

Blockchain Structure

-Basic Concepts-



박민서

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greedycatty@gmail.com

Contents

This content contains mainly about
Basic concepts about Blockchain.

We made it based on FAQ about
Blockchain
and now we're giving you answer
by this presentation.

0. What is Blockchain

1. Blockchain Structure

2. Blockchain Transaction

3. Mining

4. Frequently Asked Question

5. Q & A

0. What is Blockchain?

- Definition of Blockchain
- Characteristics of Blockchain

What is Blockchain?

- Definition of Blockchain

Blockchain is Distributed Ledger Technology that is working on the Decentralized Network system

What is Blockchain?

- Characteristics of Blockchain

| | Characteristic | Explanation |
|---|---------------------|---|
| 1 | Anonymous | Only public address and wallet address are used in transaction. |
| 2 | Traceability | All the transaction includes address. |
| 3 | Trustless | Trusted third party is not needed at Blockchain and peers don't have to trust each other. |
| 4 | Distributed Ledger | All the participants in the system have the information of transaction. |
| 5 | Decentralized | Unlike traditional network system, there is not centralized party at Blockchain system |
| 6 | Consensus Algorithm | Even if it is trustless , credibility of Data is still needed in this system. |
| 7 | Immutability | Once information is involved in blockchain, it can't be changed |

What is Blockchain?

- Characteristics of Blockchain

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What is Blockchain?

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010-1234-5678

What is Blockchain?

- Characteristics of Blockchain

| | Characteristic | Explanation |
|---|----------------|---|
| 1 | Anonymous | Only public address and wallet address are used in transaction. |

219-910190-51107

What is Blockchain?

- Characteristics of Blockchain

| | Characteristic | Explanation |
|---|----------------|---|
| 1 | Anonymous | Only public address and wallet address are used in transaction. |

3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd

(보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00

187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq

- 산출)

12.73973247 BTC

➔

1MwYXDHfQdyKXHJ7ZgBZxmg8ochwdjHeJ4 - (지출)

3QJ4hPWFQBcbvJYTCho88rz4bq4PSzcNBp (사용 12.73510584 BTC

하지 않은) 0.00212663 BTC

12.73723247 BTC




What is Blockchain?

- Characteristics of Blockchain

| | Characteristic | Explanation |
|---|----------------|---------------------------------------|
| 2 | Traceability | All the transaction includes address. |

비트코인 주소 주소는 다른 사람에게 비트코인을 전송할때 사용되는 ID입니다.

| 요약 | |
|----------|--|
| 주소 | 1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx |
| Hash 160 | a264814bd3bf5cea6dbf86001a49911b6234b3e1 |

| 거래 | | |
|-------|--------------------|---|
| 거래 수 | 4749 |  |
| 총 수신량 | 5,671.84925072 BTC |  |
| 최종 잔액 | 60.28083454 BTC |  |

e6a799fb3640d2dbbf1a32b77a2f2ed48b6a966a98a8d8a8c79595eea206eddc

(보수: 0.00006 BTC - 5.14 sat/WU - 20.55 sat/B - 크기: 292 bytes) 2018-09-08 12:15:50

1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx (1.83796343 BTC - 산출)

➡ 1NUPnXaA1bpdXr2nJ94rH9cwXbSV2KkHRq - (지출) 0.49695648 BTC
33hUWVXiGmgGTSaZk91q2SwKX9mRNHJUR3 - (지출) 0.81694847 BTC
1F159rLtt7RdabDcby2x8ZQD7c5jG7SseB - (사용하지 않은) 0.05248 BTC
1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx - (지출) 0.47151848 BTC

-1.36644495 BTC

129a9ca042f5515fe4ba55b7d76183e6d6a4fcb9056b7e60ed9bf939e4efbe30

(보수: 0.000067 BTC - 5.14 sat/WU - 20.55 sat/B - 크기: 326 bytes) 2018-09-08 08:06:20

1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx (2.37119575 BTC - 산출)

➡ 1KztpE3uq4E7cbSP8qd86yhp7XzHnFoRvW - (지출) 0.0192324 BTC
1HDZmi88E1TD3CntB9N4VMQyAetjho5scR - (지출) 0.00894142 BTC
1MyceLYsrM8Y2WBPqjbhwmjnrM5ZeZAptq - (지출) 0.02873044 BTC
329BwoqJ8kYqzSSyXDthUimb1gSoTWVuCi - (지출) 0.47626106 BTC
1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx - (지출) 1.83796343 BTC

-0.53323232 BTC

4c3e478d1e8dd605f5085f12636bac9c60f0bcc4525c7749af05d466c9f6073a

(보수: 0.000053 BTC - 5.12 sat/WU - 20.46 sat/B - 크기: 259 bytes) 2018-09-08 04:50:39

1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx (3.66428275 BTC - 산출)

➡ 1BZcaCKLdNjNtXlg1eGCm3SLqR77JV55Mp - (사용하지 않은) 0.203834 BTC
1L2uF7f2NdRQzeD4RUeZKNC5knCRi8NWmh - (지출) 1.0892 BTC
1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx - (지출) 2.37119575 BTC

-1.293087 BTC

95c4dd764010b16d4d8e486162e954e1f7516124aa6ae77685bf98ae1f4dedd5

(보수: 0.001239 BTC - 5.09 sat/WU - 20.36 sat/B - 크기: 6086 bytes) 2018-09-08 04:14:13

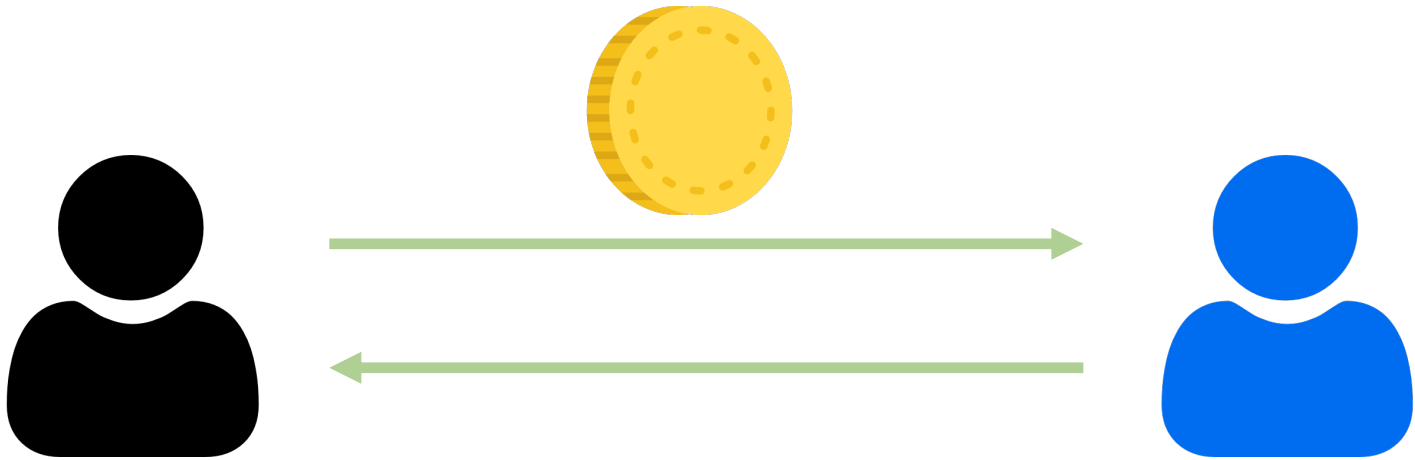
1Ggx8jNCsawNNicG2xCYucYkyJA1akQeqo (0.95 BTC - 산출)
1LfeEs9eeajm9kycusjgU92gcRUBV14ZsX (0.0089741 BTC - 산출)
18tEWFLGUxcAXsZ2S8Km1Bp8pFhdpyqdH (0.0295 BTC - 산출)

➡ 1FoesHs5Z7snHy3WYuk4Euh7NxxKWNtgyx - (지출) 6.77146056 BTC

What is Blockchain?

- Characteristics of Blockchain

| | Characteristic | Explanation |
|---|----------------|---|
| 3 | Trustless | Trusted third party is not needed at Blockchain and peers don't have to trust each other. |

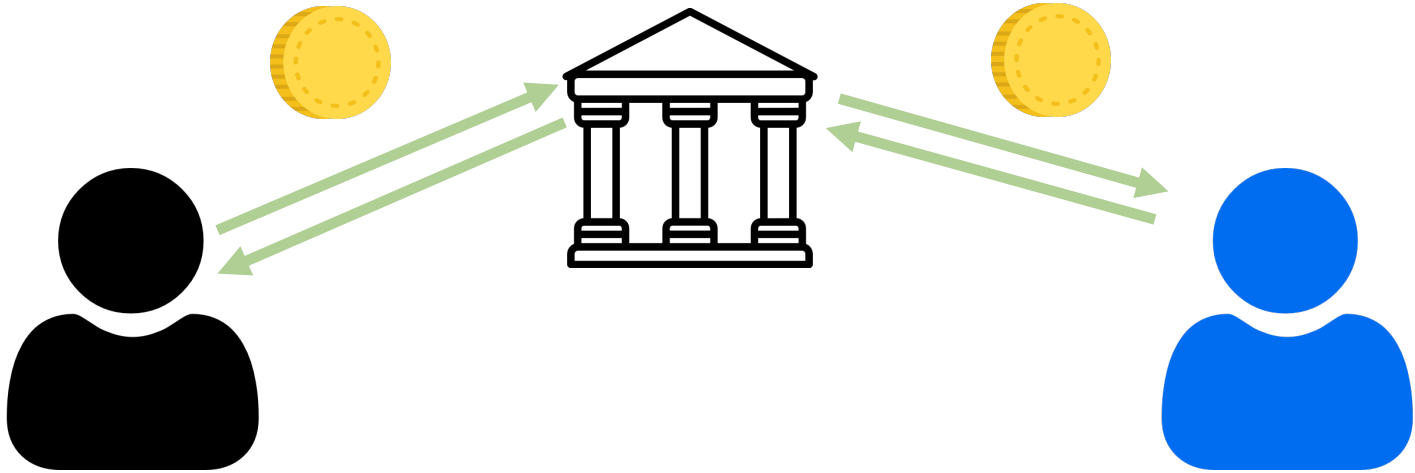


Traditional Transaction

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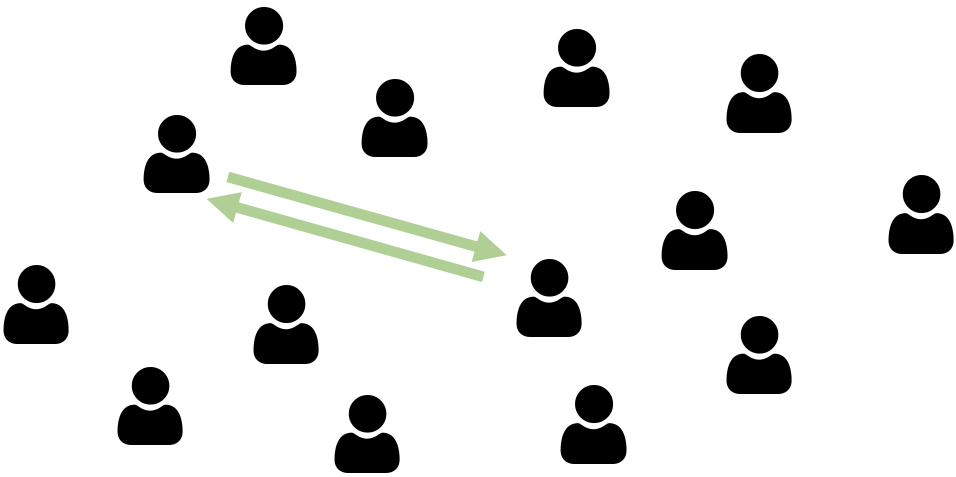


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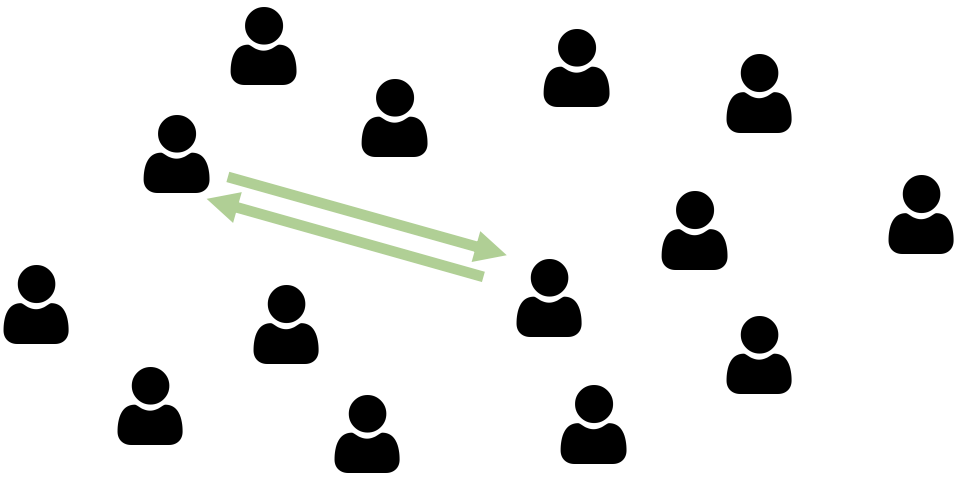


Blockchain Transaction

What is Blockchain?

