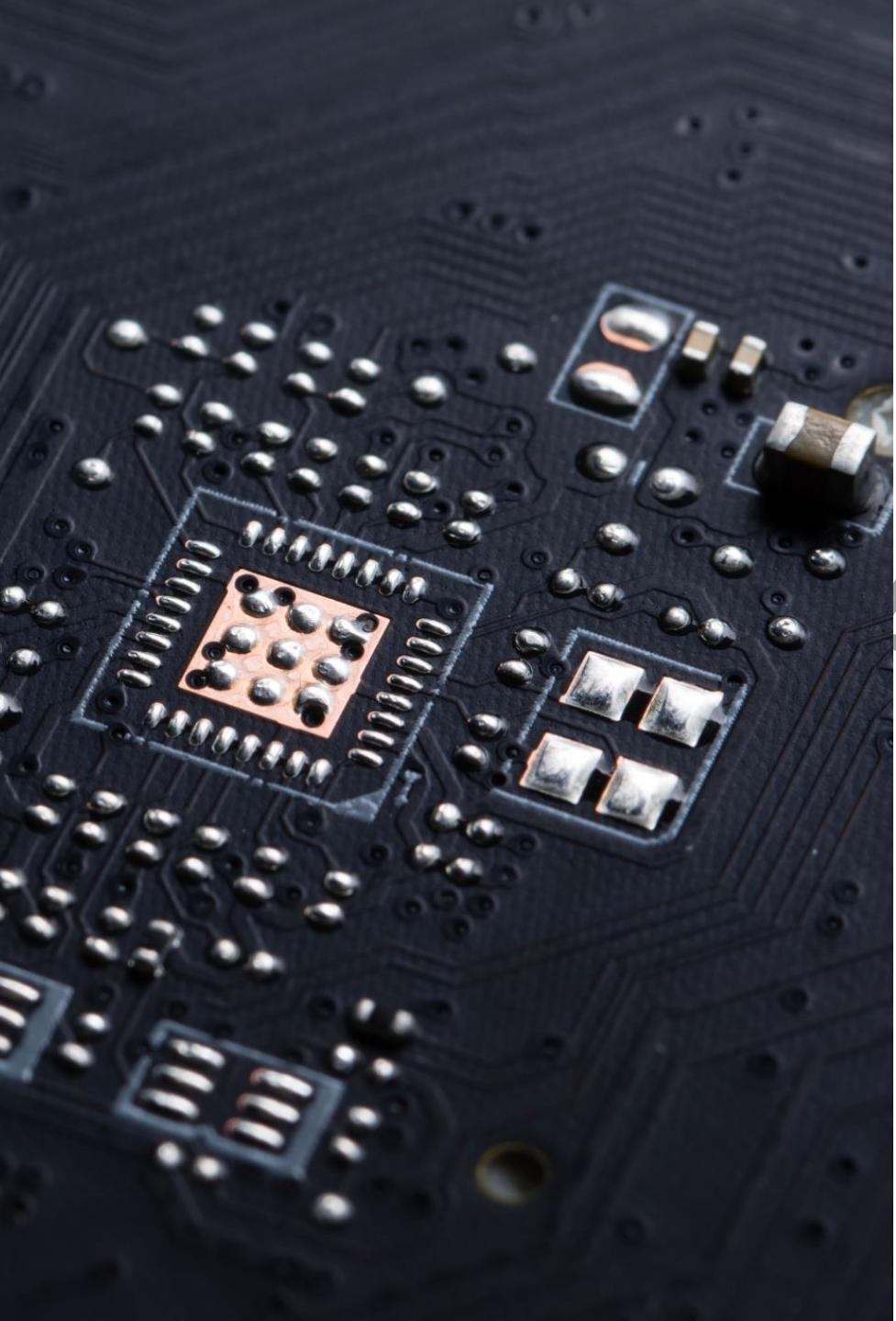
- Stores full blockchain data (although this is periodically pruned so a full node does not store all state data back to genesis)
- Participates in block validation, verifies all blocks and states.
- Serves the network and provides data on request.
- All states can be derived from a full node.



# Light Node

- Stores only the block header and depends on full node.
- For low capacity devices which cannot afford to store the gigabytes of data.
- The light nodes do not participate in consensus (i.e. they cannot be miners/validators), but they can access the Ethereum blockchain with the same functionality as a full node.





# Ethereum Accounts

ADKUMAR

# Ethereum Accounts

- An Ethereum account is an entity with an ether (ETH) balance that can send or receive transactions on Ethereum.

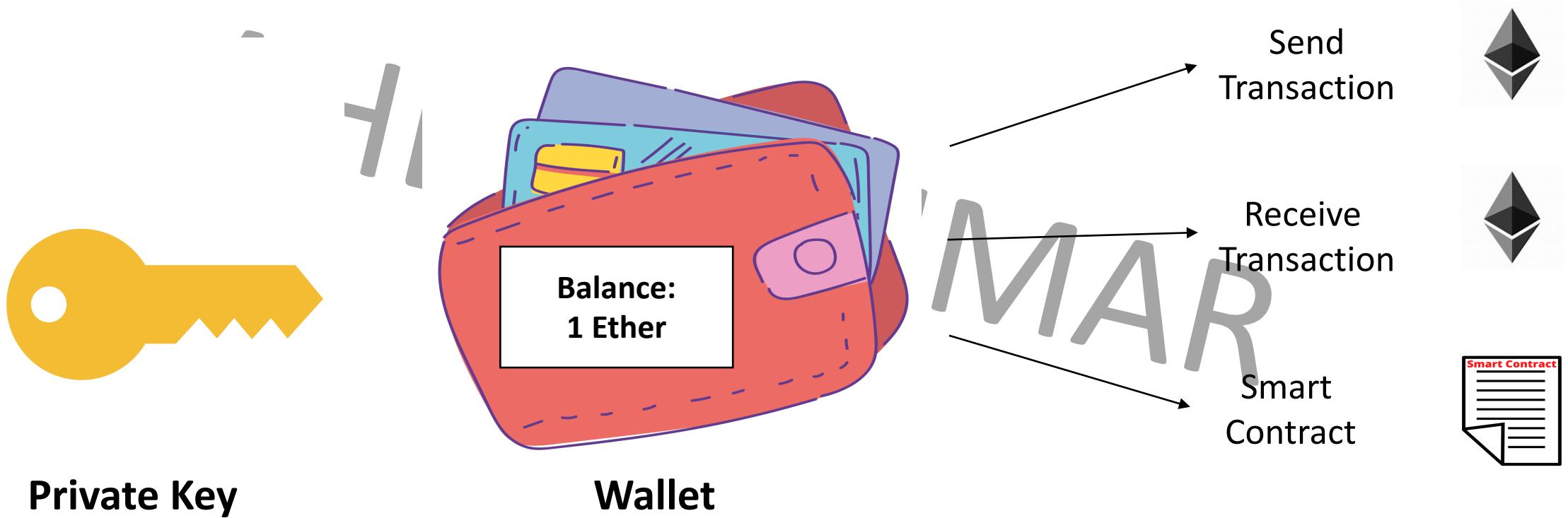
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# Types of Ethereum Accounts

Externally Owned  
Account(EOA)

Contract Account(CA)

# Externally Owned Account(EOA)



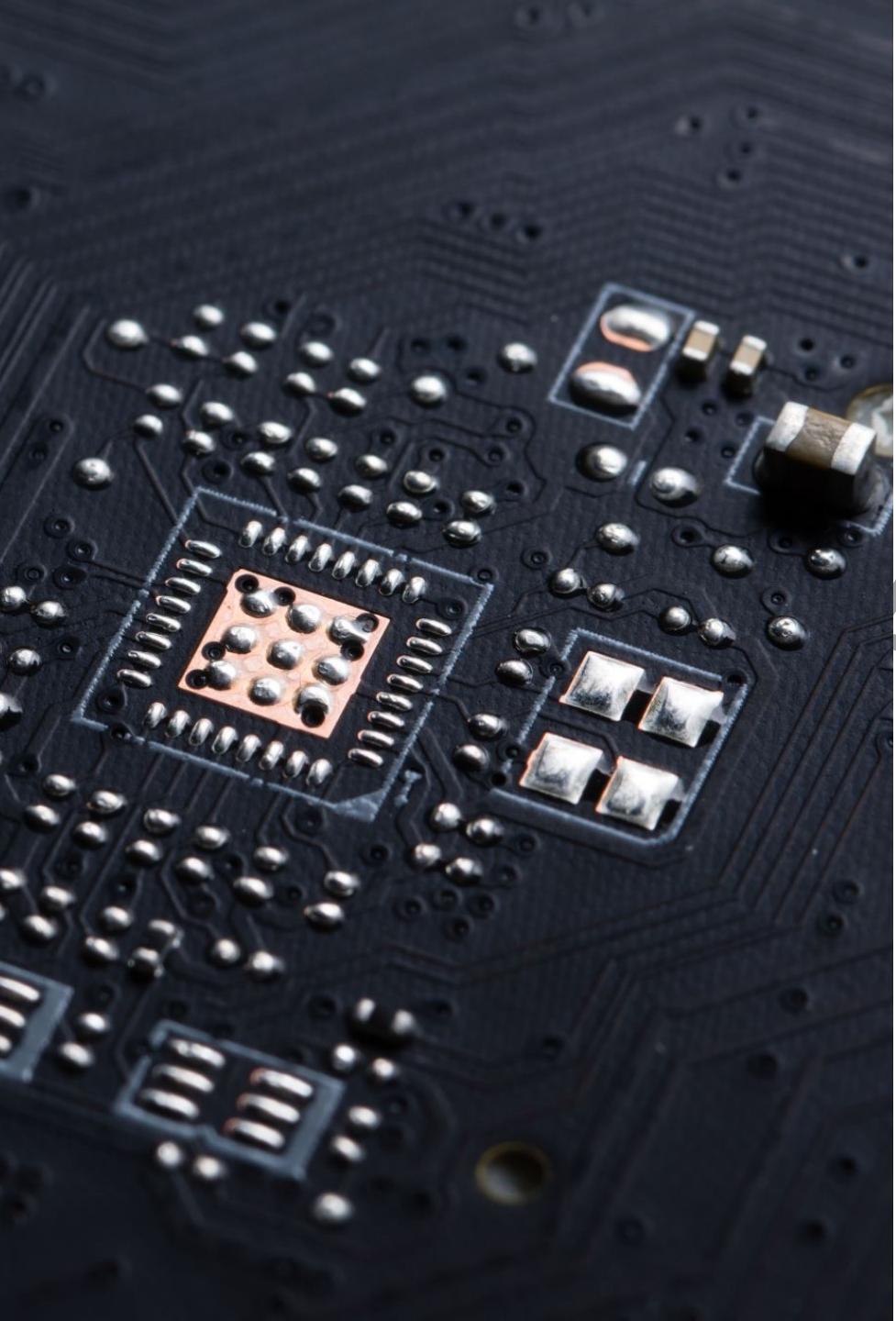
# Contract Account (CA)

- Controlled by contract code.

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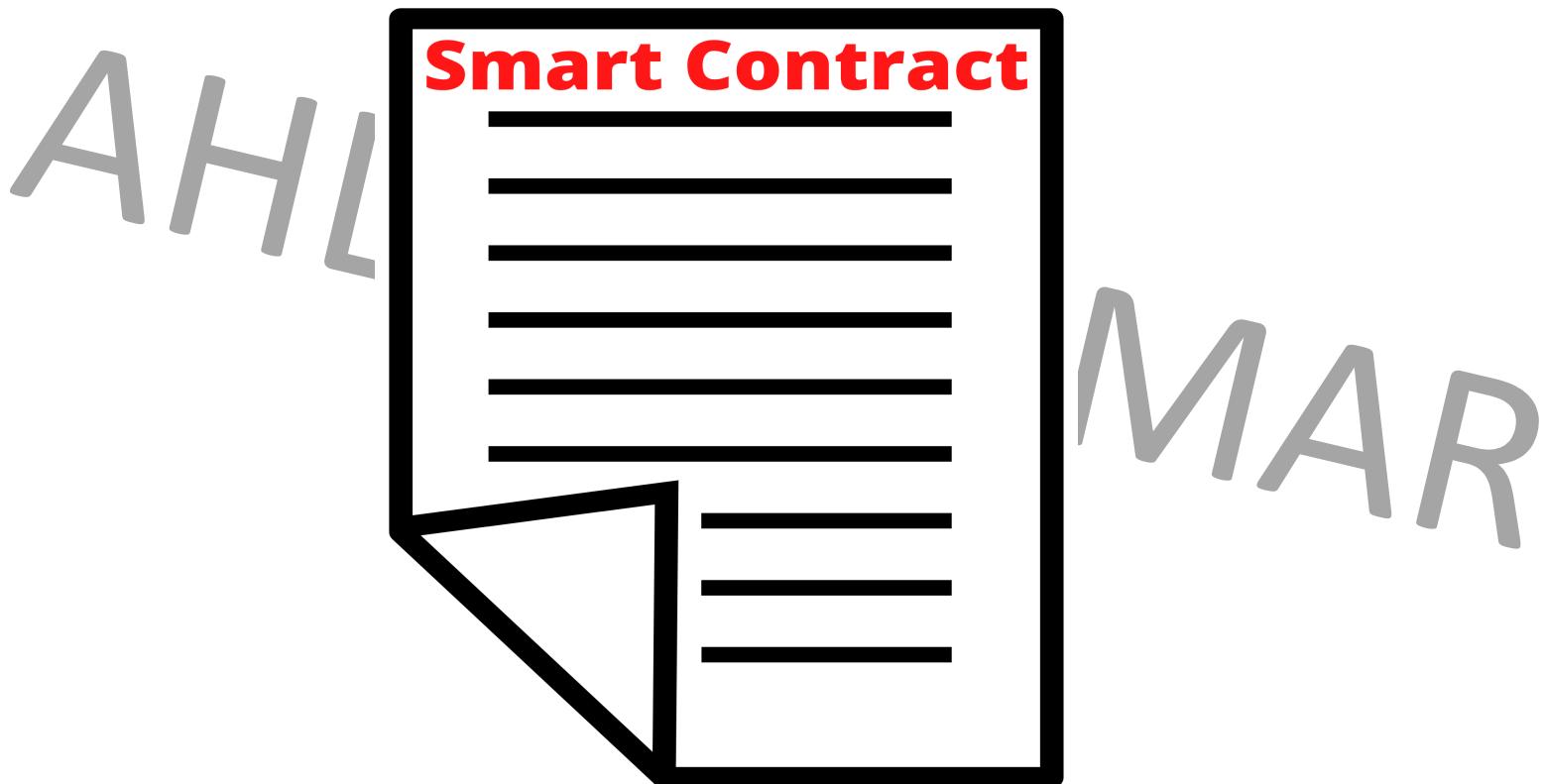
# EOA VS CA