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| 4 | Distributed Ledger | All the participants in the system have the information of transaction. |

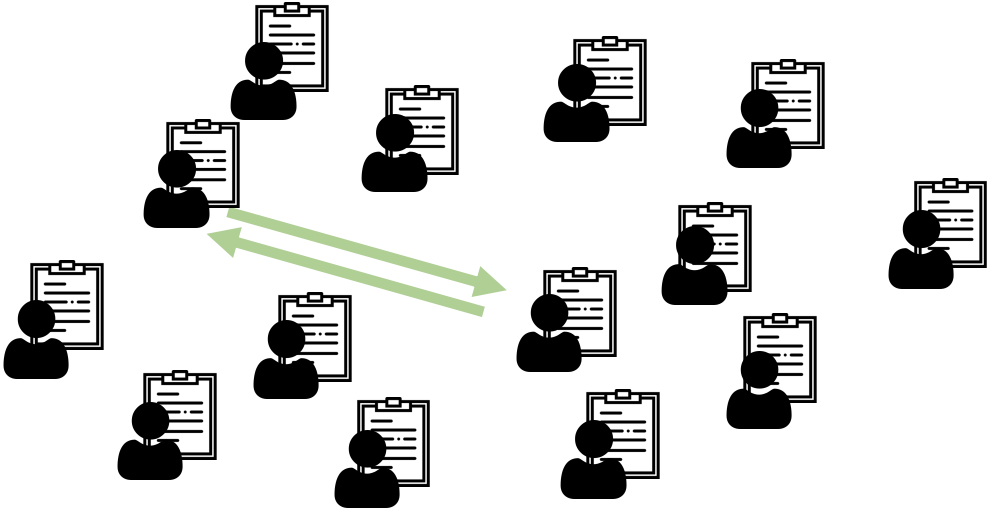


Blockchain Transaction

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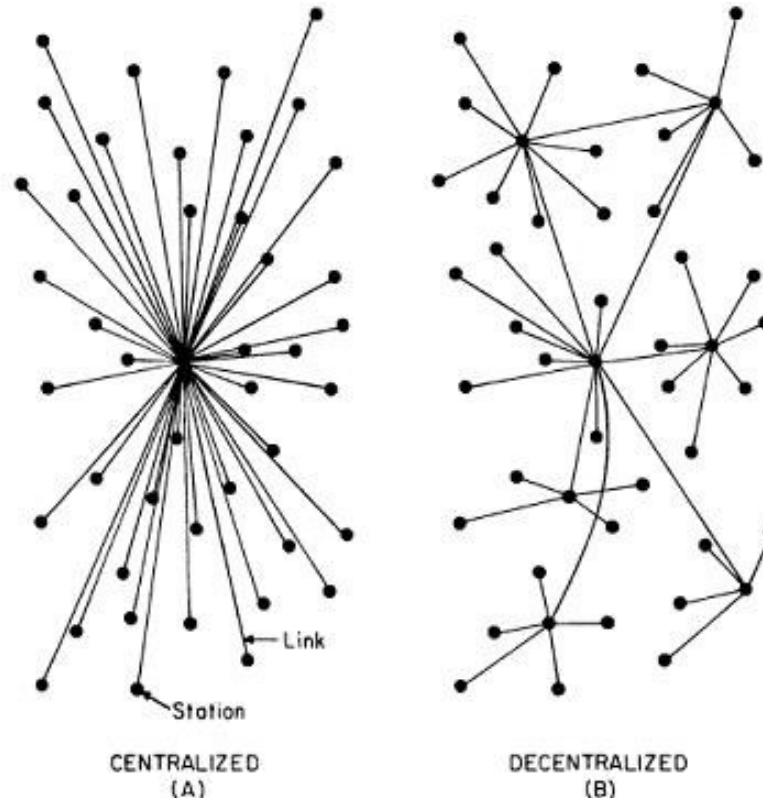


Blockchain Transaction

What is Blockchain?

- Characteristics of Blockchain

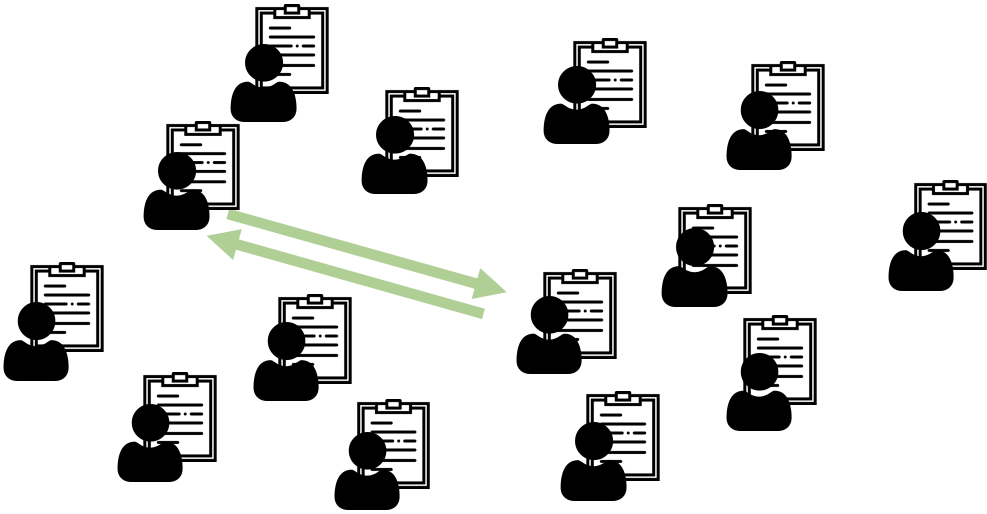
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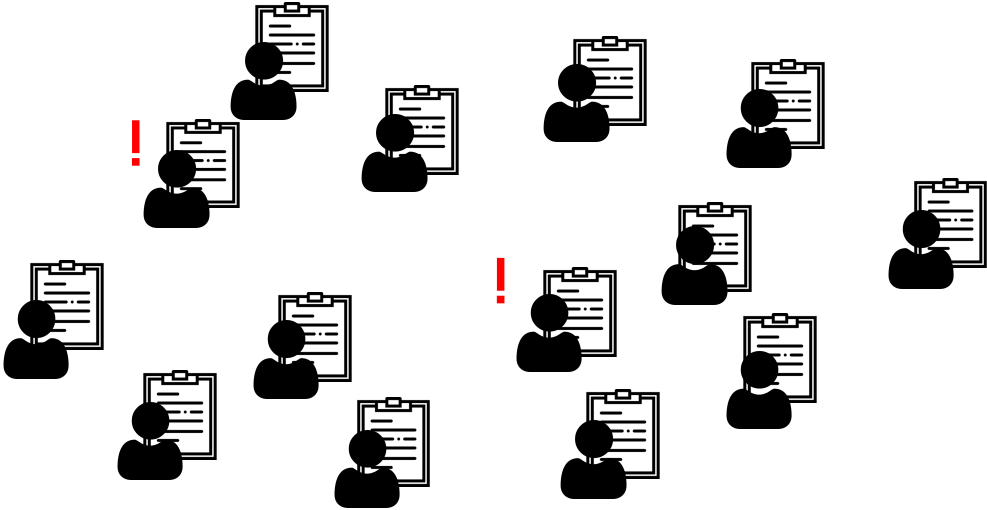


Blockchain Transaction

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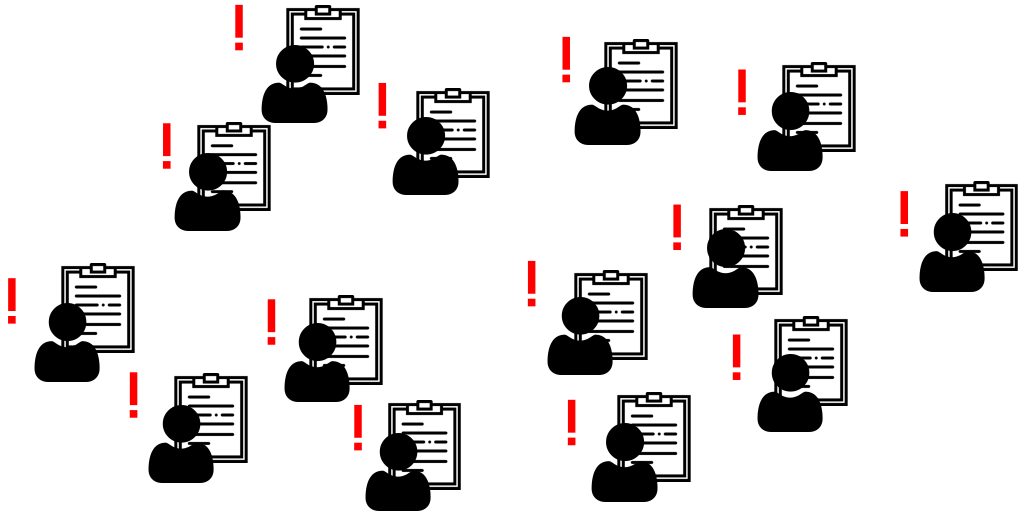


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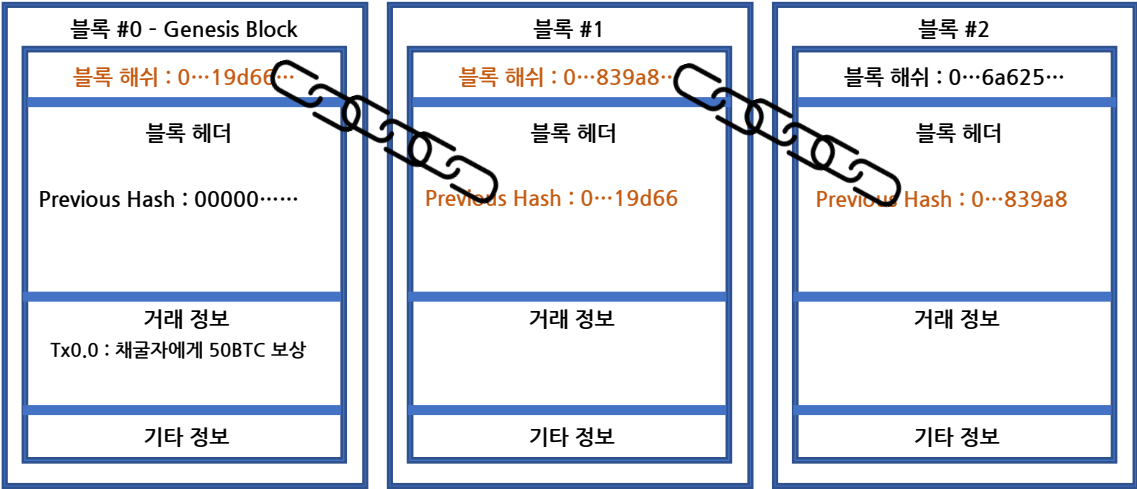


Blockchain Transaction

What is Blockchain?

- Characteristics of Blockchain

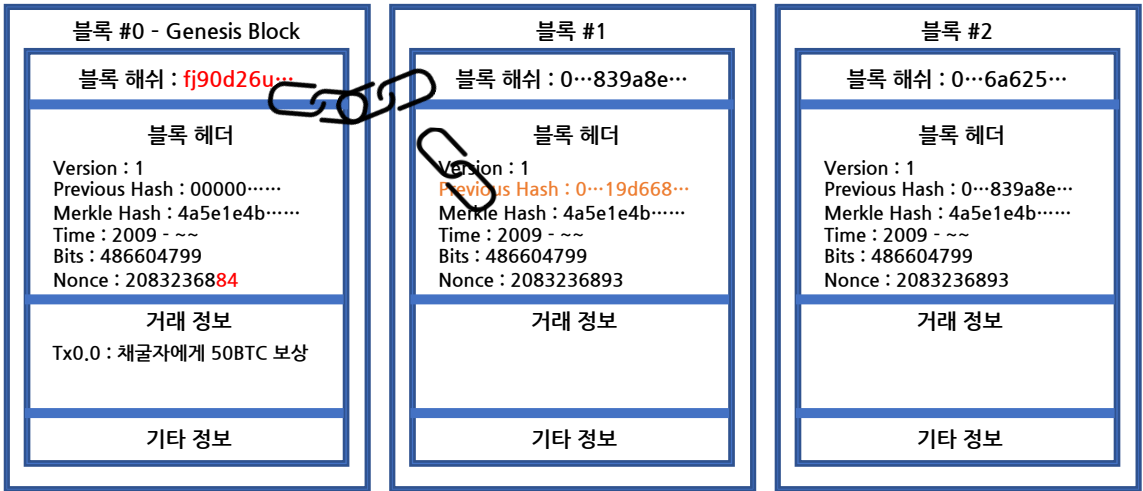
| | Characteristic | Explanation |
|---|----------------|---|
| 7 | Immutability | Once information is involved in blockchain, it can't be changed |



What is Blockchain?

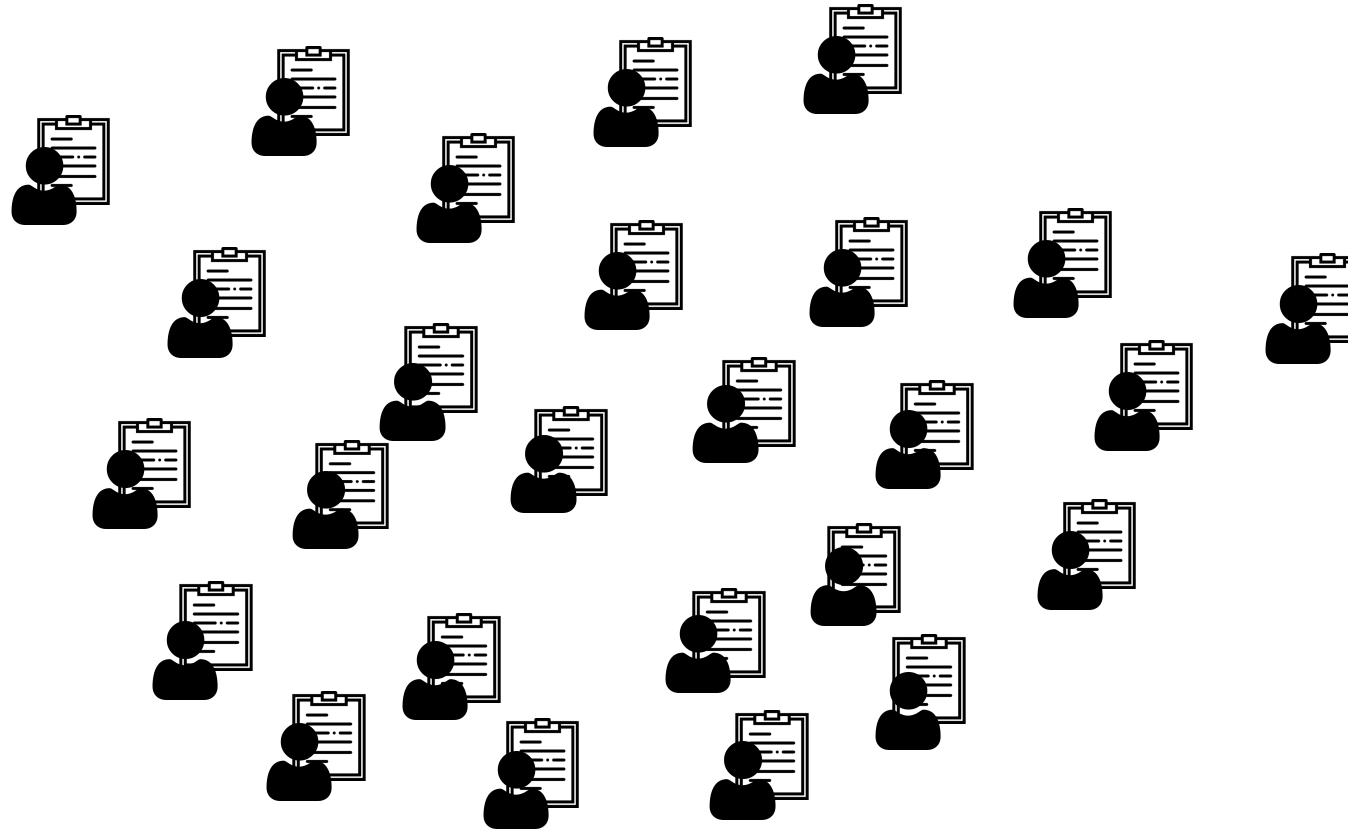
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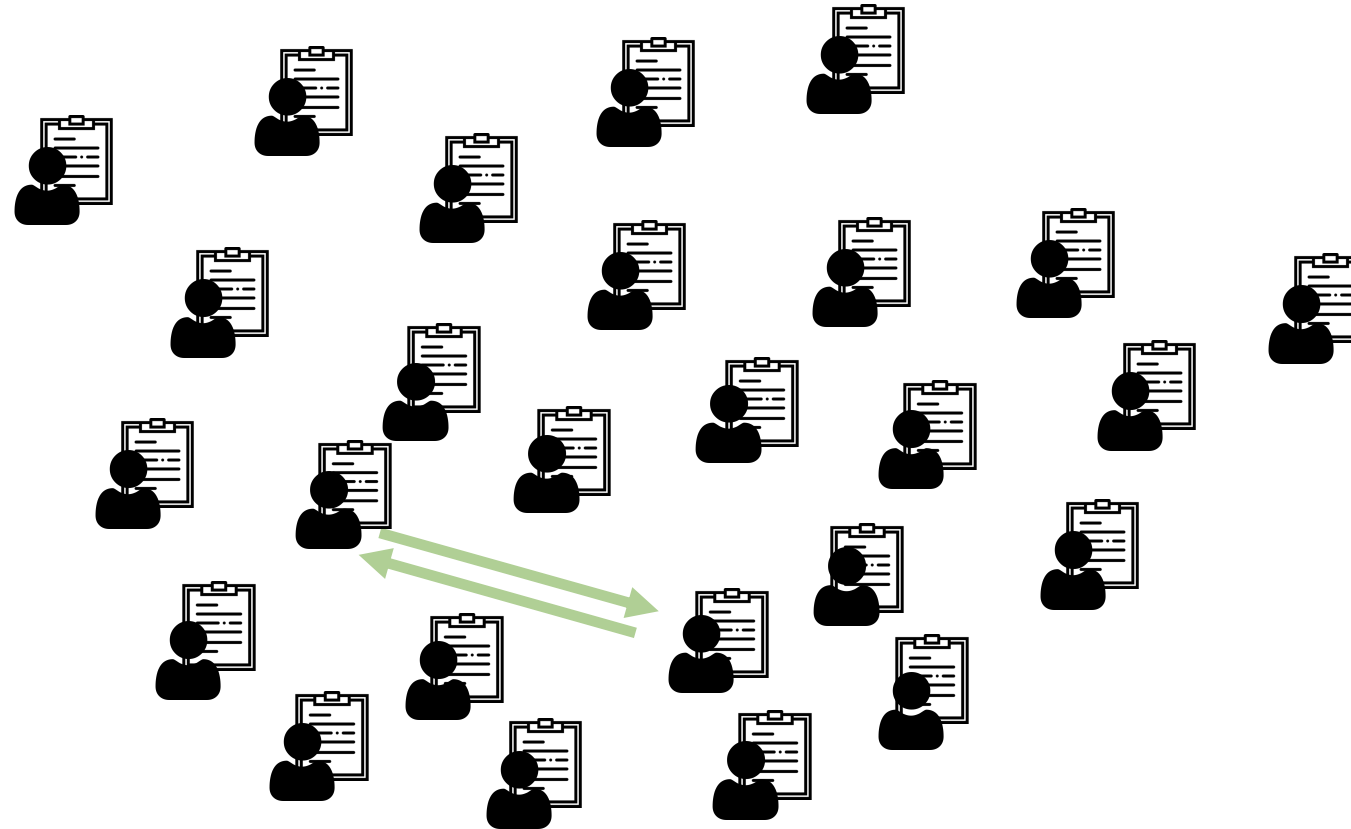
What is Blockchain?

- Characteristics of Blockchain



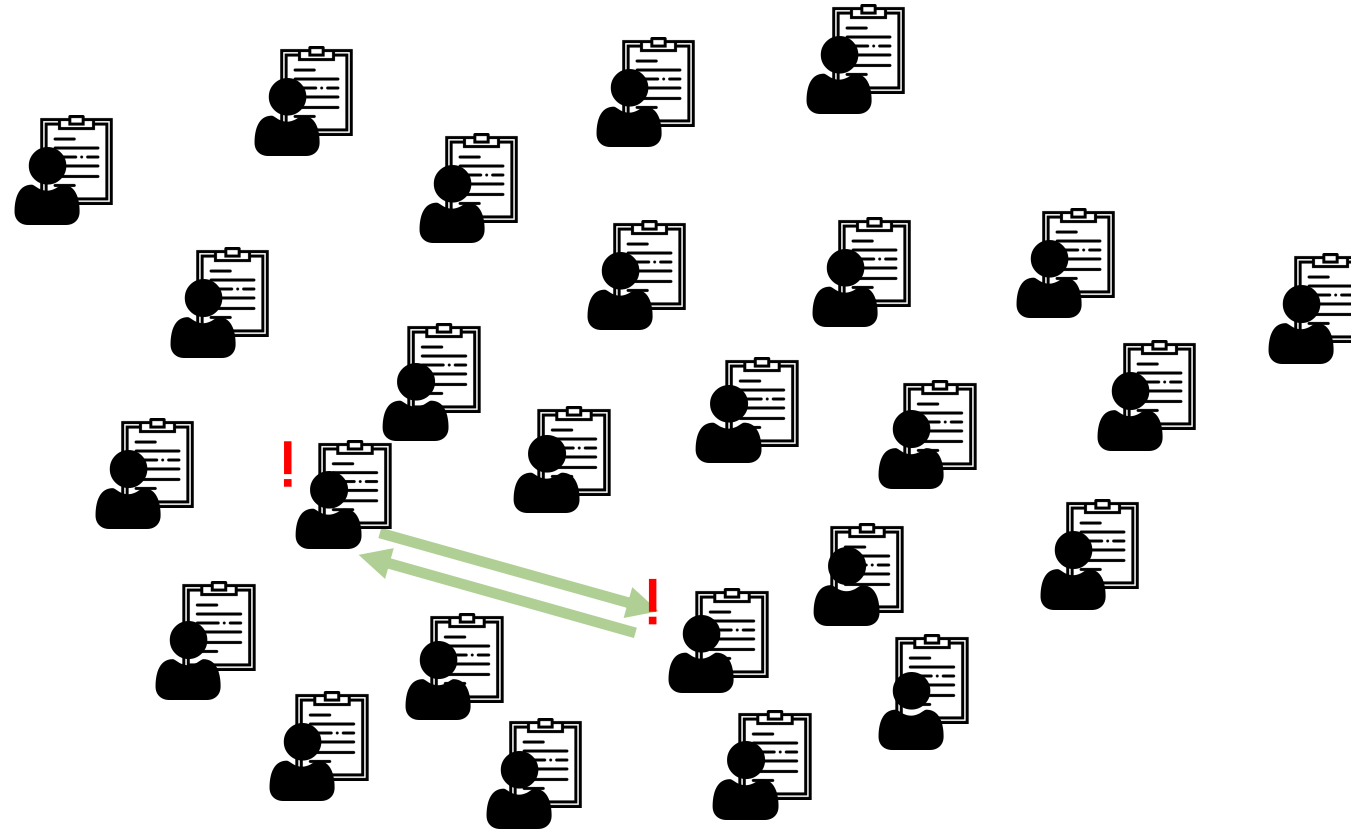
What is Blockchain?

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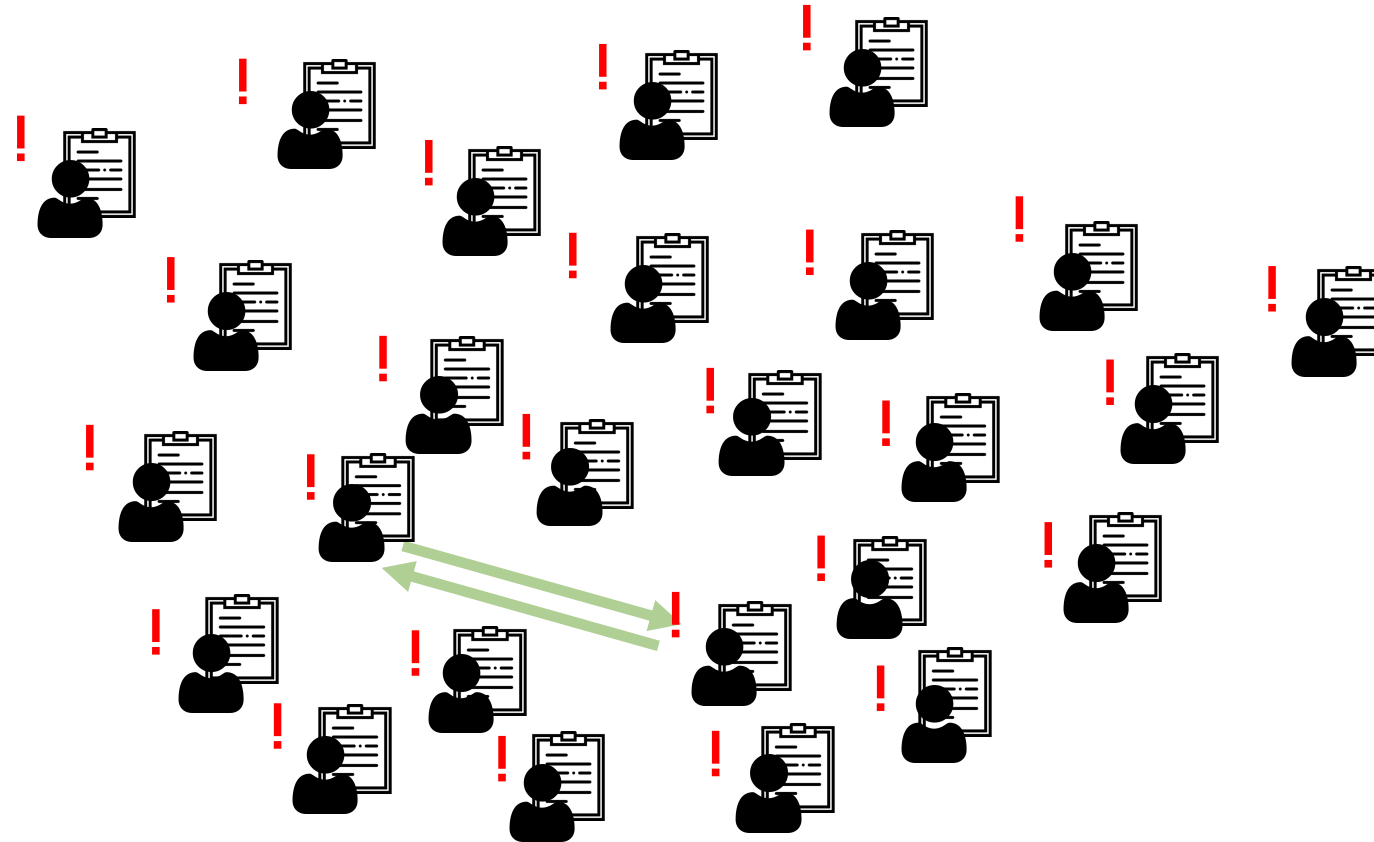
What is Blockchain?