EOA	CA
Private Key is needed	No private or public key is needed.
Controlled by Human	Controlled by Contract code
Has a unique address	Has a unique address
Holds ETH balance	Holds ETH balance

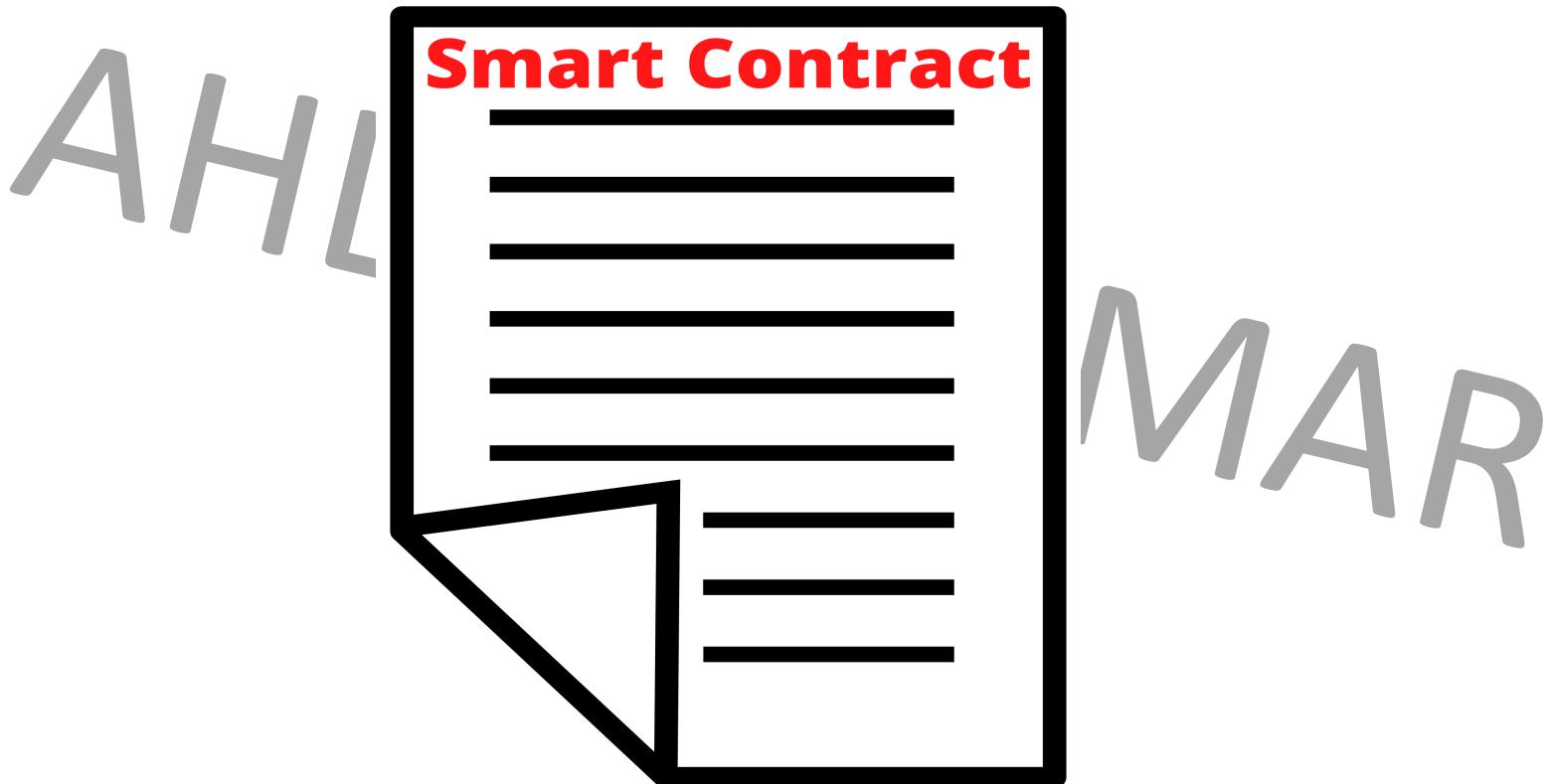


Smart  
Contract

# Smart Contract



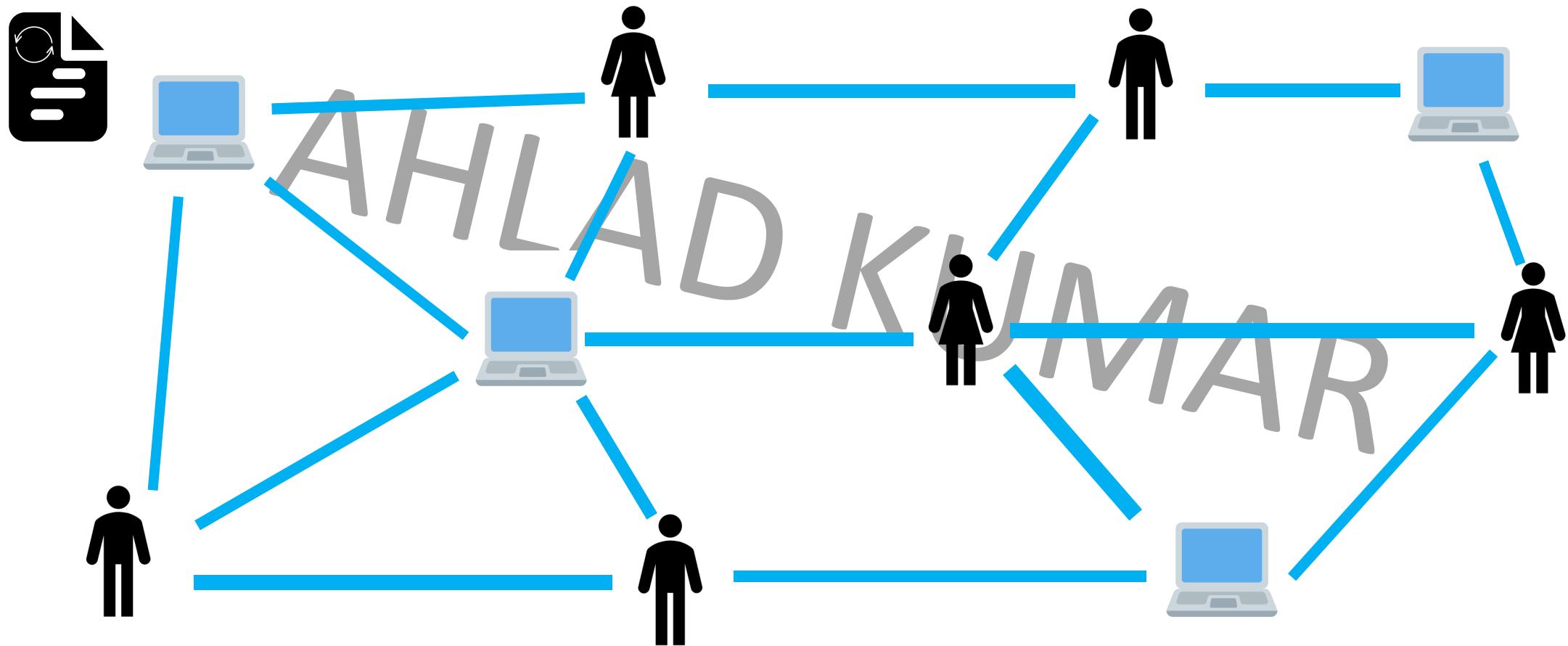
# Smart Contract



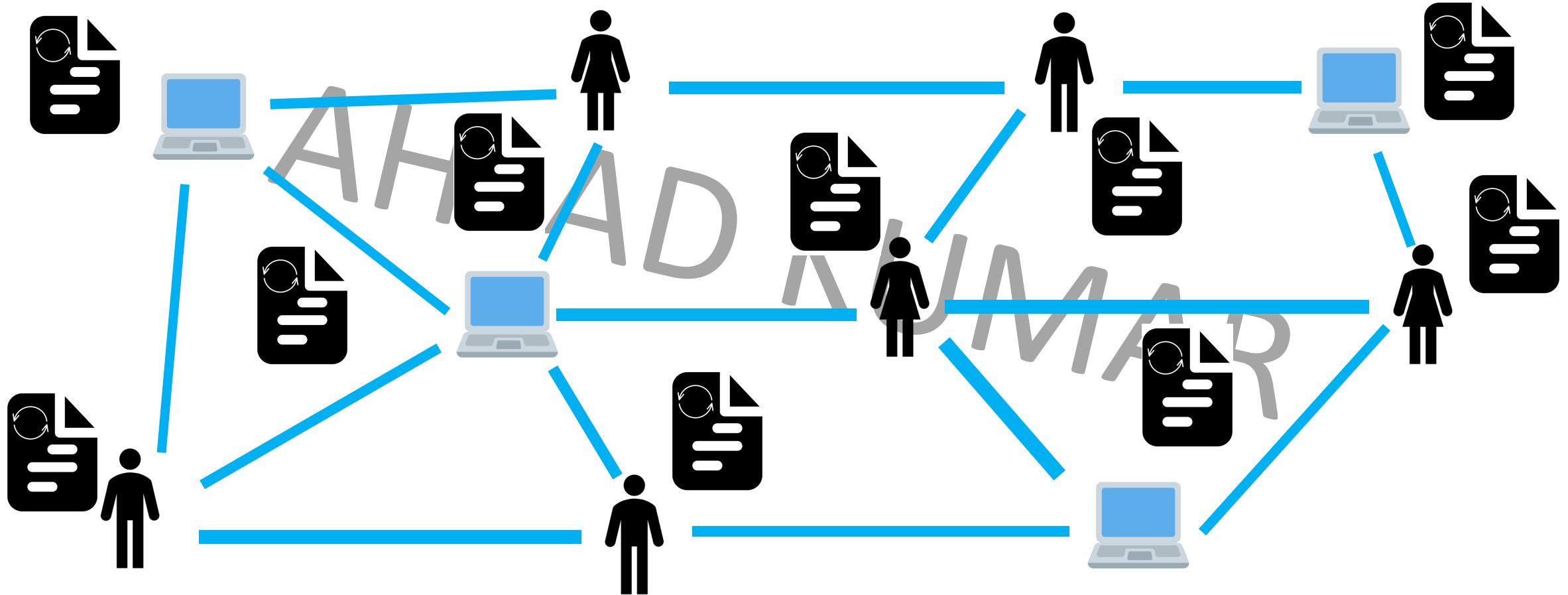
# Smart Contract



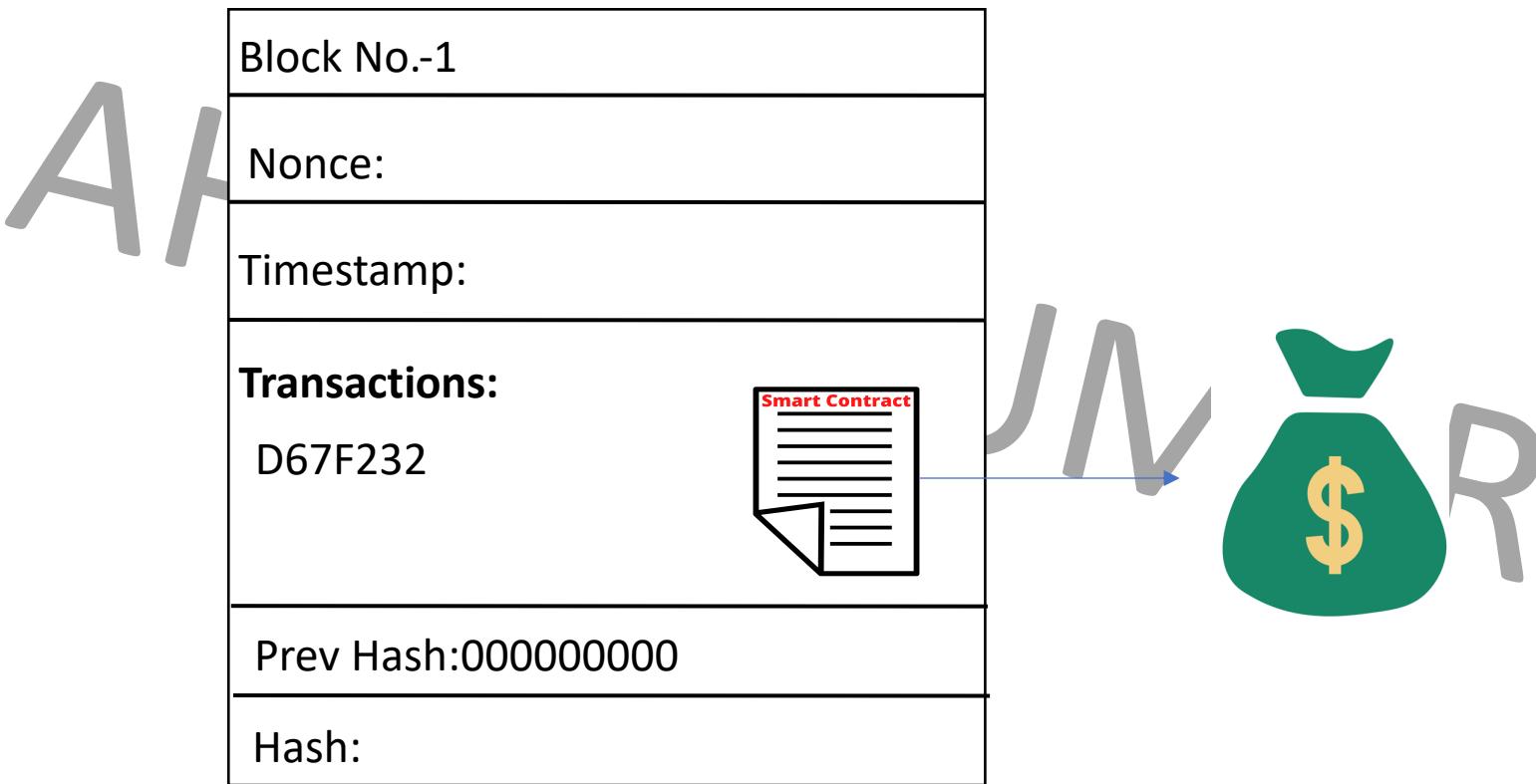
# Smart Contract



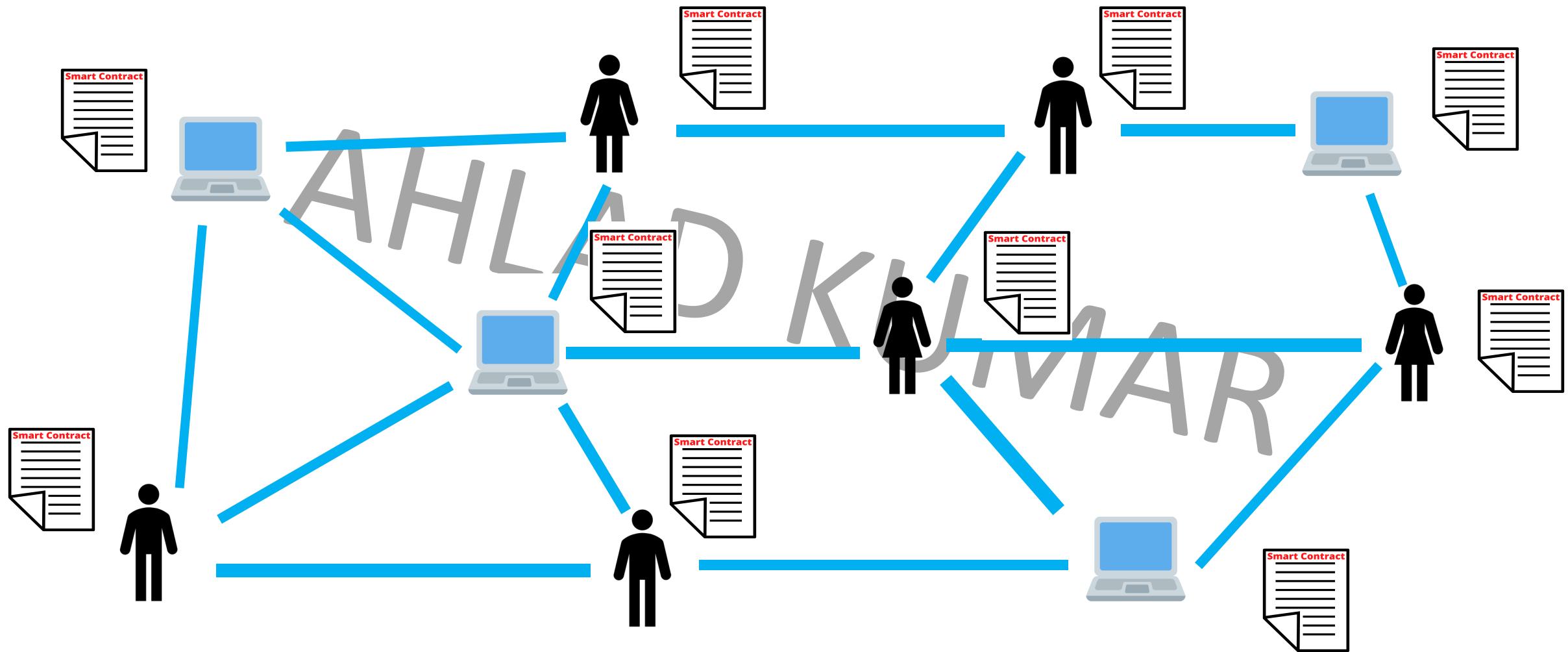
# Smart Contract



# Smart Contract



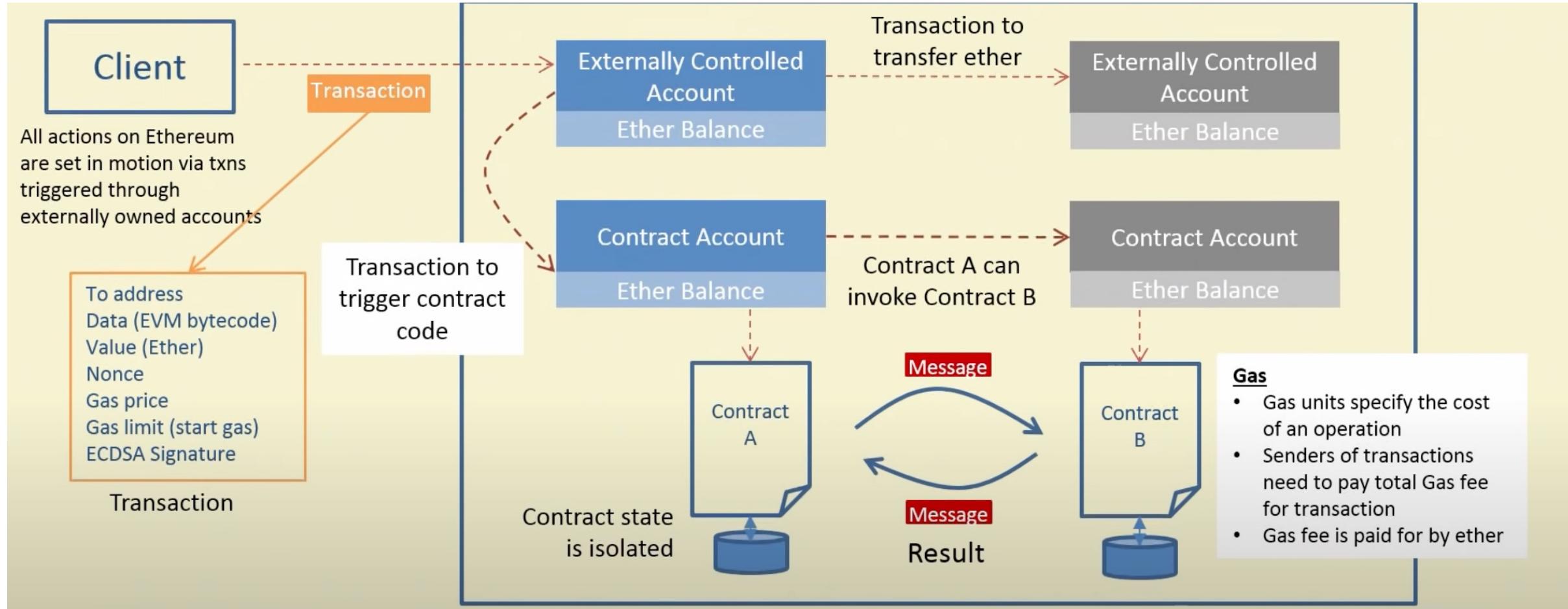
# Smart Contract



# Smart Contract

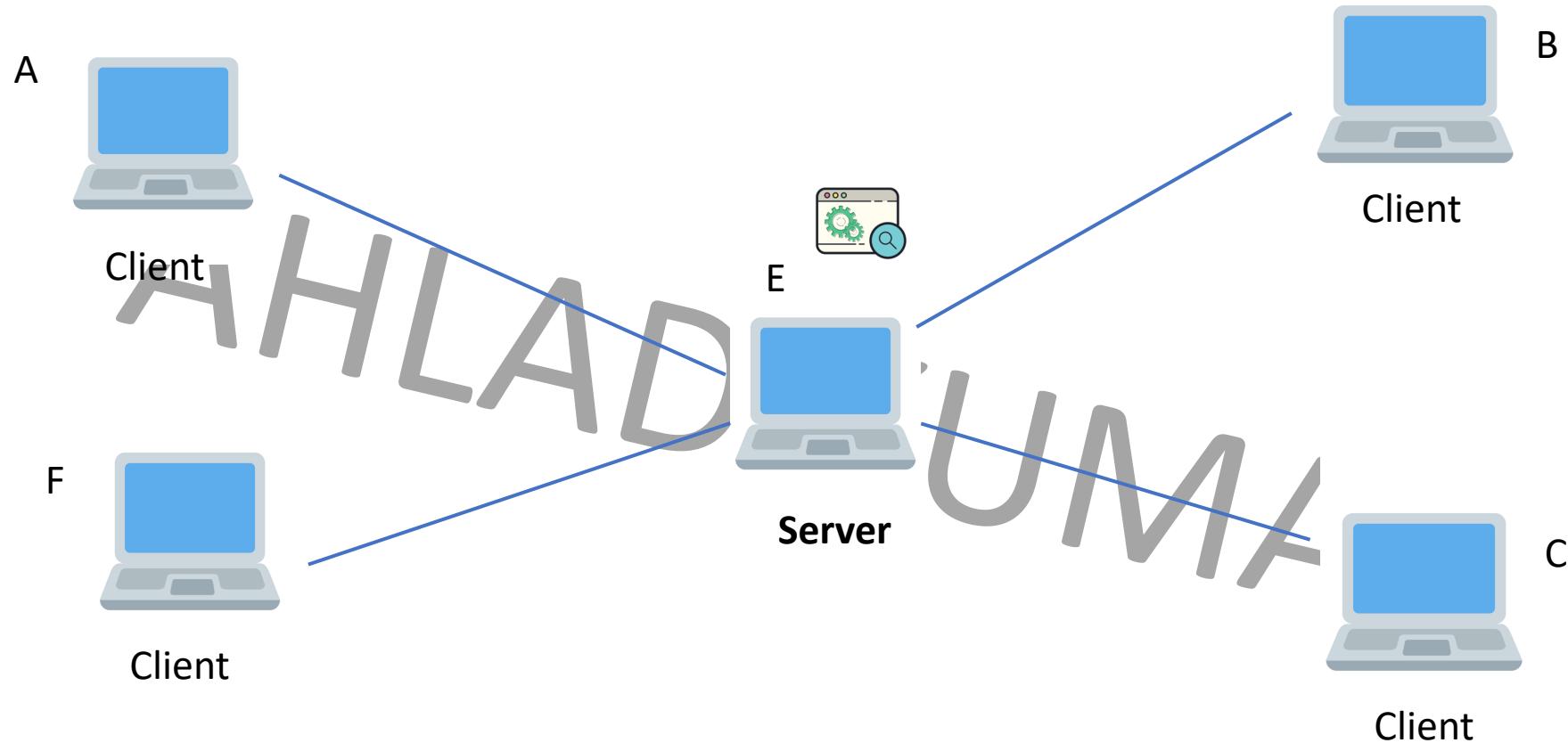
Each node has the following:-

- Current state of all smart contracts.
- History of both transaction and smart contract.