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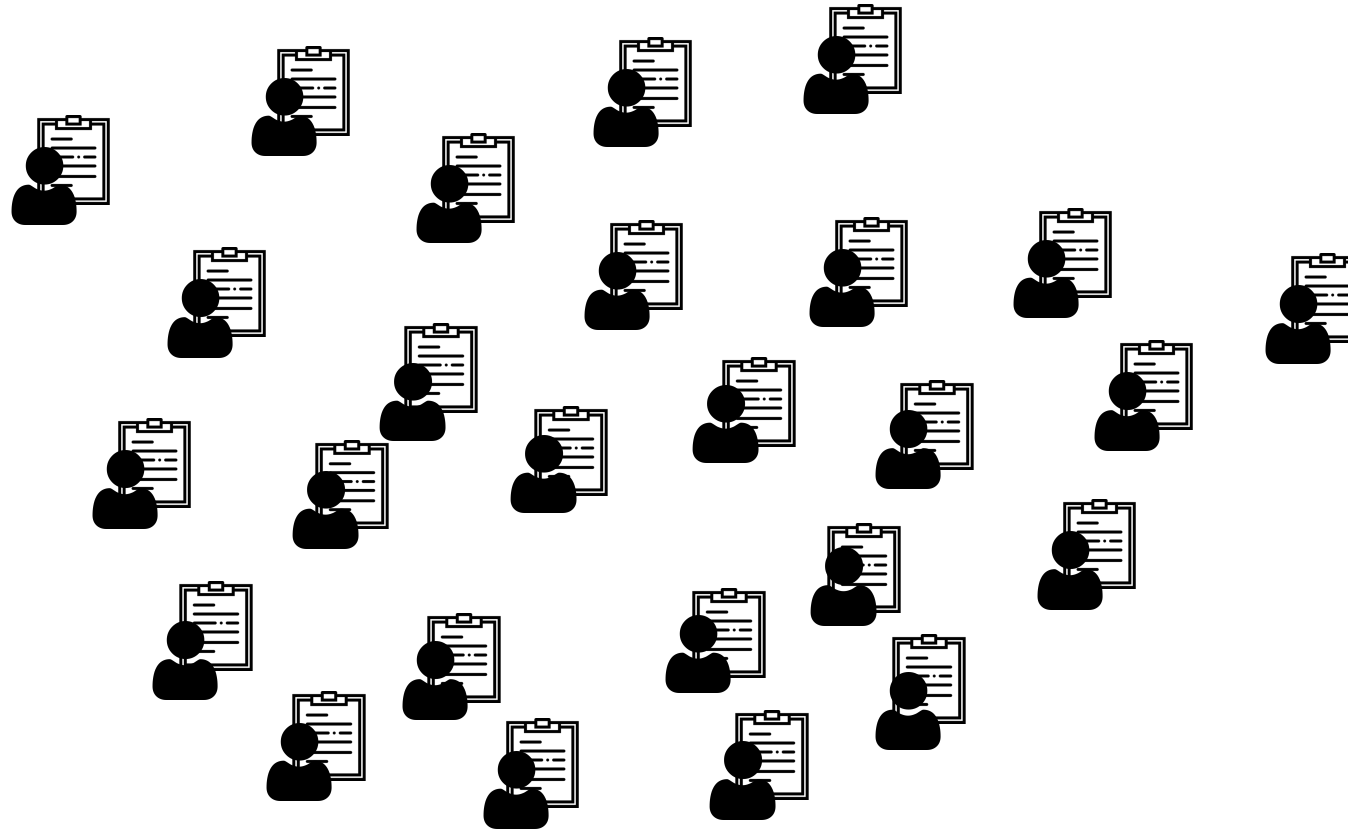
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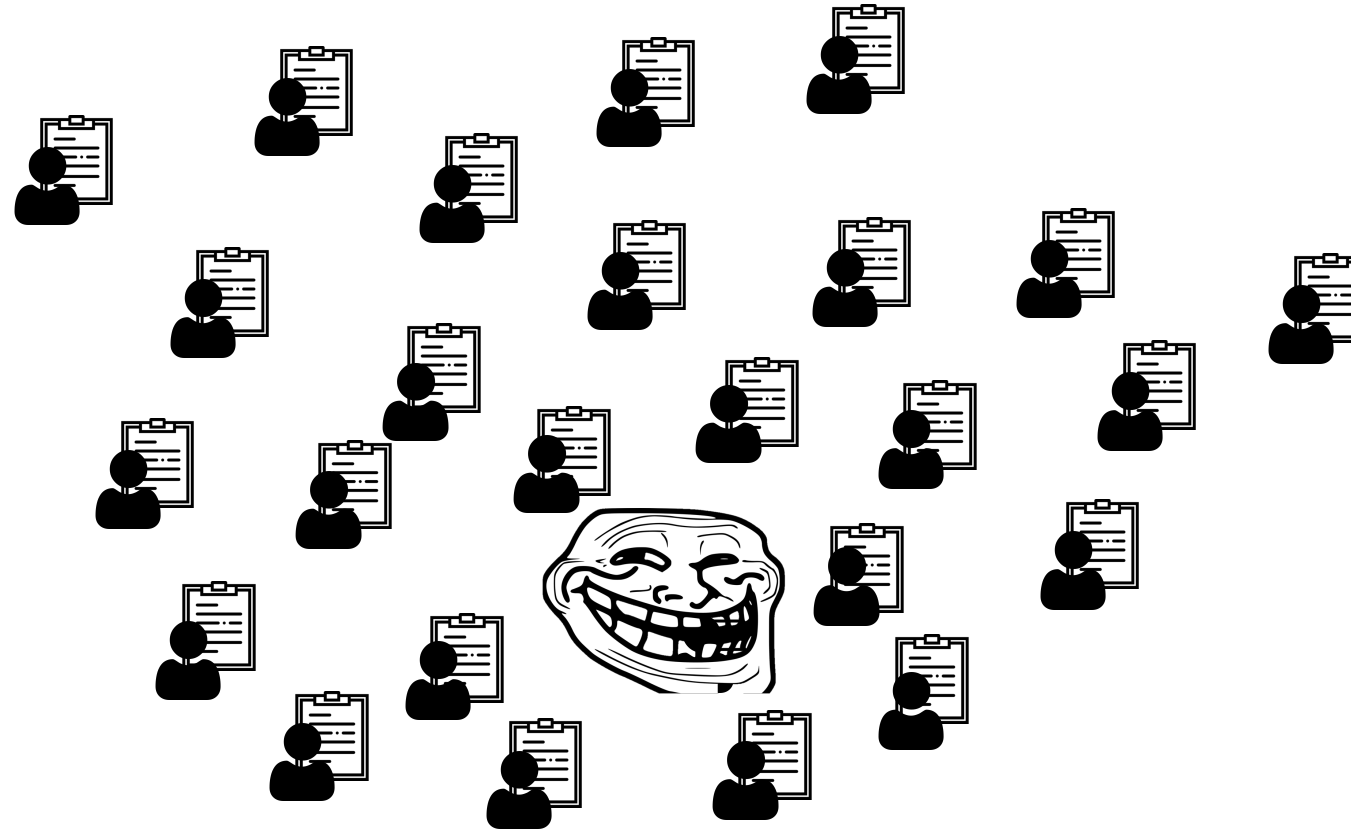
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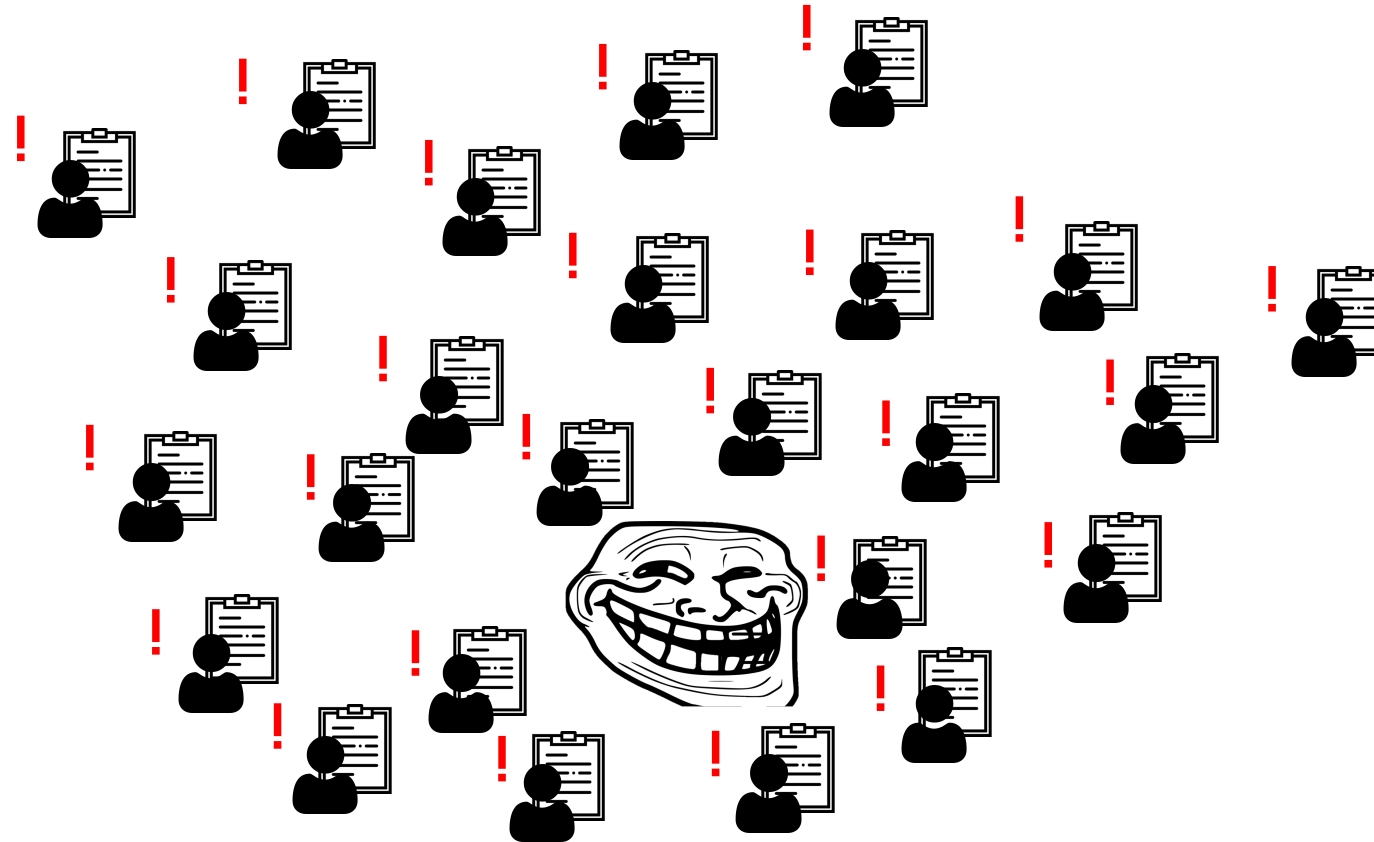
What is Blockchain?

- Characteristics of Blockchain



What is Blockchain?

- Characteristics of Blockchain



What is Blockchain?

- Characteristics of Blockchain

| | Characteristic | Explanation |
|---|---------------------|--|
| 1 | Anonymous | Since public key and wallet address is used at transaction , it is anonymous |
| 2 | Traceability | All the transaction concludes address. |
| 3 | Trustless | Trusted third party is not needed at Blockchain also don't have to trust other peers. |
| 4 | Distributed Ledger | All the participants in the system have the information of transaction. |
| 5 | Decentralized | Unlike traditional network system, there is not centralized party at Blockchain system |
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1. Blockchain Structure

- Genesis Block
- Block Structure
- Chain Structure

Blockchain Structure

- Genesis Block

Genesis Block is the very first Block of certain Blockchain ecosystem, also known as Block 0

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

| 요약 | |
|---------|---------------------|
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |
| 릴레이된 곳 | Unknown |
| 난이도 | 1 |
| Bits | 486604799 |
| 크기 | 0.285 kB |
| 무게 | 0.896 kWU |
| 번역 | 1 |
| 해시 난수 | 2083236893 |
| 블록 보상 | 50 BTC |

| 해시 | |
|-------------|--|
| 해시 | 00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f |
| 이전 차단 | 00 |
| 다음 블록 | 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048 |
| Merkle Root | 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b |



거래

4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b

(크기: 204 bytes) 2009-01-03 18:15:05

투입물 없음 (새로 생성 된 동전)

→

1A1zP1eP5QGefi... (Genesis of Bitcoin) - (사용하지 않은)

50 BTC

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

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| 이전 차단 | 00 |
| 다음 블록 | 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048 |
| Merkle Root | 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b |



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4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b

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Blockchain Structure

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투입물 없음 (새로 생성 된 동전)
→
1A1zP1eP5QGefi... (Genesis of Bitcoin) - (사용하지 않은)
50 BTC

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

요약

거래 수

1

거래

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1A1zP1eP5QGefi... (Genesis of Bitcoin [링크](#)) - (사용하지 않은)

50 BTC

50 BTC

타임 스탬프

2009-01-03 18:15:05

수신 시간

2009-01-03 18:15:05

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

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| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |
| 릴레이된 곳 | Unknown |
| 난이도 | 1 |
| Bits | 486604799 |
| 크기 | 0.285 kB |
| 무게 | 0.896 kWU |
| 번역 | 1 |
| 해시 난수 | 2083236893 |
| 블록 보상 | 50 BTC |

블록 #0

| 요약 | |
|---------|---------------------|
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

| | |
|---------|---------------------|
| 요약 | |
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 블록 보상 | |
| 50 BTC | |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

| | |
|---------|---------------------|
| 요약 | |
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

| | |
|---------|---------------------|
| 요약 | |
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

| | |
|---------|---------------------|
| 요약 | |
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |

50 BTC

Blockchain Structure

- Genesis Block of Bitcoin

블록 #0

| 요약 | |
|---------|---------------------|
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |
| 릴레이된 곳 | Unknown |
| 난이도 | 1 |
| Bits | 486604799 |
| 크기 | 0.285 kB |
| 무게 | 0.896 kWU |
| 번역 | 1 |
| 해시 난수 | 2083236893 |
| 블록 보상 | 50 BTC |

| 해시 | |
|-------------|--|
| 해시 | 00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f |
| 이전 차단 | 00 |
| 다음 블록 | 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048 |
| Merkle Root | 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b |



거래

4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b

(크기: 204 bytes) 2009-01-03 18:15:05

투입물 없음 (새로 생성 된 동전)

→

1A1zP1eP5QGefi... (Genesis of Bitcoin) - (사용하지 않은)

50 BTC

50 BTC

해시

이전 차 단

다음과 같이

```
Merkle 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b
Root
```


[illegible]

해시

이전 차

요약

거래 수수료 0 BTC

해시

```
Merkle Root 0e3e2357e806b6cdb1f70b54c3a3a17b6714ee1f0e68bebb44a74b1efd512098
```

해시

이전 차

요약

거래 수수료 0 BTC

해시

```
Merkle Root 0e3e2357e806b6cdb1f70b54c3a3a17b6714ee1f0e68bebb44a74b1efd512098
```

해시

해시| 000000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f

[illegible]

해시

해시| 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048

이전 차단 [000000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f](#)

다임리 00000006a625f06636b8bb6ac7b960a8d03705d1ace08b1a19da3fdcc99ddbd

Merkle Root 0e3e2357e806b6cdb1f70b54c3a3a17b6714ee1f0e68bebb44a74b1efd512098

Blockchain Structure

- Block Structure

블록 #0

| 요약 | |
|---------|---------------------|
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |
| 릴레이된 곳 | Unknown |
| 난이도 | 1 |
| Bits | 486604799 |
| 크기 | 0.285 kB |
| 무게 | 0.896 kWU |
| 번역 | 1 |
| 해시 난수 | 2083236893 |
| 블록 보상 | 50 BTC |

| 해시 | |
|-------------|--|
| 해시 | 00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f |
| 이전 차단 | 00 |
| 다음 블록 | 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048 |
| Merkle Root | 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b |



거래

4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b

(크기: 204 bytes) 2009-01-03 18:15:05

투입물 없음 (새로 생성 된 동전)

➡

1A1zP1eP5QGefi... (Genesis of Bitcoin) - (사용하지 않음)

50 BTC

50 BTC

블록 #539832

| 요약 | |
|---------|----------------------|
| 거래 수 | 2106 |
| 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0.1561294 BTC |
| 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2018-09-03 20:49:16 |
| 수신 시간 | 2018-09-03 20:49:16 |
| 릴레이된 곳 | AntPool |
| 난이도 | 6,727,225,469,722.53 |
| Bits | 388618029 |
| 크기 | 1159.523 kB |
| 무게 | 3992.678 kWU |
| 번역 | 0x20000000 |
| 해시 난수 | 2551954848 |
| 블록 보상 | 12.5 BTC |

| 해시 | |
|-------------|---|
| 해시 | 00000000000000000053bd5de314f61add5c7b0614372ccfce2f0b7fce39743 |
| 이전 차단 | 00 |
| 다음 블록 | 0000000000000000000000003299e4701aa1adea5c7075b3be6142dd8c44c6419fb81 |
| Merkle Root | a903b4c6a39b8d625ea4f1a0b640eaf226bf225b7462b71f2190d3ade97c986b |



거래

4da0badb7482e7883fe95d1b438fed03598c03b2017fc007f4d8e1aa6114eb45

(크기: 248 bytes) 2018-09-03 20:49:16

투입물 없음 (새로 생성 된 동전)

➡

1Nh7uHdvY6fNwtQtM1G5EzAFPLC33B59rB - (사용하지 않음)
출력 주소를 디코딩 할 수 없습니다. - (사용하지 않음)

12.6561294 BTC
0 BTC

12.6561294 BTC

e9c809cc208bcaf6d8346d141374e97e21da9c59b2754e3fbf69c577133caf8c

(보수: 0.0025 BTC - 280.27 sat/WU - 1,121 sat/B - 크기: 223 bytes) 2018-09-03 20:42:25

15xeZss37GAwXx8d2MQq9RVg7YfEdJ1LV3 (4.83064584 BTC - 산출)

➡

3Ggd46Rt36oDotZyZdyGUWSakTpfmoSYhZ - (사용하지 않음)
1LNmcAB3NRLHo8JCpcGevCv1Jhzt34W4M5 - (지출)
4.82614584 BTC

4.82614584 BTC

3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd

(보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00

187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq (12.73973247 BTC - 산출)

➡

1MwYXDHfQdyKXHJ7ZgBZxmg8ochwdjHeJ4 - (지출)
3QJ4hPWFQBcbvJYTcho88rz4bq4PSzcNBp - (사용하지 않음)
12.73510584 BTC
0.00212663 BTC

12.73732347 BTC

ec0f4186fa16c8cc41c47ee9dd99e95aa3d8751b486c26311ba933416d175f6

(보수: 0.0025 BTC - 277.78 sat/WU - 1,111 sat/B - 크기: 225 bytes) 2018-09-03 20:41:05

114M4Qsato5HctQPFnBTgdBpL9JctmZJet (10.36602916 BTC - 산출)

➡

12ovmyLbttyEQNckCPJrNz7vCLZC2BwxL3 - (지출)
15ZJ9ztfxst9j3AMDca4AnjzhsvNRjcUtn - (사용하지 않음)
10.35762916 BTC
0.0059 BTC

10.36352916 BTC

3b960d047214930761f4faca5e258b841af3d47f4b8a230d983088e6815dfb50

(보수: 0.00187508 BTC - 210.31 sat/WU - 841.24 sat/B - 크기: 223 bytes) 2018-09-03 20:33:51

Blockchain Structure

- Block Structure

블록 #0

| 요약 | |
|---------|---------------------|
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |
| 릴레이된 곳 | Unknown |
| 난이도 | 1 |
| Bits | 486604799 |
| 크기 | 0.285 kB |
| 무게 | 0.896 kWU |
| 번역 | 1 |
| 해시 난수 | 2083236893 |
| 블록 보상 | 50 BTC |

| 해시 | |
|-------------|--|
| 해시 | 00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f |
| 이전 차단 | 00 |
| 다음 블록 | 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048 |
| Merkle Root | 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b |



거래

| | |
|--|--|
| 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b (크기: 204 bytes) 2009-01-03 18:15:05 | |
| 투입을 없음 (새로 생성 된 동전) | 1A1zP1eP5QGefi... (Genesis of Bitcoin) - (사용하지 않은) |
| | 50 BTC |
| | 50 BTC |

블록 #539832

| 요약 | |
|---------|----------------------|
| 거래 수 | 2106 |
| 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0.1561294 BTC |
| 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2018-09-03 20:49:16 |
| 수신 시간 | 2018-09-03 20:49:16 |
| 릴레이된 곳 | AntPool |
| 난이도 | 6,727,225,469,722.53 |
| Bits | 388618029 |
| 크기 | 1159.523 kB |
| 무게 | 3992.678 kWU |
| 번역 | 0x20000000 |
| 해시 난수 | 2551954848 |
| 블록 보상 | 12.5 BTC |

| 해시 | |
|-------------|---|
| 해시 | 000000000000000000053bd5de314f61add5c7b0614372ccfce2f0b7fce39743 |
| 이전 차단 | 00000000000000000001b5f1026e9b67348761c98906e522f7fed52d555730182 |
| 다음 블록 | 00000000000000000003299e4701aa1adea5c7075b3be6142dd8c44c6419fb81 |
| Merkle Root | a903b4c6a39b8d625ea4f1a0b640eaf226bf225b7462b71f2190d3ade97c986b |



거래

| | |
|--|--|
| 4da0badb7482e7883fe95d1b438fed03598c03b2017fc007f4d8e1aa6114eb45 (크기: 248 bytes) 2018-09-03 20:49:16 | |
| 투입을 없음 (새로 생성 된 동전) | 1Nh7uHdvY6fNwtQtM1G5EzAFPLC33B59rB - (사용하지 않은) 출력 주소를 디코딩 할 수 없습니다. - (사용하지 않은) |
| | 12.6561294 BTC 0 BTC |
| | 12.6561294 BTC |
| e9c809cc208bc9f6d8346d141374e97e21da9c59b2754e3fbf69c577133caf8c (보수: 0.0025 BTC - 280.27 sat/WU - 1,121 sat/B - 크기: 223 bytes) 2018-09-03 20:42:25 | |
| 15xeZss37GAwXx8d2MQq9RVg7YfEdJ1LV3 (4.83064584 BTC - 산출) | 3Ggd46Rt36oDotZyZdyGUWSakTpfmoSYhZ - (사용하지 않은) 1LNmcAB3NRLHo8JCpcGevCv1Jhzt34W4M5 - (지출) 4.82614584 BTC |
| | 0.002 BTC |
| | 4.82614584 BTC |
| 3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd (보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00 | |
| 187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq (12.73973247 BTC - 산출) | 1MwYXDHfQdyKXhJ7ZgBZxmg8ochwdjHeJ4 - (지출) 3QJ4hPWFQBcbvJYTcho88rz4bq4PSzcNBp - (사용하지 않은) 10.35762916 BTC |
| | 0.00212663 BTC |
| | 12.73723247 BTC |
| ec0f4186fa16c8cc41c47ee9dd99e95aa3d8751b486c26311ba933416d175f6 (보수: 0.0025 BTC - 277.78 sat/WU - 1,111 sat/B - 크기: 225 bytes) 2018-09-03 20:41:05 | |
| 114M4Qsato5HctQPFnBTgdBpL9JctmZJet (10.36602916 BTC - 산출) | 12ovmyLbttyEQNckCPJrNz7vCLZC2BwxL3 - (지출) 15ZJ9ztfxst9j3AMDca4AnjzhsvNRjcUtn - (사용하지 않은) 10.35762916 BTC |
| | 0.0059 BTC |
| | 10.36352916 BTC |
| 3b960d047214930761f4faca5e258b841af3d47f4b8a230d983088e6815dfb50 (보수: 0.00187508 BTC - 210.31 sat/WU - 841.24 sat/B - 크기: 223 bytes) 2018-09-03 20:33:51 | |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

블록 #0

| 요약 | |
|---------|---------------------|
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |
| 릴레이된 곳 | Unknown |
| 난이도 | 1 |
| Bits | 486604799 |
| 크기 | 0.285 kB |
| 무게 | 0.896 kWU |
| 번역 | 1 |
| 해시 난수 | 2083236893 |
| 블록 보상 | 50 BTC |

| 해시 | |
|-------------|--|
| 해시 | 00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f |
| 이전 차단 | 00 |
| 다음 블록 | 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048 |
| Merkle Root | 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b |



거래

| | |
|--|---|
| 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b (크기: 204 bytes) 2009-01-03 18:15:05 | |
| 투입물 없음 (새로 생성 된 동전) | 1A1zP1eP5QGefi... (Genesis of Bitcoin) - (사용하지 않음) 50 BTC |
| 50 BTC | |

블록 #539832

| 요약 | |
|---------|----------------------|
| 거래 수 | 2106 |
| 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0.1561294 BTC |
| 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2018-09-03 20:49:16 |
| 수신 시간 | 2018-09-03 20:49:16 |
| 릴레이된 곳 | AntPool |
| 난이도 | 6,727,225,469,722.53 |
| Bits | 388618029 |
| 크기 | 1159.523 kB |
| 무게 | 3992.678 kWU |
| 번역 | 0x20000000 |
| 해시 난수 | 2551954848 |
| 블록 보상 | 12.5 BTC |

| 해시 | |
|-------------|---|
| 해시 | 000000000000000000053bd5de314f61add5c7b0614372ccfce2f0b7fce39743 |
| 이전 차단 | 0000000000000000000001b5f1026e9b67348761c98906e522f7fed52d555730182 |
| 다음 블록 | 0000000000000000000003299e4701aa1adea5c7075b3be6142d8c44c6419fb81 |
| Merkle Root | a903b4c6a39b8d625ea4f1a0b640eaf226bf225b7462b71f2190d3ade97c986b |



거래

| | |
|--|---|
| 4da0badb7482e7883fe95d1b438fed03598c03b2017fc007f4d8e1aa6114eb45 (크기: 248 bytes) 2018-09-03 20:49:16 | |
| 투입물 없음 (새로 생성 된 동전) | 1Nh7uHdvY6fNwtQtM1G5EzAFPLC33B59rB - (사용하지 않음) 12.6561294 BTC |
| 출력 주소를 디코딩 할 수 없습니다. - (사용하지 않음) 0 BTC | |
| 12.6561294 BTC | |
| e9c809cc208bc9f6d8346d141374e97e21da9c59b2754e3fbf69c577133caf8c (보수: 0.0025 BTC - 280.27 sat/WU - 1,121 sat/B - 크기: 223 bytes) 2018-09-03 20:42:25 | |
| 15xeZss37GAwXx8d2MQq9RVg7YfEdJ1LV3 (4.83064584 BTC - 산출) | 3Ggd46Rt36oDotZyZdyGUWSakTpfmoSYhZ - (사용하지 않음) 0.002 BTC |
| 1LNmcAB3NRLHo8JCpcGevCv1Jhzt34W4M5 - (지출) 4.82614584 BTC | |
| 4.82614584 BTC | |
| 3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd (보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00 | |
| 187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq (12.73973247 BTC - 산출) | 1MwYXDHfQdyKXhJ7ZgBZxmg8ochwdjHeJ4 - (지출) 12.73510584 BTC |
| 3QJ4hPWFQBcbvJYTcho88rz4bq4PSzcNBp - (사용하지 않음) 0.00212663 BTC | |
| 12.73723247 BTC | |
| ec0f4186fa16c8cc41c47ee9dd99e95aa3d8751b486c26311ba933416d175f6 (보수: 0.0025 BTC - 277.78 sat/WU - 1,111 sat/B - 크기: 225 bytes) 2018-09-03 20:41:05 | |
| 114M4Qsato5HctQPFnBTgdBpL9JctmZJet (10.36602916 BTC - 산출) | 12ovmyLbttyEQNckCPJrNz7vCLZC2BwxL3 - (지출) 10.35762916 BTC |
| 15ZJ9ztHxst9j3AMDca4AnjzhsvNRjcUtn - (사용하지 않음) 0.0059 BTC | |
| 10.36352916 BTC | |
| 3b960d047214930761f4faca5e258b841af3d47f4b8a230d983088e6815dfb50 (보수: 0.00187508 BTC - 210.31 sat/WU - 841.24 sat/B - 크기: 223 bytes) 2018-09-03 20:33:51 | |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| | | | |
|--|--|---|--|
| 블록 #0 | | 블록 #539832 | |
| 요약 | | 요약 | |
| 거래 수1 | | 거래 수2106 | |
| 거래 | | | |
| 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b | | (크기: 204 bytes) 2009-01-03 18:15:05 | |
| 투입물 없음 (새로 생성 된 동전) | | 1A1zP1eP5QGefi... (Genesis of Bitcoin 🔗) - (사용하지 않은)50 BTC | |
| | | 50 BTC | |
| 난이도1 | | 난이도6,727,225,469,722.53 | |
| 해시 난수2083236893 | | 해시 난수2551954848 | |
| 블록 보상50 BTC | | 블록 보상12.5 BTC | |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | 거래 | |
|------------------|--|--|
| 요약 | | |
| 거래 수 | <div data-bbox="479 446 2102 641"> <div>4da0badb7482e7883fe95d1b438fed03598c03b2017fc007f4d8e1aa6114eb45 (크기: 248 bytes) 2018-09-03 20:49:16</div> <div> <div>투입물 없음 (새로 생성 된 동전)</div> <div>→ 1Nh7uHdvY6fNwtQtM1G5EZAfPLC33B59rB - (사용하지 않은)</div> <div>출력 주소를 디코딩 할 수 없습니다. - (사용하지 않은)</div> <div>12.6561294 BTC</div> <div>0 BTC</div> <div>12.6561294 BTC</div> </div> </div> | |
| 출력 합계 | <div data-bbox="479 714 2102 779"> <div>e9c809cc208bc6af6d8346d141374e97e21da9c59b2754e3fbf69c577133caf8c</div> <div>(보수: 0.0025 BTC - 280.27 sat/WU - 1,121 sat/B - 크기: 223 bytes) 2018-09-03 20:42:25</div> </div> | |
| 예상된 거래량 | <div data-bbox="479 803 2102 966"> <div>15xeZss37GAwXx8d2MQq9RVg7YfEdJ1LV3 (4.83064584 BTC - 산출) → 3Ggd46Rt36oDotZyZdyGUWSakTpfmoSYhZ - (사용하지 않은)</div> <div>1LNmcAB3NRLho8JCpcGevCv1Jhzt34W4M5 - (지출)</div> <div>0.002 BTC</div> <div>4.82614584 BTC</div> <div>4.82814584 BTC</div> </div> | |
| 거래 수수료 | | |
| 높이 | | |
| 타임 스탬프 | <div data-bbox="479 1047 2102 1136"> <div>3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd</div> <div>(보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00</div> </div> | |
| 난이도 | <div data-bbox="479 1144 2102 1307"> <div>187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq (12.73973247 BTC - 산출) → 1MwYXDHFQdyKXHJ7ZgBZxmg8ochwdjHeJ4 - (지출)</div> <div>3QJ4hPWFQBcbvJYTCho88rz4bq4PSzcNBp - (사용하지 않은)</div> <div>12.73510584 BTC</div> <div>0.00212663 BTC</div> <div>12.73723247 BTC</div> </div> | |
| 해시 난수 | | |
| 블록 보상 | <div data-bbox="479 1380 2102 1575"> <div>ec0f4186fa16c8cc41c47ee9dd99e95aa3d8751b486c26311baf933416d175f6</div> <div>(보수: 0.0025 BTC - 277.78 sat/WU - 1,111 sat/B - 크기: 225 bytes) 2018-09-03 20:41:05</div> </div> | |
| Blockchain Basic | <div data-bbox="479 1477 2102 1624"> <div>114M4Qsato5HctQPFnBTgdBpL9JctmZJet (10.36602916 BTC - 산출) → 12ovmyLtbtyEQNckCPJrNz7vCLZC2BwxL3 - (지출)</div> <div>15ZJ9zHxst9j3AMDca4AnjzhsvNRjcUtqn - (사용하지 않은)</div> <div>10.35762916 BTC</div> <div>0.0059 BTC</div> <div>10.36352916 BTC</div> </div> | |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