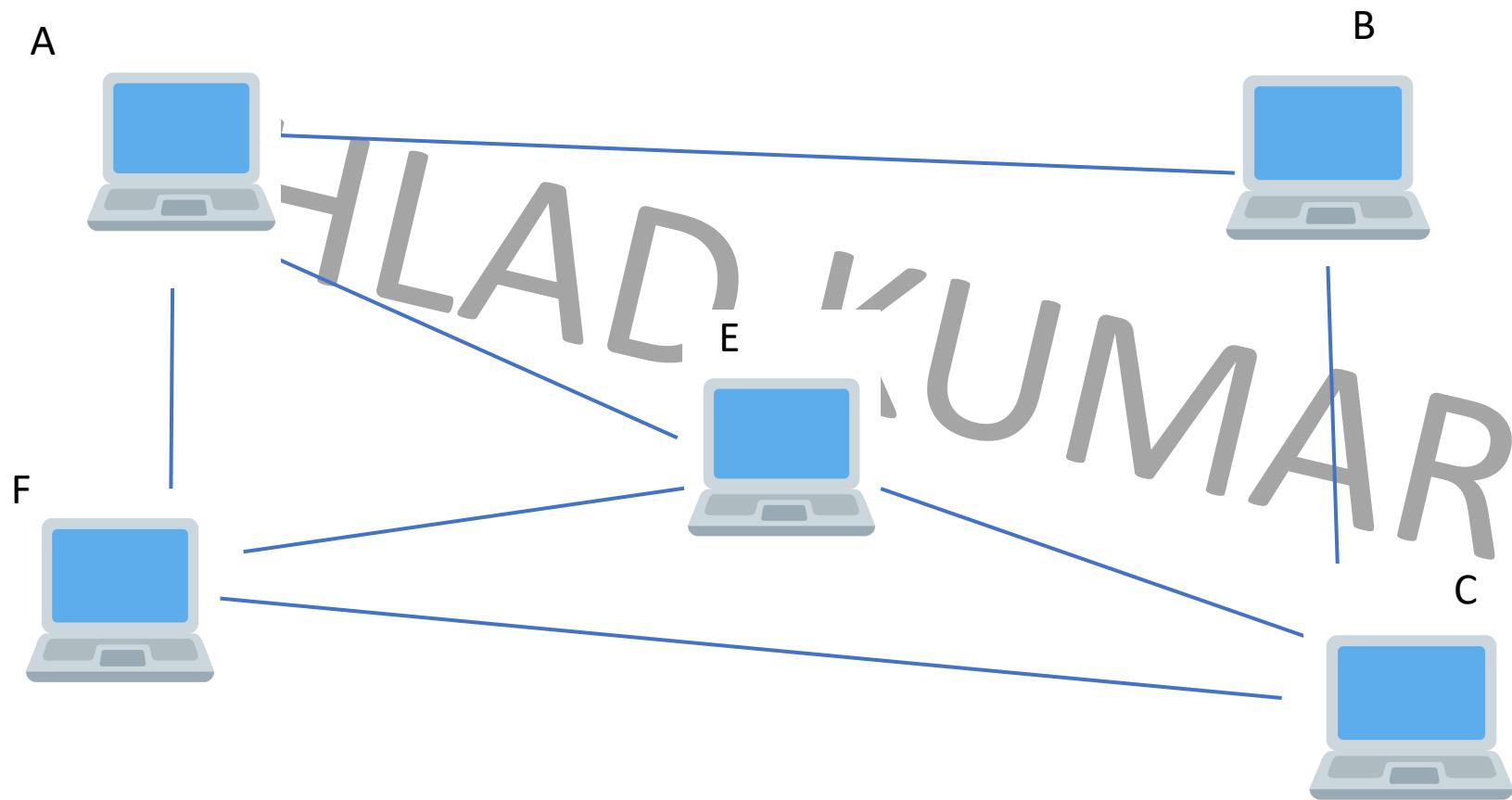


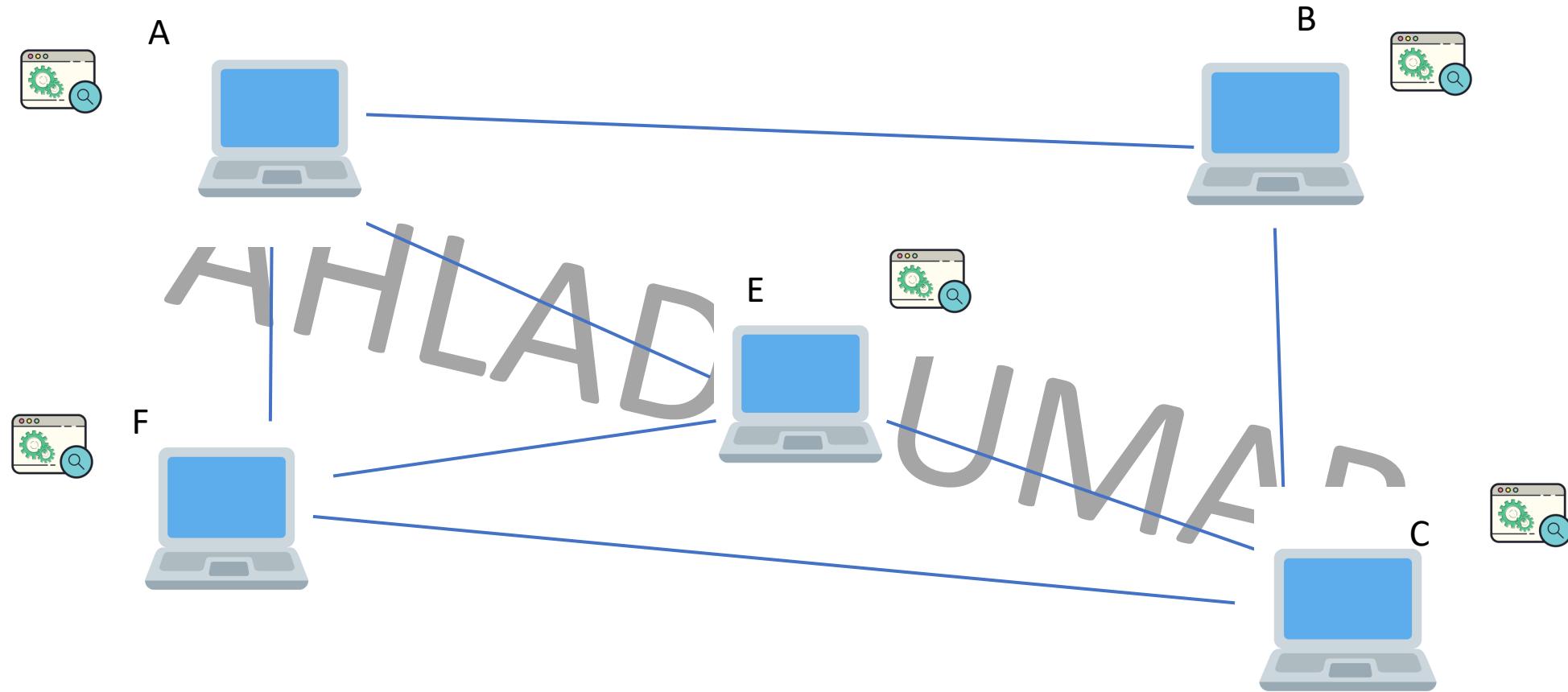
# Decentralized Apps(Dapps)

AHLAD KUMAR



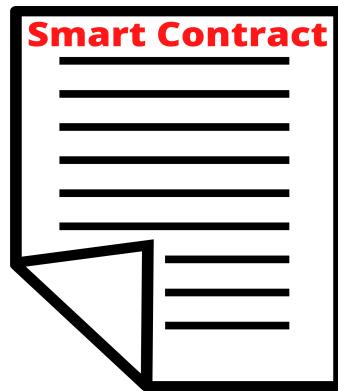
# Decentralized Apps(Dapps)



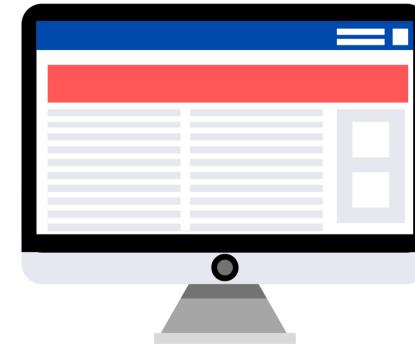
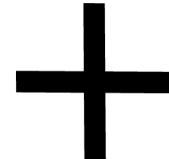


# Decentralized Apps(Dapps)

Decentralized Network



Smart Contract



Front End

**Search Engine**

AHLA

**Social Media**

**Video Platform**

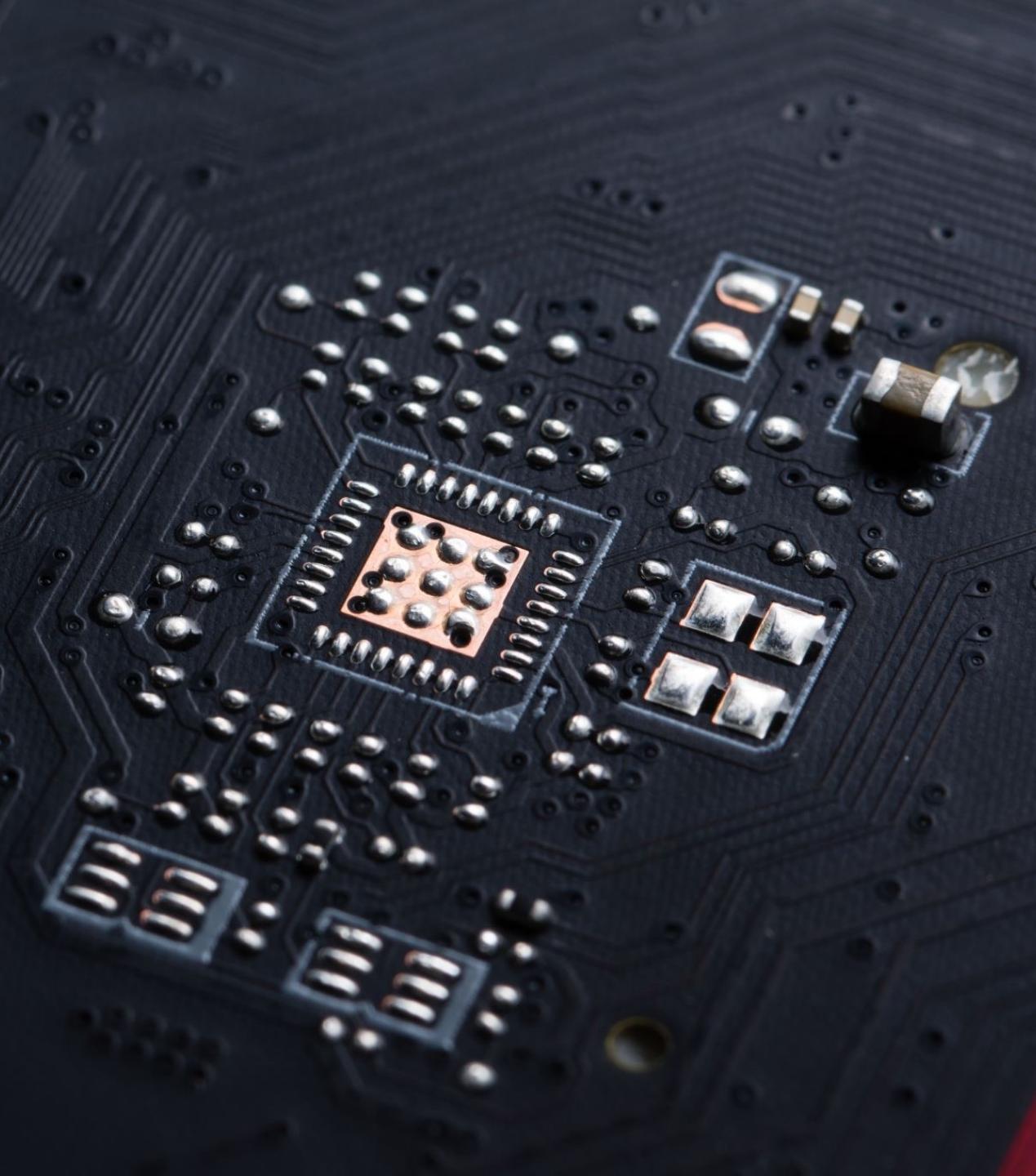


KUMAR

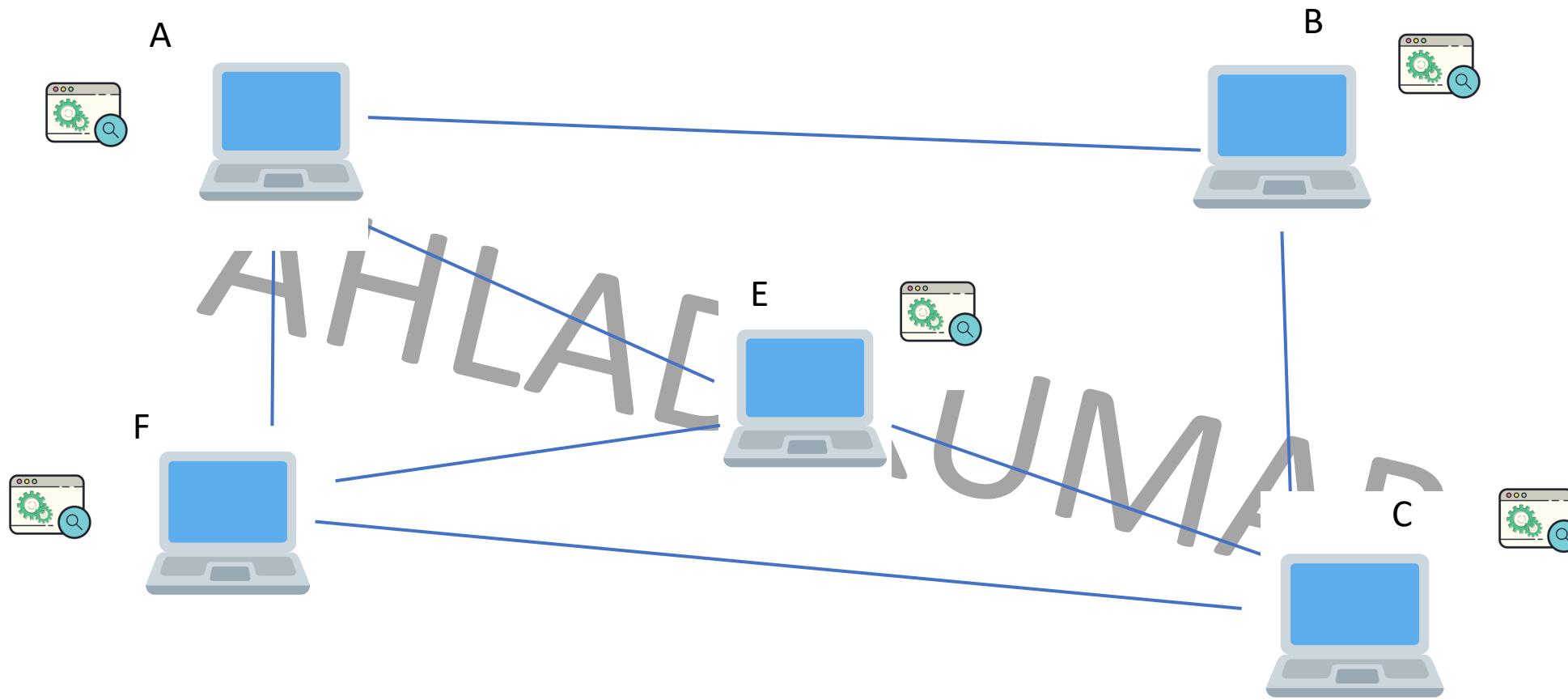


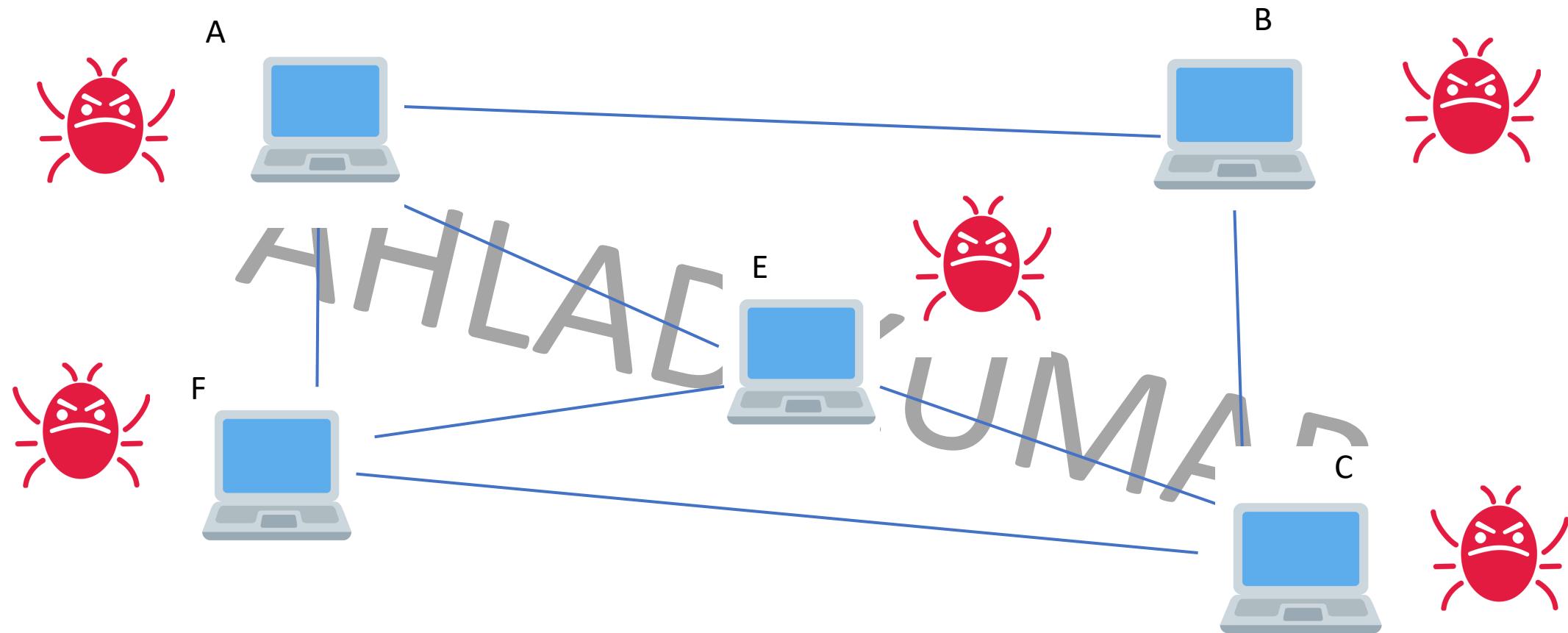
# Decentralized Apps(Dapps)

Centralized Apps	Decentralized Apps
Not Trustworthy	Trustworthy
Censorship	No censorship
You pay	They pay
Go down	Can never go down



# Ethereum Virtual Machine(EVM KUMAR



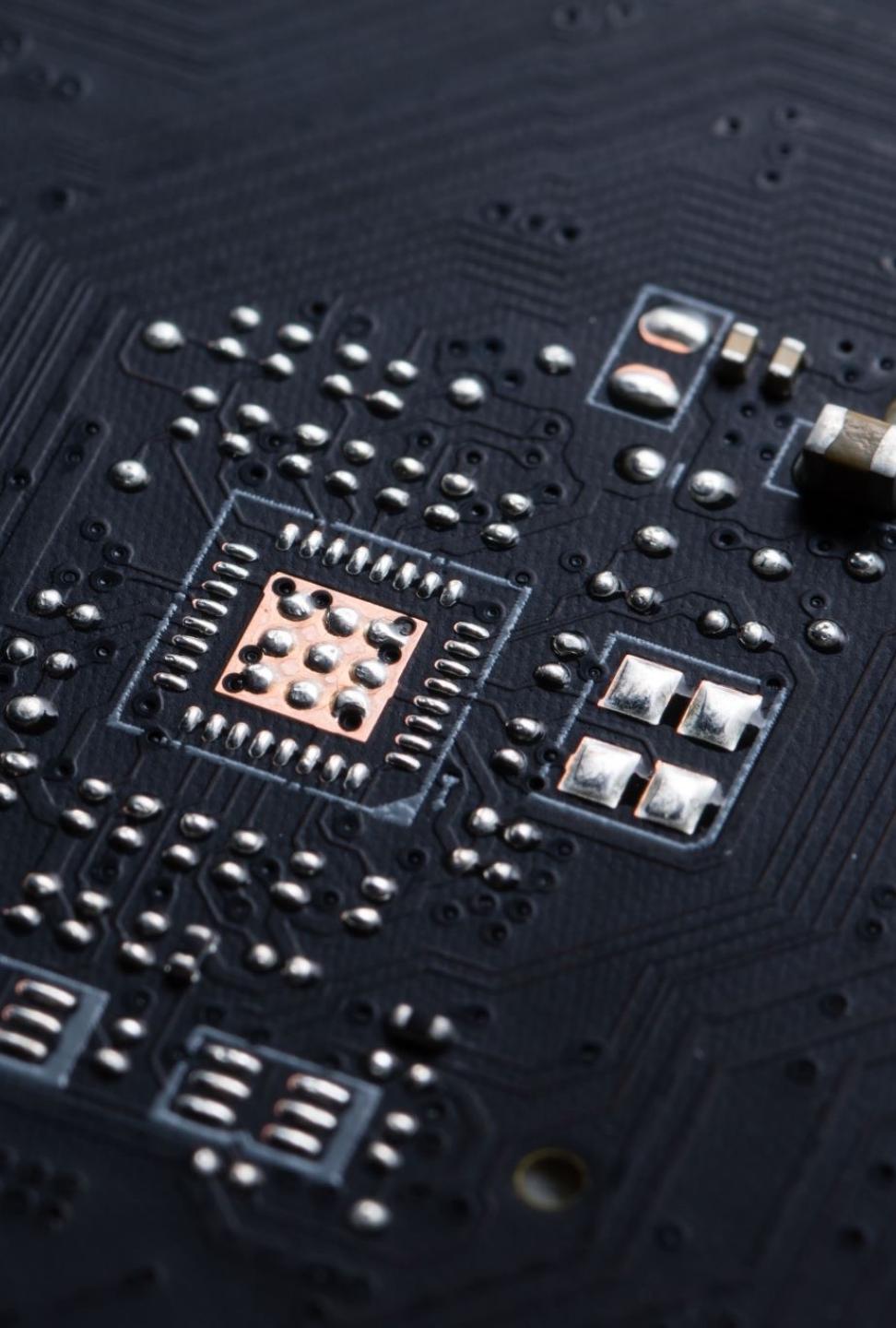


# Ethereum Virtual Machine

AHL

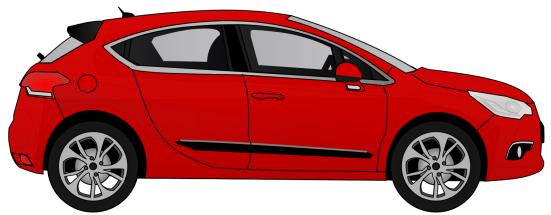


'IMAR



Ethereum Gas

# Ethereum Gas

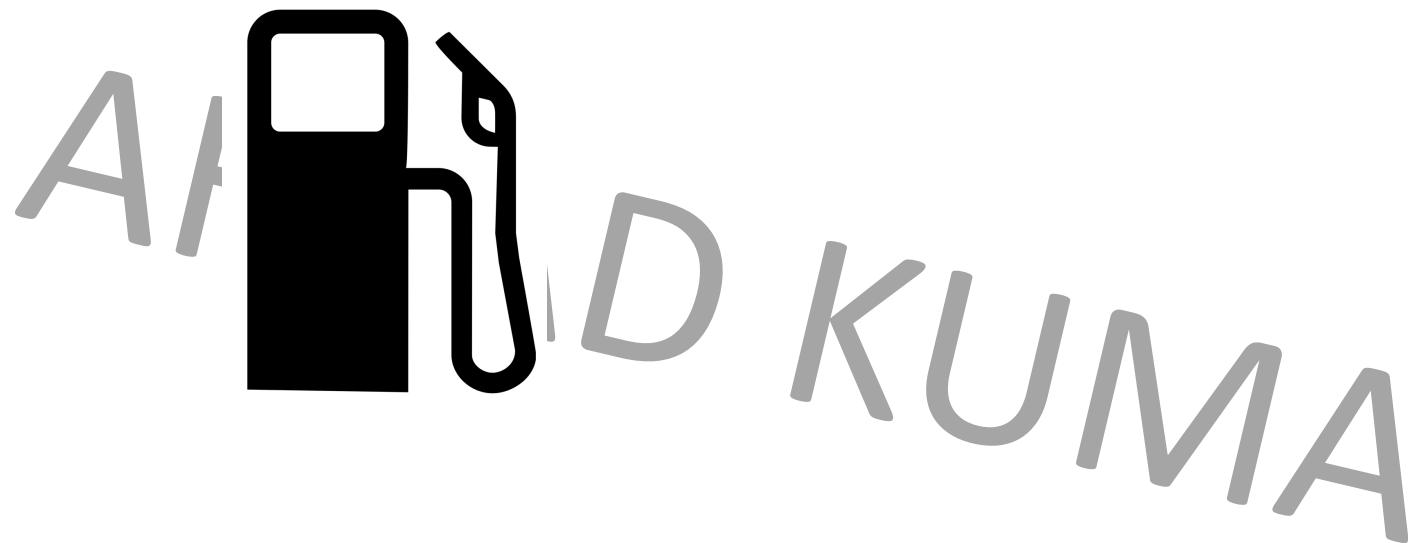


A

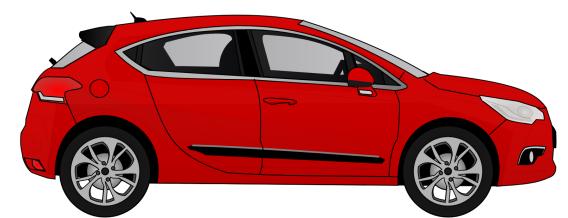


B

# Ethereum Gas

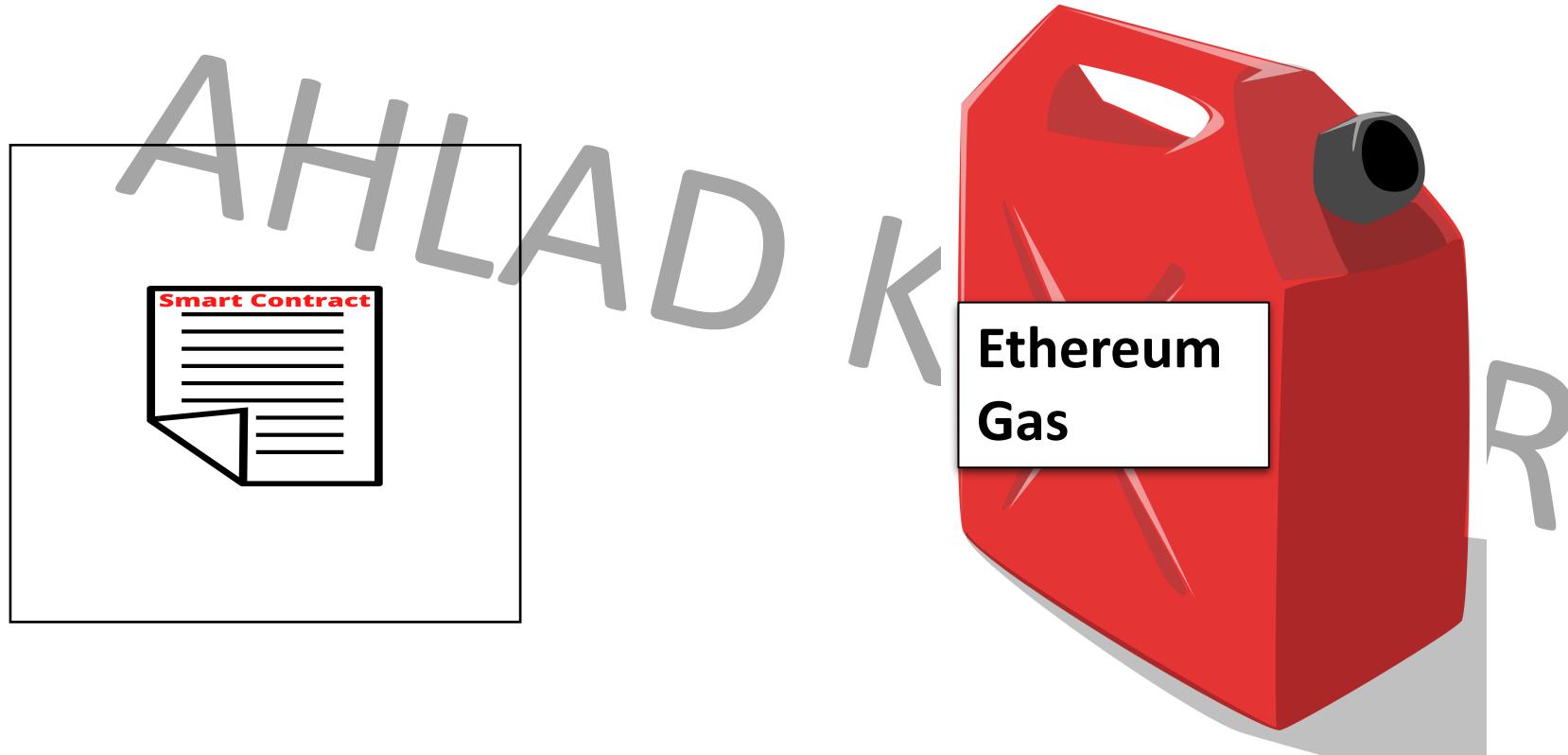


A



B

# Ethereum Gas



# Ethereum Gas

$$10 * 3 - 6 = ?$$

Multiplication – 5 gas

Subtraction – 3 gas

Equal to – 3 gas

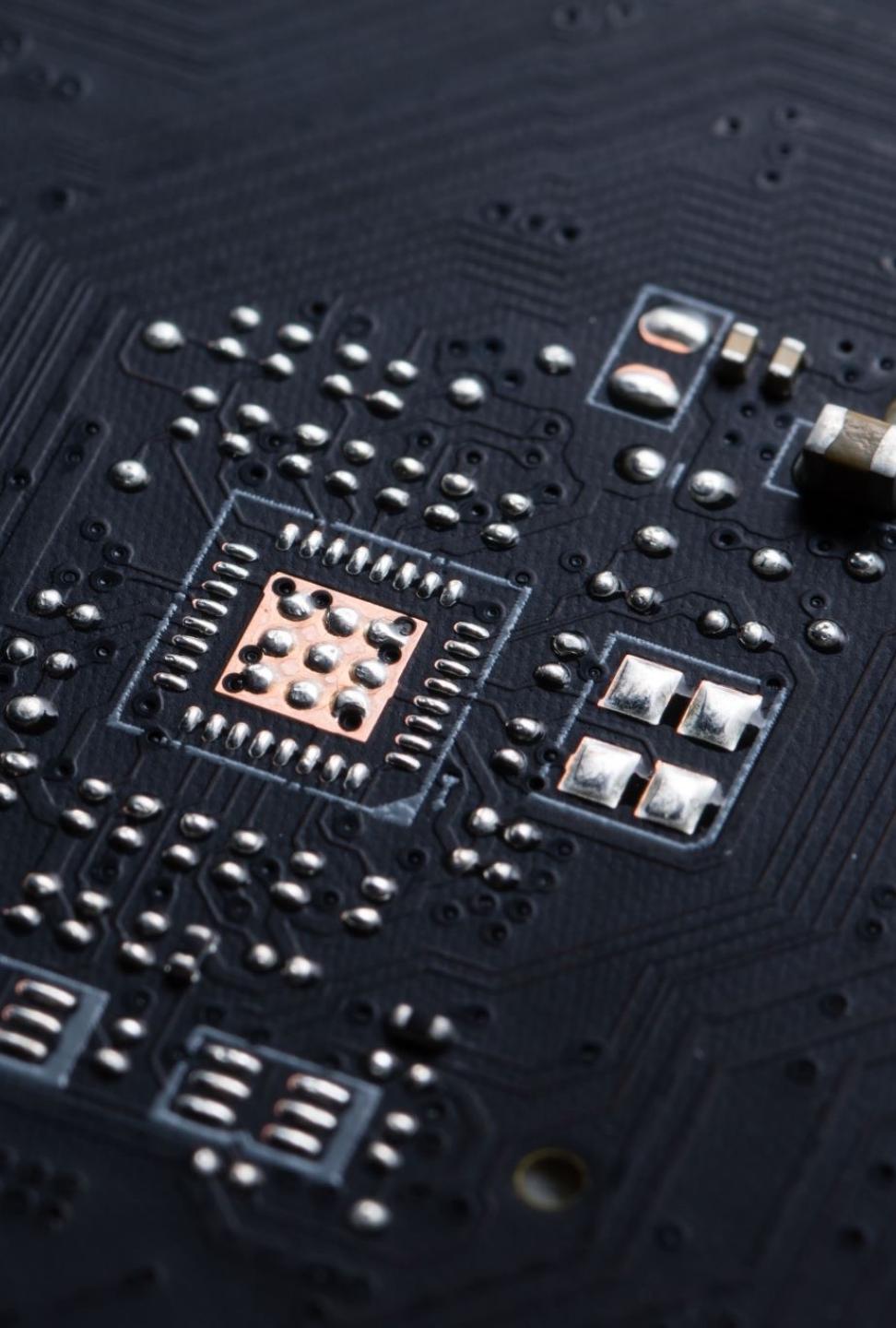
**Total gas → 5 + 3 + 3 = 11 Gas**

<https://github.com/djrtwo/evm-opcode-gas-costs>

# Ethereum Gas

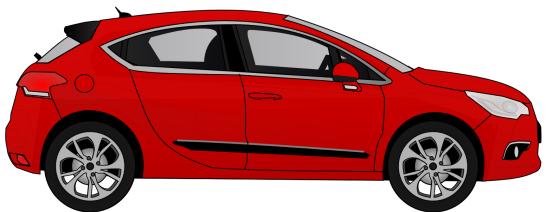
Some important points to note -

- Any transaction that modifies the blockchain costs gas.
- The user that generated the transaction pays for the gas.



# Ethereum Gas Price MAR

# Gas Price



A

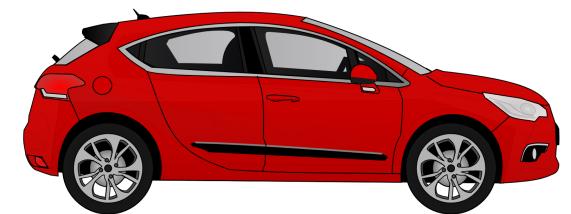


B

# Gas Price



A



B

# Gas Price

$$10 * 3 - 6 = ?$$

Multiplication – 5 gas

Subtraction – 3 gas

Equal to – 3 gas