Blockchain Structure

- Block Structure

| 블록 #0 | | 블록 #539832 | |
|---------|---------------------|------------|----------------------|
| 요약 | | 요약 | |
| 거래 수 | 1 | 거래 수 | 2106 |
| 출력 합계 | 50 BTC | 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 0 BTC | 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0 BTC | 거래 수수료 | 0.1561294 BTC |
| 높이 | 0 (주요 체인) | 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 | 타임 스탬프 | 2018-09-03 20:49:16 |
| 난이도 | 1 | 난이도 | 6,727,225,469,722.53 |
| 해시 난수 | 2083236893 | 해시 난수 | 2551954848 |
| 블록 보상 | 50 BTC | 블록 보상 | 12.5 BTC |

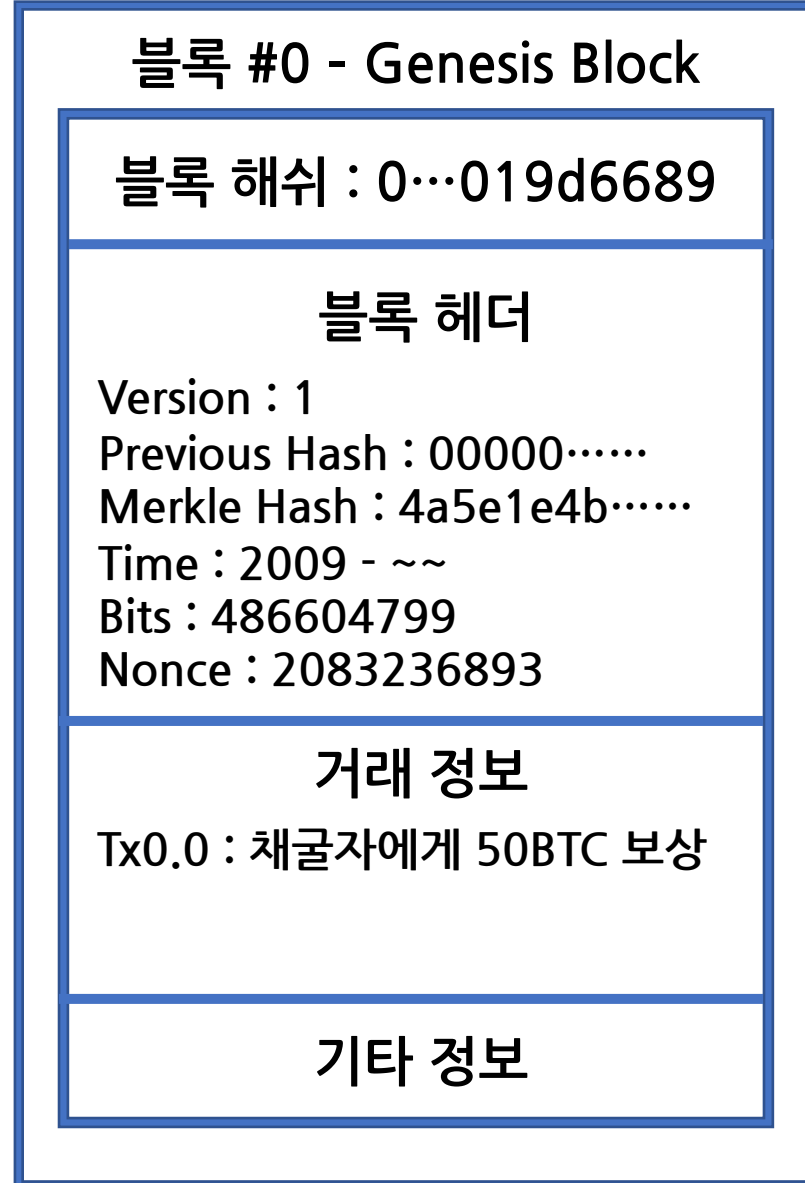
Blockchain Structure

- Block Structure

| | Components | Explanation |
|--------|-------------------|--|
| Header | Hash | Hash value |
| | Ver | Software Version of Bitcoin |
| | Prev Block | Hash Value of Previous Block (Parent Block) |
| | Merkle Root | Hash value that contains All transaction information |
| | Timestamp | The time that Block has been merged on the chain |
| | Bits & Difficulty | Number that control the difficulty |
| | Nonce | Value of mining result |
| Body | Fee | Amount of Fee |
| | Transaction | Tx count , Size, Block index, Tx list etc |
| | ... | ... |

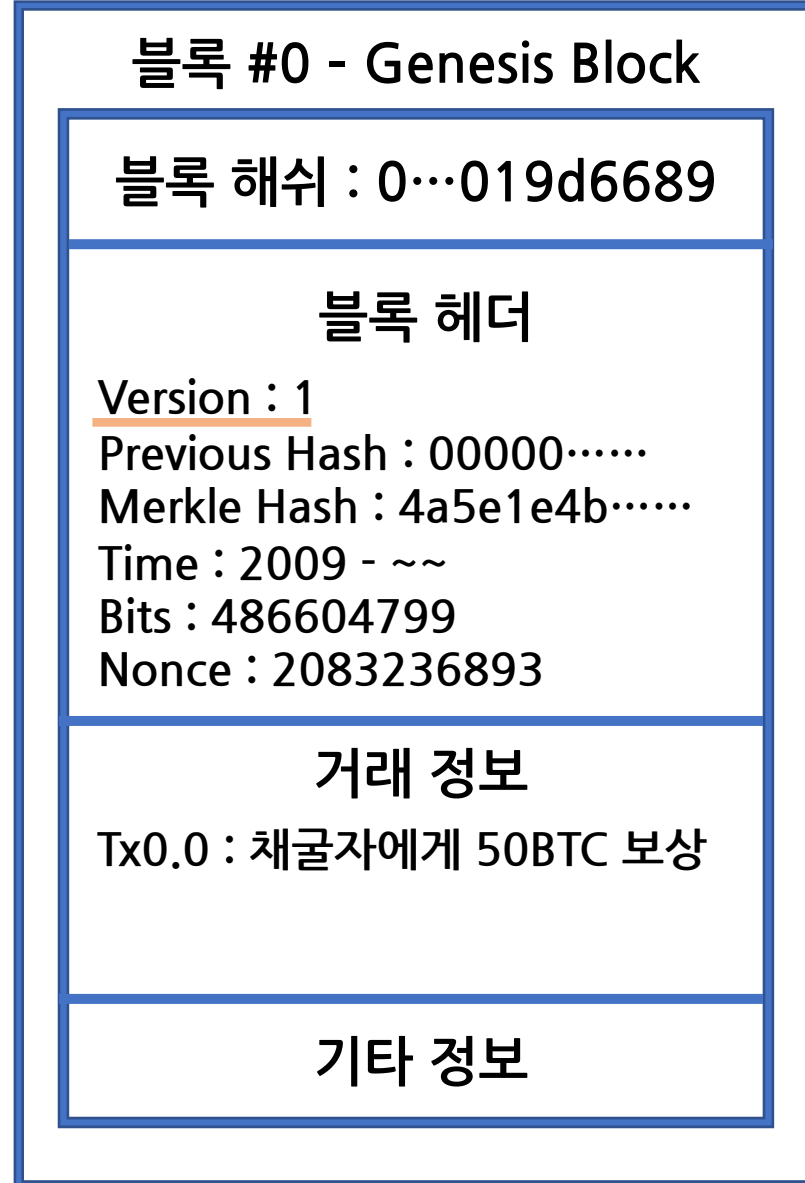
Blockchain Structure

- Block Structure (Genesis)



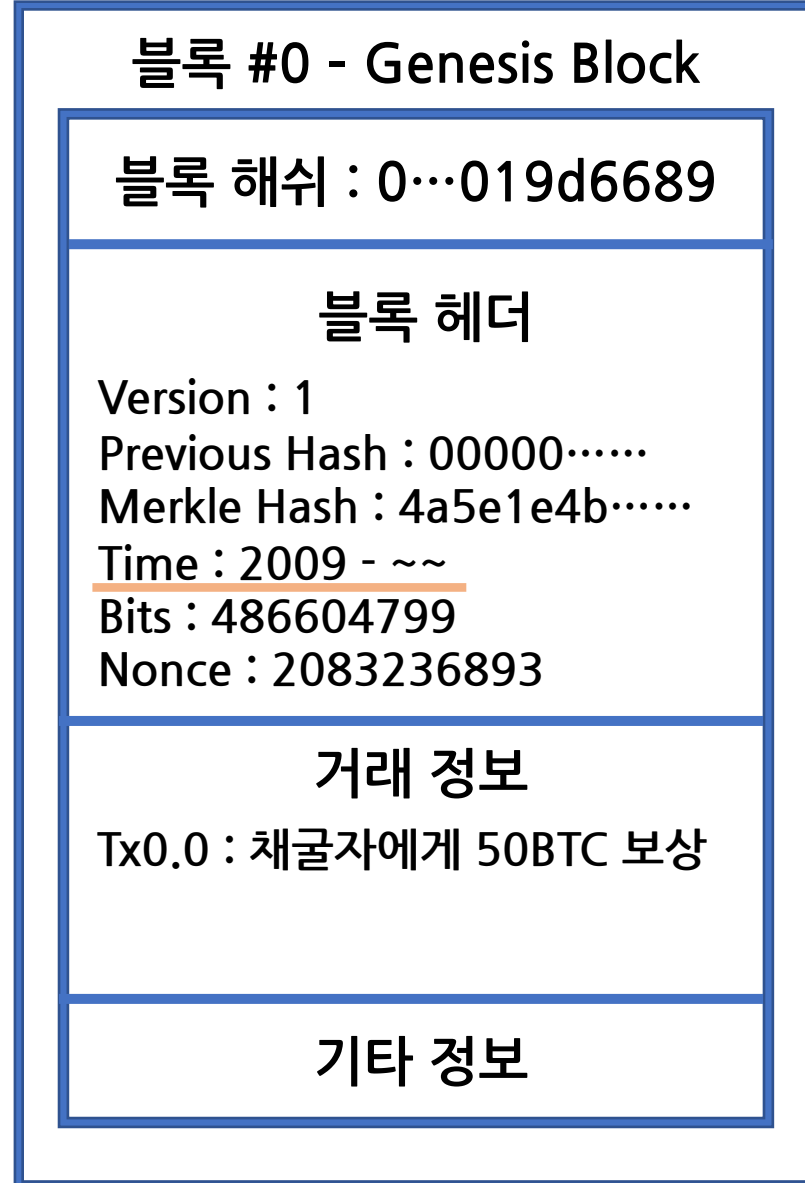
Blockchain Structure

- Block Structure (Genesis)



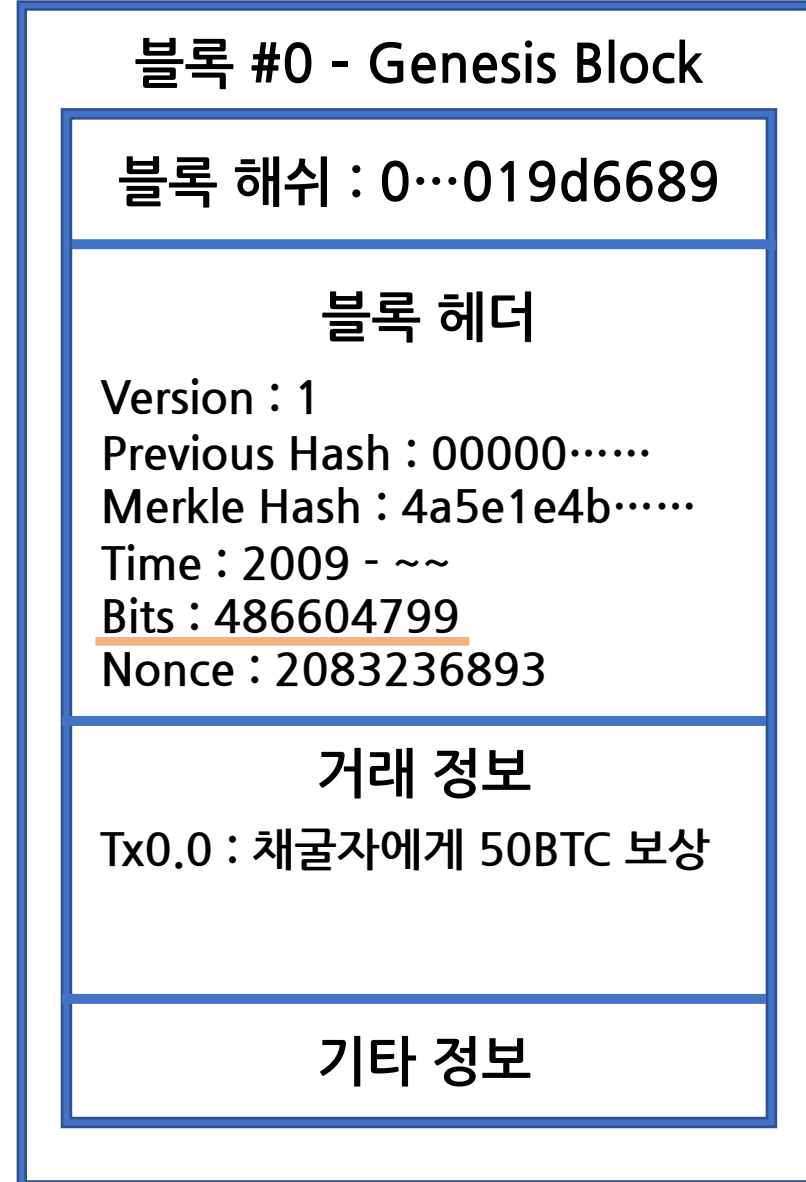
Blockchain Structure

- Block Structure (Genesis)