Total gas  $\rightarrow 5 + 3 + 3 = 11$  Gas

# Gas Price

- It is the amount the sender wants to pay per unit of gas to get the transaction mined. `gasPrice` is set by the sender.
- Gas prices are denoted in gwei. ( $1 \text{ gwei} = 10^{9} \text{ ETH}$ )

**1 Gas price = 10 gwei**

# Gas Price

- It is the amount the sender wants to pay per unit of gas to get the transaction mined. `gasPrice` is set by the sender.
- Gas prices are denoted in gwei. ( $1 \text{ gwei} = 10^{9} \text{ ETH}$ )

**1 Gas price = 100 gwei**

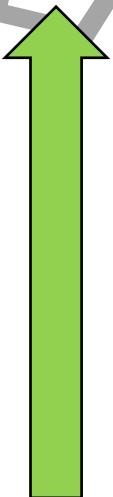
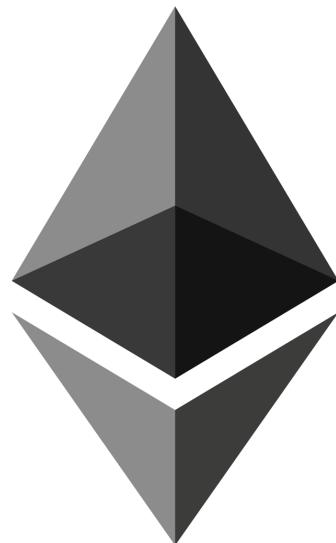
# Gas Price

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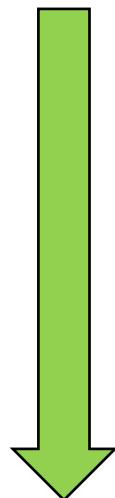
**1 Gas price = 1000 gwei**

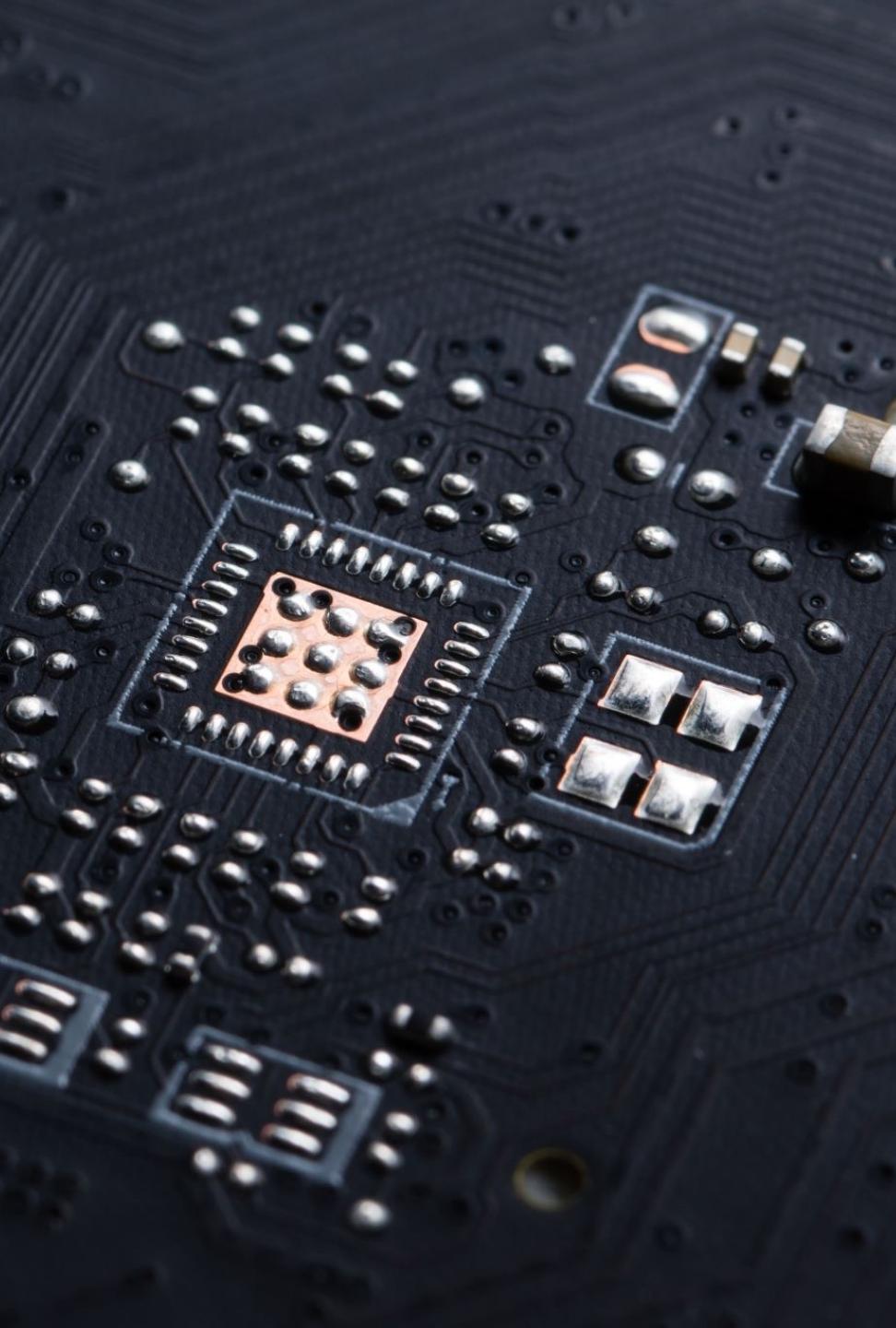
# Gas Price

- The higher the gas price the faster the transaction will be mined. It just like the transaction in Bitcoin.



AHLAD KUN

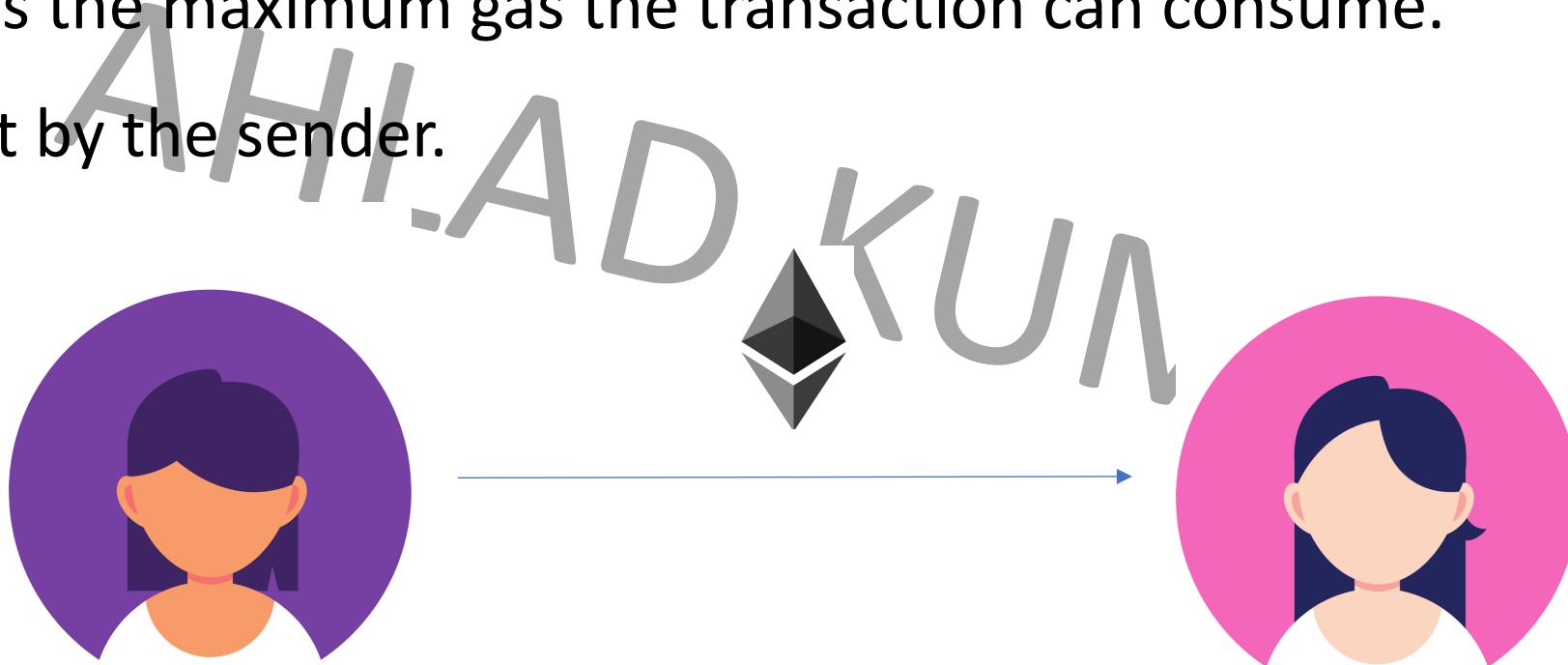
The word "AHLAD KUN" written in a large, stylized, grey font. The letters are slightly slanted and have a wavy, dynamic feel, positioned between the upward arrow and the alarm clock.