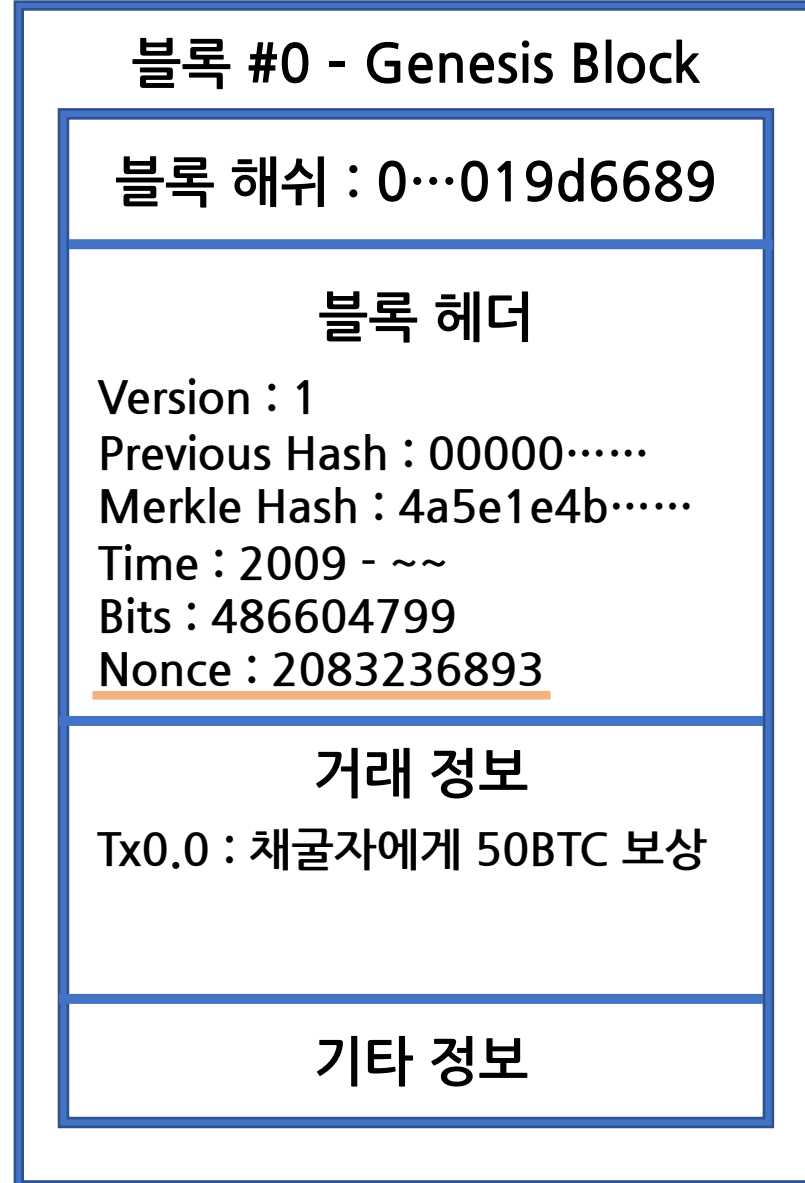
Blockchain Structure

- Block Structure (Genesis)



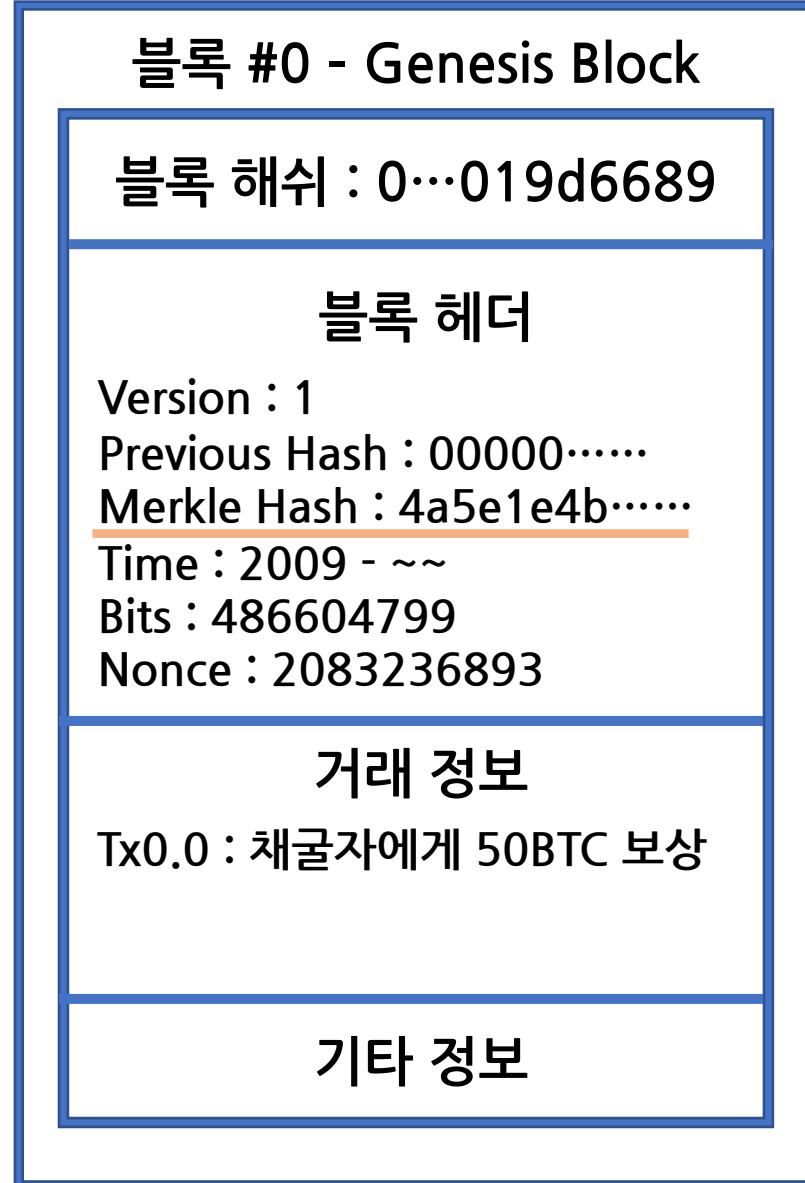
Blockchain Structure

- Block Structure (Genesis)



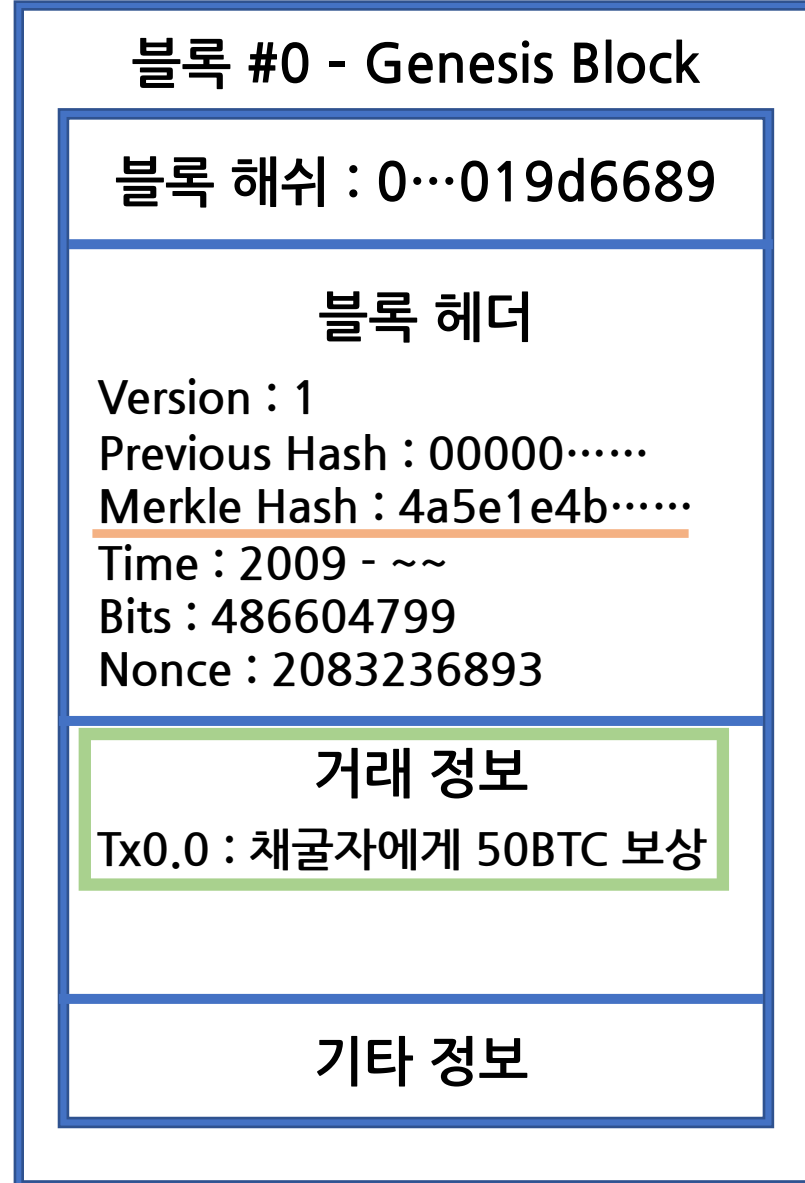
Blockchain Structure

- Block Structure (Genesis)



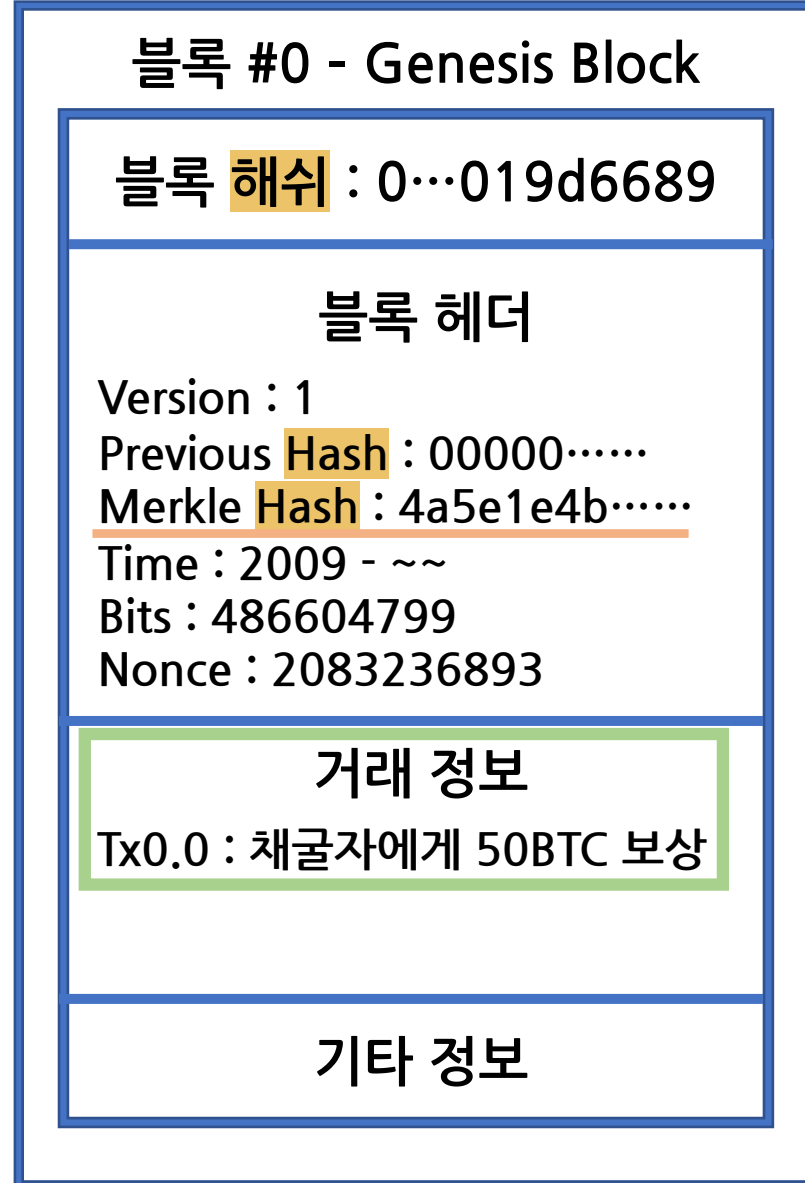
Blockchain Structure

- Block Structure (Genesis)



Blockchain Structure

- Block Structure (Genesis)



Blockchain Structure

- Block Structure (Genesis)

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

Merkle Hash : 4a5e1e4b.....

Time : 2009 - ~~

Bits : 486604799

Nonce : 2083236893

거래 정보

Tx0.0 : 채굴자에게 50BTC 보상

기타 정보

Blockchain Structure

- Block Structure (Genesis)

```
In [18]: from hashlib import sha256
h = hashlib.sha256()
h.update(b'Hello World')
h.hexdigest()
```

```
Out[18]: 'a591a6d40bf420404a011733cfb7b190d62c65bf0bcda32b57b277d9ad9f146e'
```

```
In [19]: from hashlib import sha256
h = hashlib.sha256()
h.update(b'Hello Worl')
h.hexdigest()
```

```
Out[19]: '12fec4c65dd4455c48aff8977a7cd8ccb97539ad4cd7c37f13cf71ba8bee9a98'
```

```
In [20]: len('a591a6d40bf420404a011733cfb7b190d62c65bf0bcda32b57b277d9ad9f146e')
```

```
Out[20]: 64
```

```
In [21]: len('12fec4c65dd4455c48aff8977a7cd8ccb97539ad4cd7c37f13cf71ba8bee9a98')
```

```
Out[21]: 64
```

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

Merkle Hash : 4a5e1e4b.....

Time : 2009 - ~~

Bits : 486604799

Nonce : 2083236893

거래 정보

Tx0.0 : 채굴자에게 50BTC 보상

기타 정보

Blockchain Structure

- Block Structure (Genesis)

```
In [18]: from hashlib import sha256
h = hashlib.sha256()
h.update(b'Hello World')
h.hexdigest()
```

```
Out[18]: 'a591a6d40bf420404a011733cfb7b190d62c65bf0bcda32b57b277d9ad9f146e'
```

```
In [19]: from hashlib import sha256
h = hashlib.sha256()
h.update(b'Hello Worl')
h.hexdigest()
```

```
Out[19]: '12fec4c65dd4455c48aff8977a7cd8ccb97539ad4cd7c37f13cf71ba8bee9a98'
```

```
In [20]: len('a591a6d40bf420404a011733cfb7b190d62c65bf0bcda32b57b277d9ad9f146e')
```

```
Out[20]: 64
```

```
In [21]: len('12fec4c65dd4455c48aff8977a7cd8ccb97539ad4cd7c37f13cf71ba8bee9a98')
```

```
Out[21]: 64
```

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

Merkle Hash : 4a5e1e4b.....