Ethereum Gas  
Limit

# Gas Limit

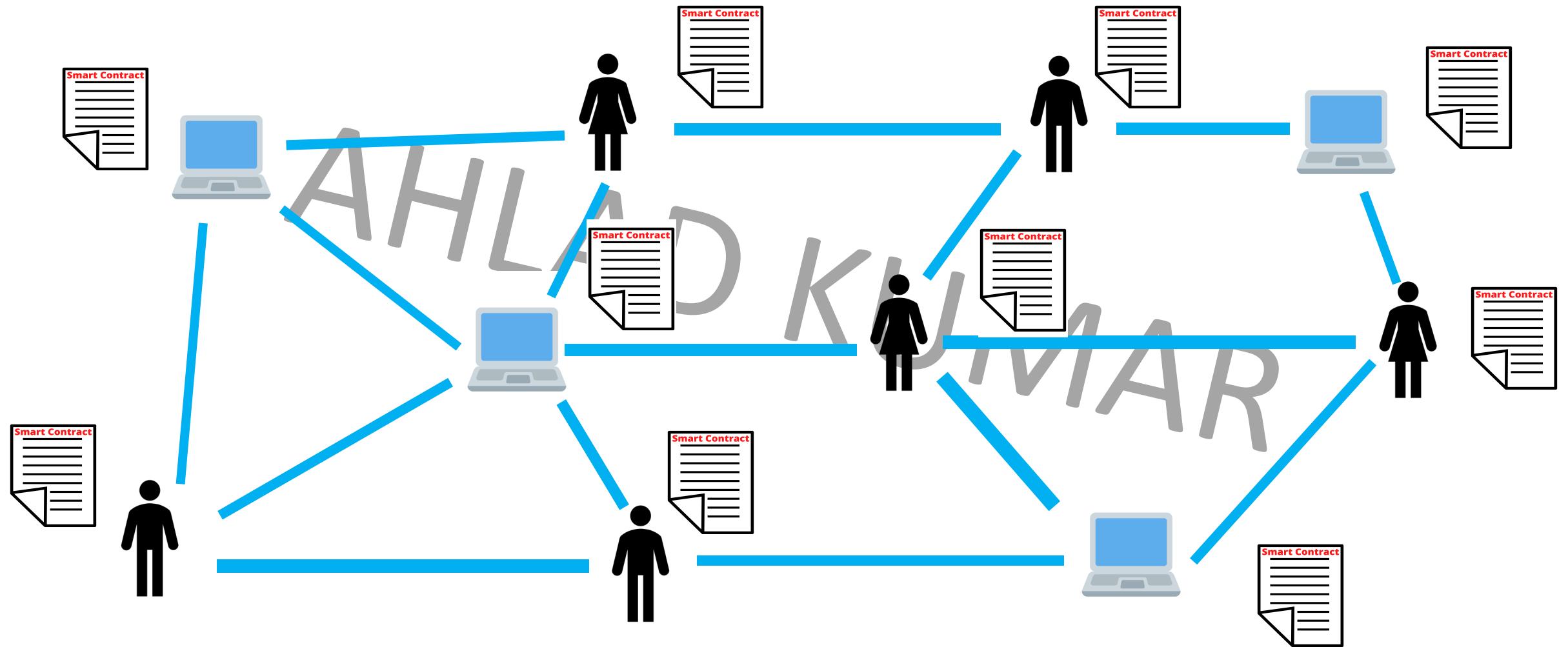
- It is the maximum gas the transaction can consume.
- Set by the sender.



# Gas Limit



# Gas Limit



# Gas Limit

**Let say A wants to send B 2 ETH. So what will be the total fees A that has to pay ?**

Case 1: When transaction gas limit is 21,000 units.

A sets the gas price per unit = 100 gwei.

Transaction gas limit = 21,000 units.

Total fee will be: Gas units(limit) \* Gas price per unit

**Total fee will be:  $21,000 * 100 = 210,0000$  gwei or 0.0021 ETH**

# Gas Limit

**Let say A wants to send B 2 ETH. So what will be the total fees A that has to pay ?**

Case 2: When gas transaction limit < 21000 units.

Transaction gas limit = 20,000 units.

Transaction Fail

# Gas Limit

**Let say A wants to send B 2 ETH. So what will be the total fees A that has to pay ?**

Case 3: When gas transaction limit > 21000 units.

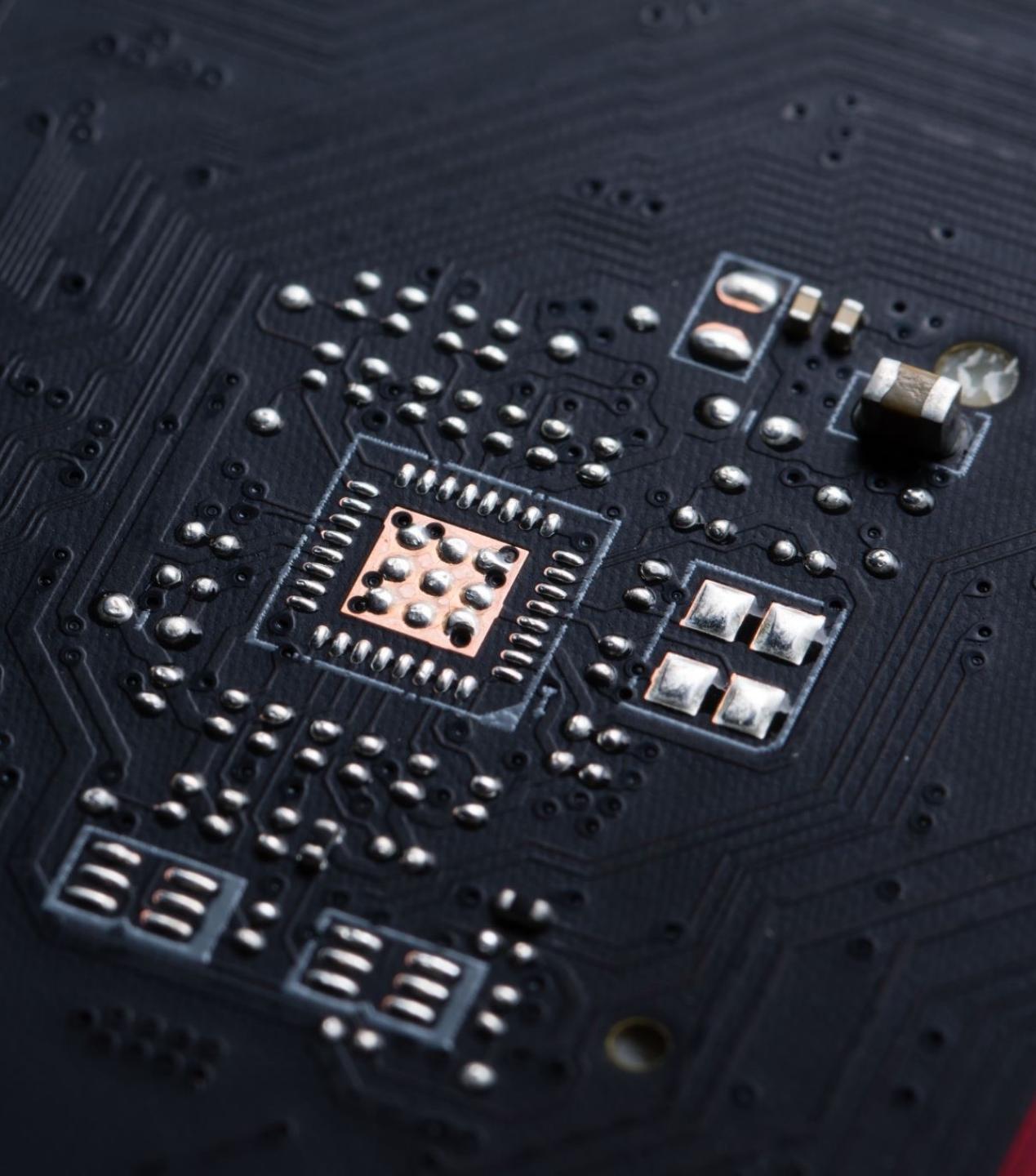
Transaction gas limit = 22,000 units.

**22,000 – 21000 = 1000 will be returned**

# Gas Limit

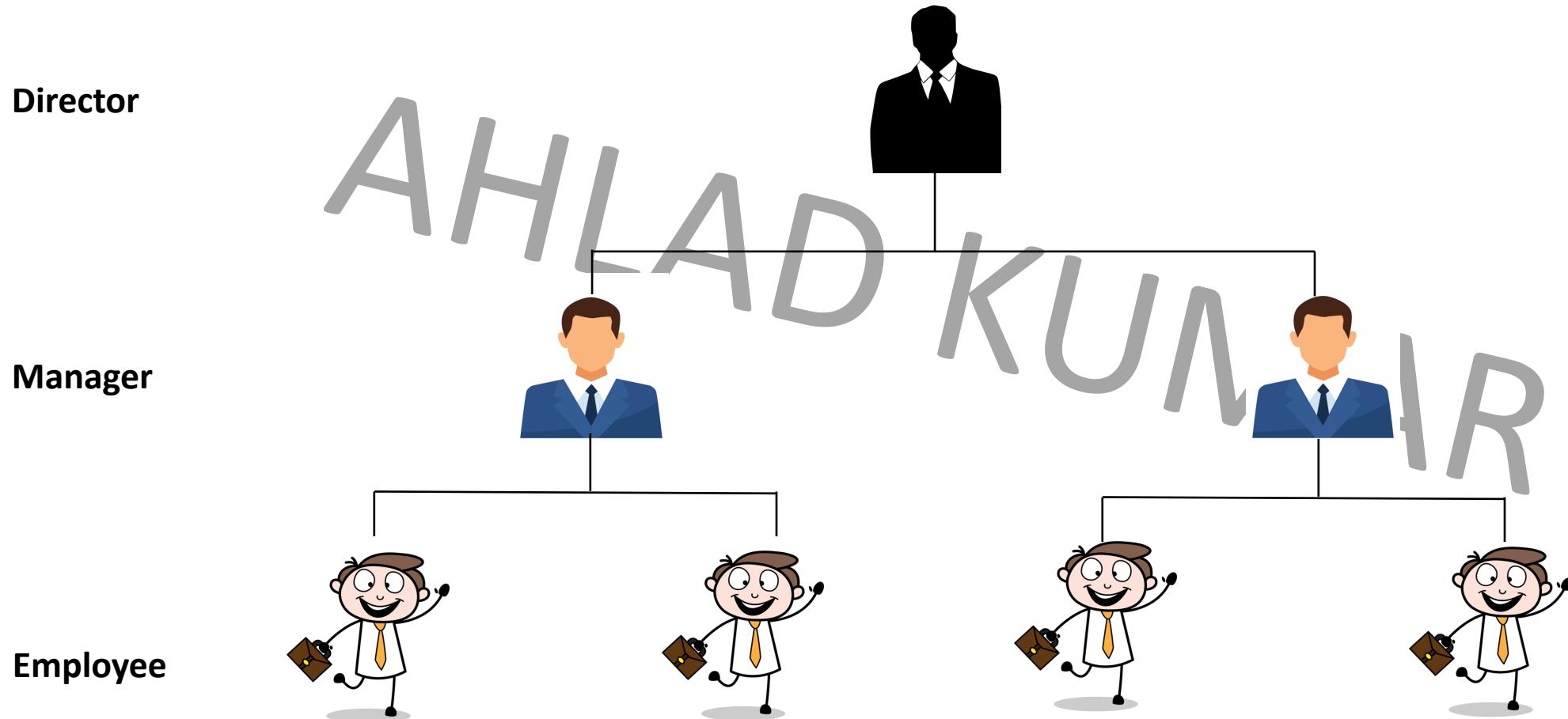
**Q) What is the use of Gas Limit ?**

AHLAD KUMAR

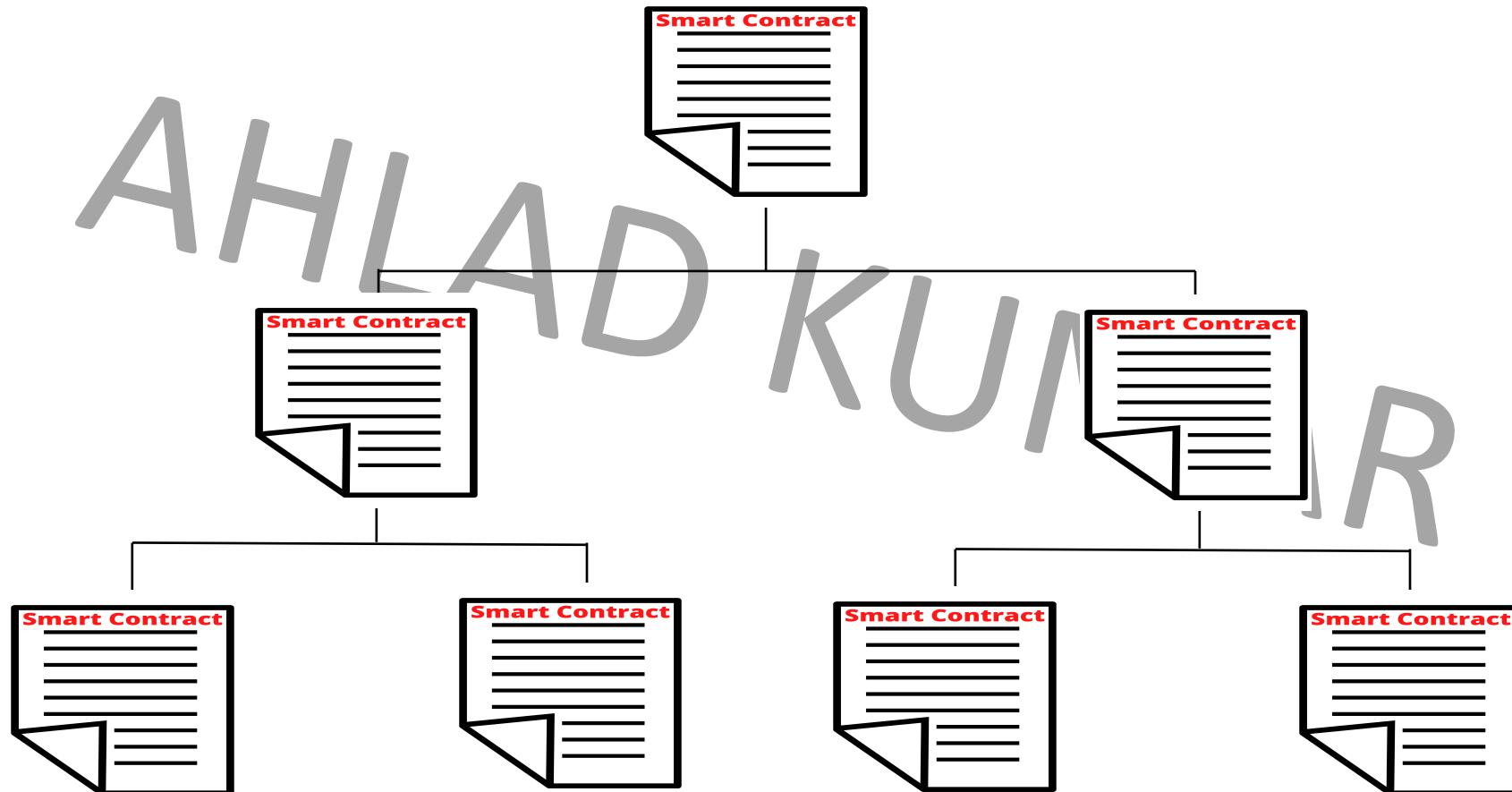


# Decentralized Autonomous Organization *KUMAR* (DAOs)

# Decentralized Autonomous Organization (DAOs)



# Decentralized Autonomous Organization (DAOs)



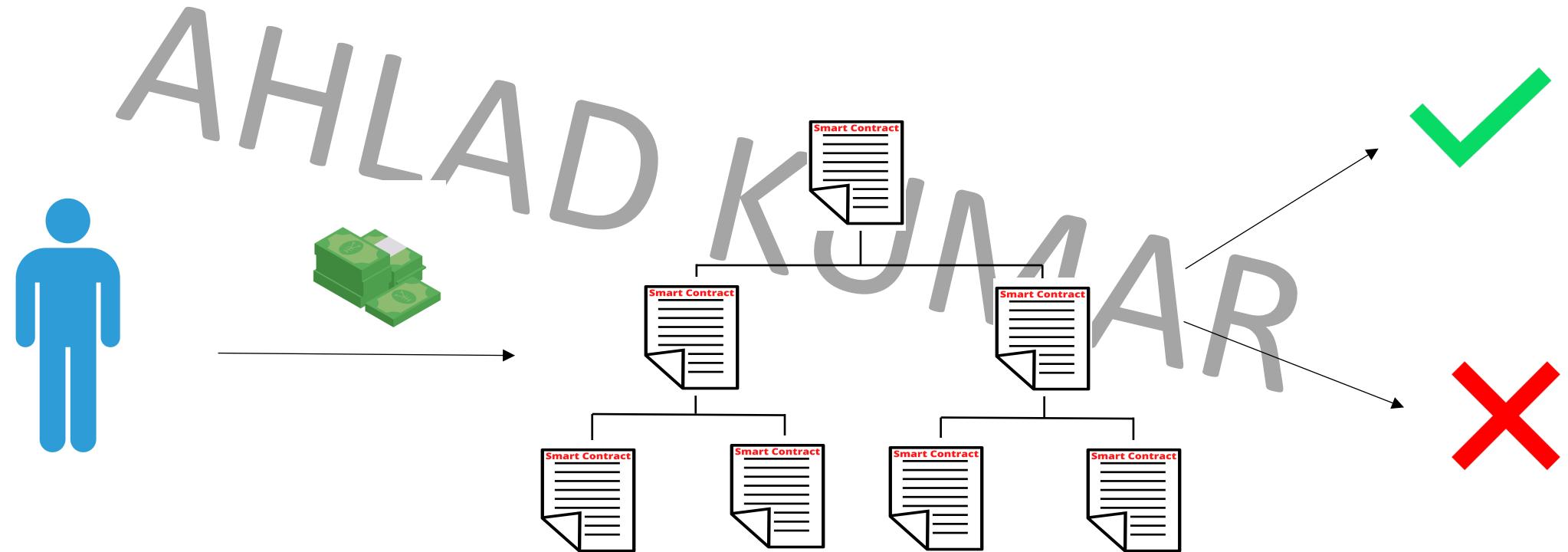
# DAO vs Organization

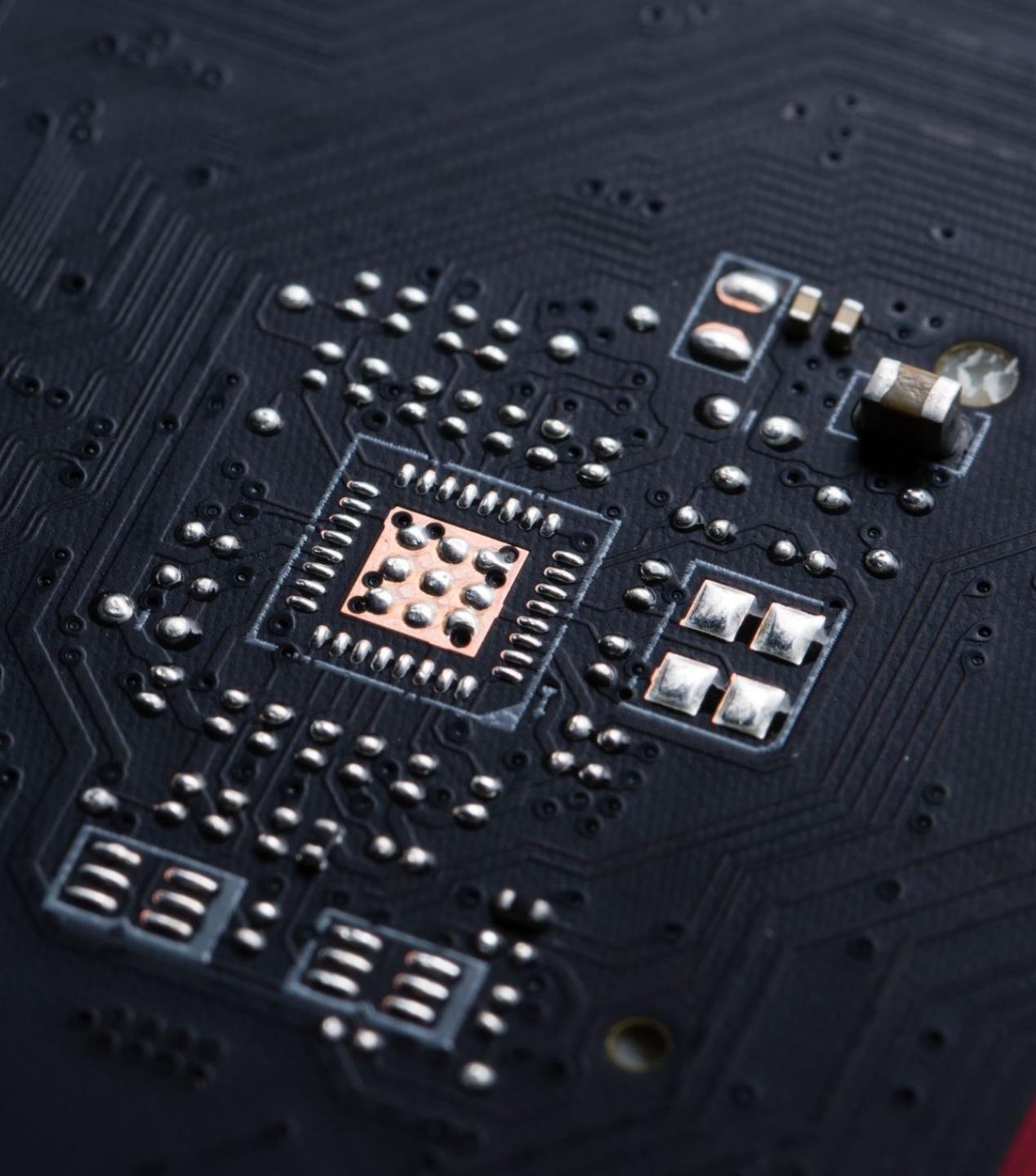
DAO	A traditional organization
Fully democratized.	Usually hierarchical.
Voting required .	Voting may or may not require.
No trusted intermediary to count vote.	Outcome of voting must be handled manually.
Services offered are handled automatically.	Requires human handling, or centrally controlled automation.
All activity is transparent and fully public.	Activity is typically private, and limited to the public.

# Decentralized Autonomous Organization (DAOs)



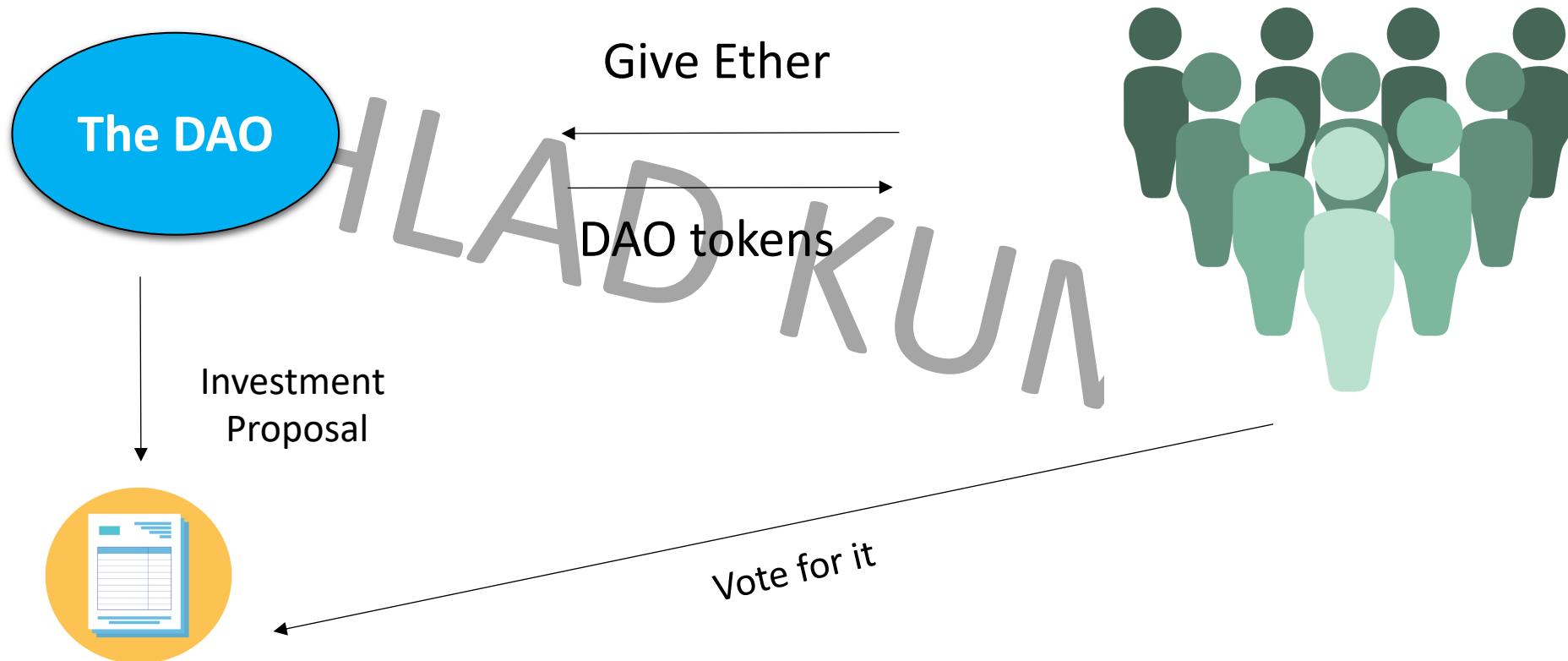
# Decentralized Autonomous Organization (DAOs)



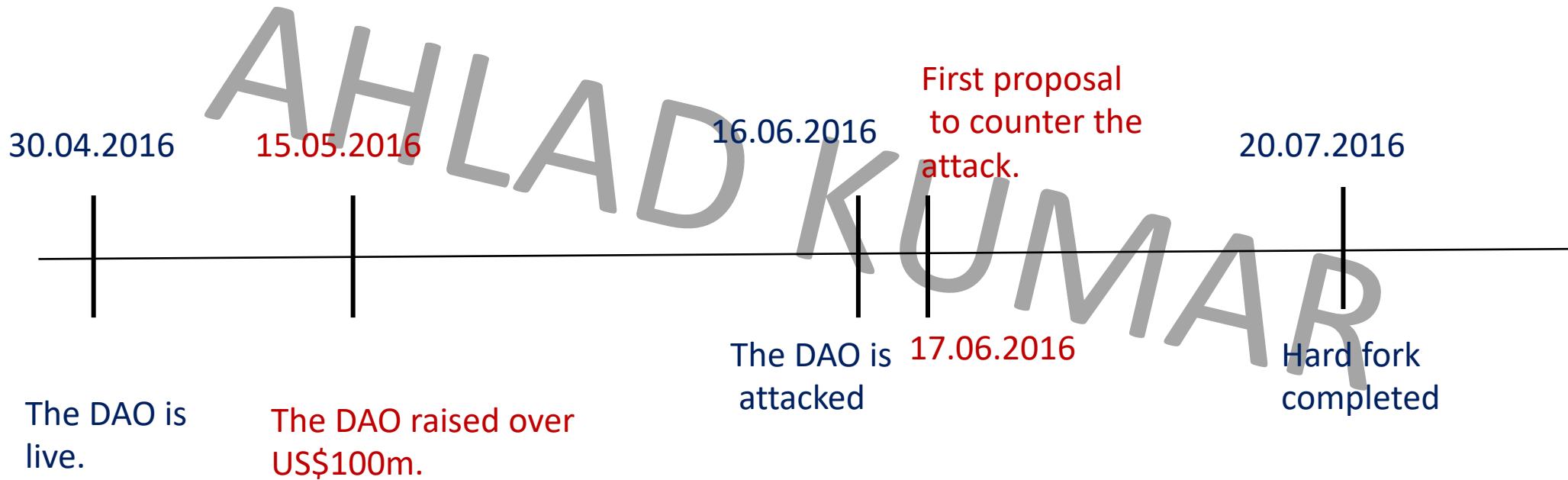


# The DAO KUMAR

# The DAO Attack



# The DAO Attack



# The DAO Attack