Time : 2009 - ~~

Bits : 486604799

Nonce : 2083236893

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```

```
In [20]: len('a591a6d40bf420404a011733cfb7b190d62c65bf0bcda32b57b277d9ad9f146e')
```

```
Out[20]: 64
```

```
In [21]: len('12fec4c65dd4455c48aff8977a7cd8ccb97539ad4cd7c37f13cf71ba8bee9a98')
```

```
Out[21]: 64
```

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

Merkle Hash : 4a5e1e4b.....

Time : 2009 - ~~

Bits : 486604799

Nonce : 2083236893

거래 정보

Tx0.0 : 채굴자에게 50BTC 보상

기타 정보

Blockchain Structure

- Block Structure (Genesis)

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```
In [20]: len('a591a6d40bf420404a011733cfb7b190d62c65bf0bcda32b57b277d9ad9f146e')
```

```
Out[20]: 64
```

```
In [21]: len('12fec4c65dd4455c48aff8977a7cd8ccb97539ad4cd7c37f13cf71ba8bee9a98')
```

```
Out[21]: 64
```

Blockchain Structure

- Block Structure (Genesis)

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In [18]: from hashlib import sha256
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```
In [19]: from hashlib import sha256
         h = hashlib.sha256()
         h.update(b'Hello Worl')
         h.hexdigest()
```

```
Out[19]: '12fec4c65dd4455c48aff8977a7cd8ccb97539ad4cd7c37f13cf71ba8bee9a98'
```

Hello World → a591a6d40bf420404a011733cfb~~

Hello Worl → 12fec4c65dd4455c48aff8977a7cd~~

Blockchain Structure

- Block Structure (Genesis)

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

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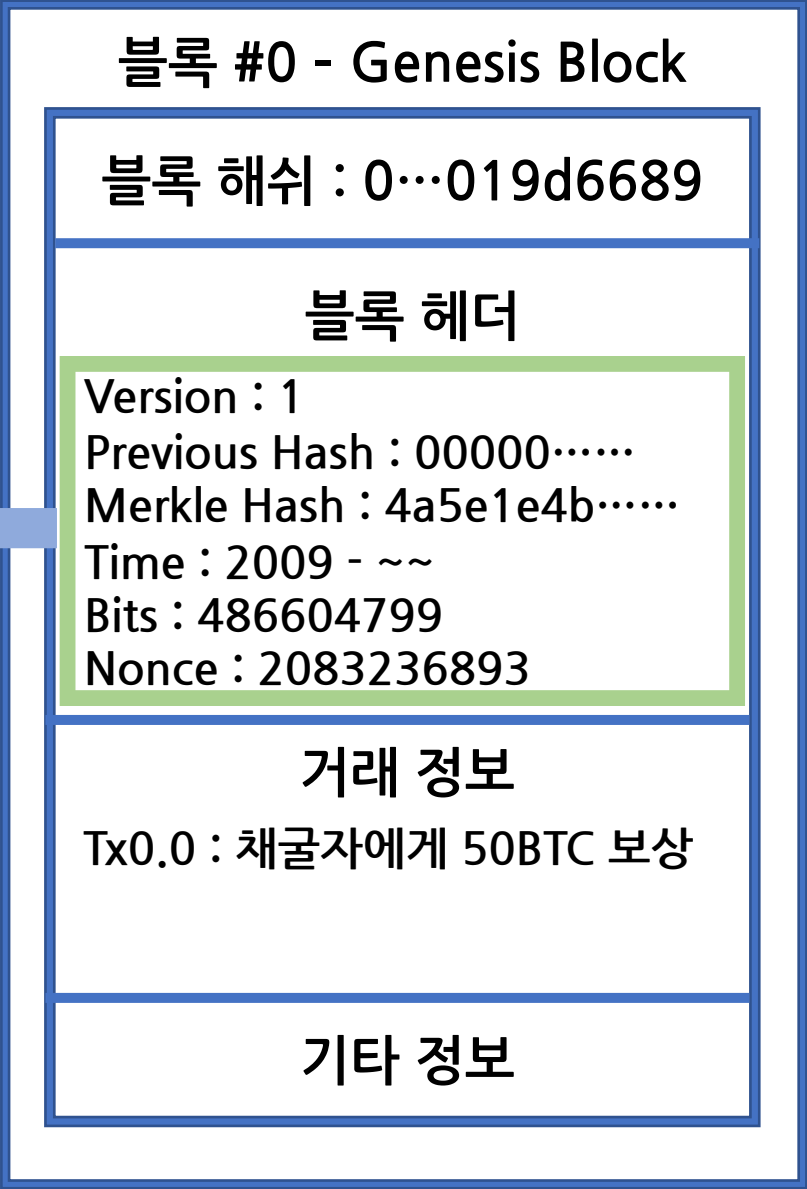
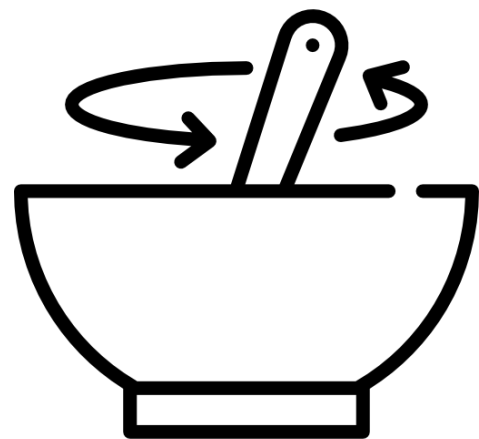
거래 정보

Tx0.0 : 채굴자에게 50BTC 보상

기타 정보

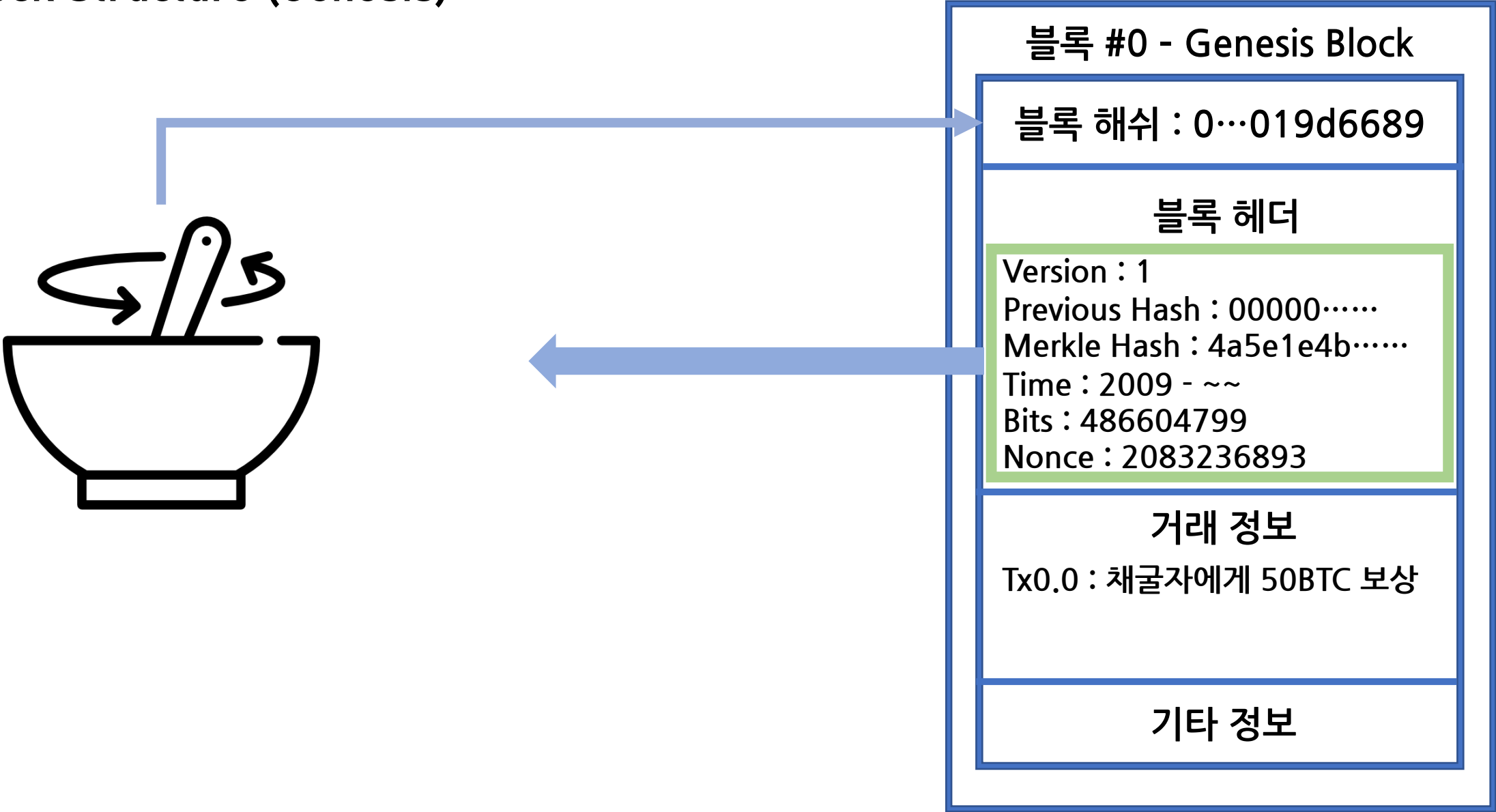
Blockchain Structure

- Block Structure (Genesis)



Blockchain Structure

- Block Structure (Genesis)



Blockchain Structure

- Block Structure (Genesis)

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

Merkle Hash : 4a5e1e4b.....

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거래 정보

Tx0.0 : 채굴자에게 50BTC 보상

기타 정보

Blockchain Structure

- Block Structure (Genesis)

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

Merkle Hash : 4a5e1e4b.....

Time : 2009 - ~~

Bits : 486604799

Nonce : 2083236884

거래 정보

Tx0.0 : 채굴자에게 50BTC 보상

기타 정보

Blockchain Structure

- Block Structure (Genesis)

블록 #0 - Genesis Block

블록 해쉬 : 0...019d6689

블록 헤더

Version : 1

Previous Hash : 00000.....

Merkle Hash : 4a5e1e4b.....

Time : 2009 - ~~

Bits : 486604799

Nonce : 2083236884

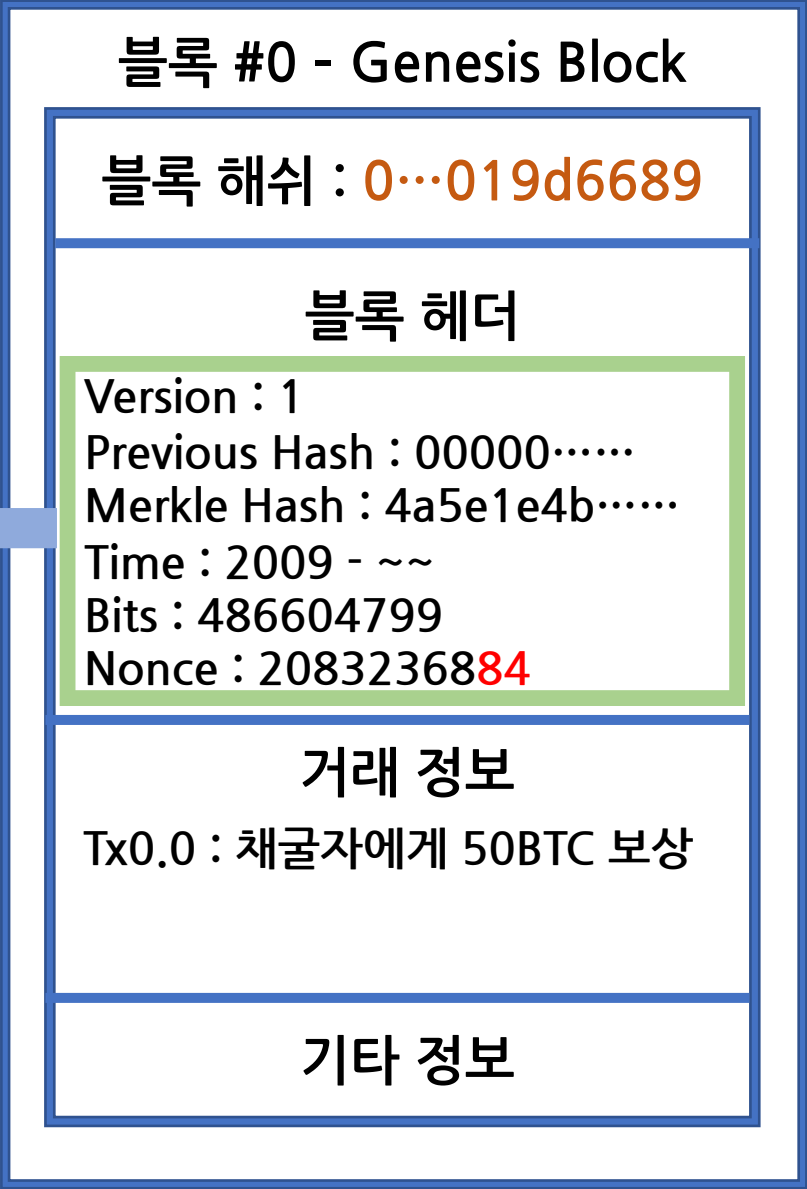
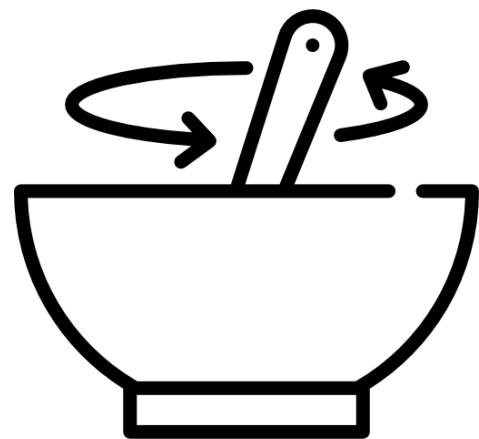
거래 정보

Tx0.0 : 채굴자에게 50BTC 보상

기타 정보

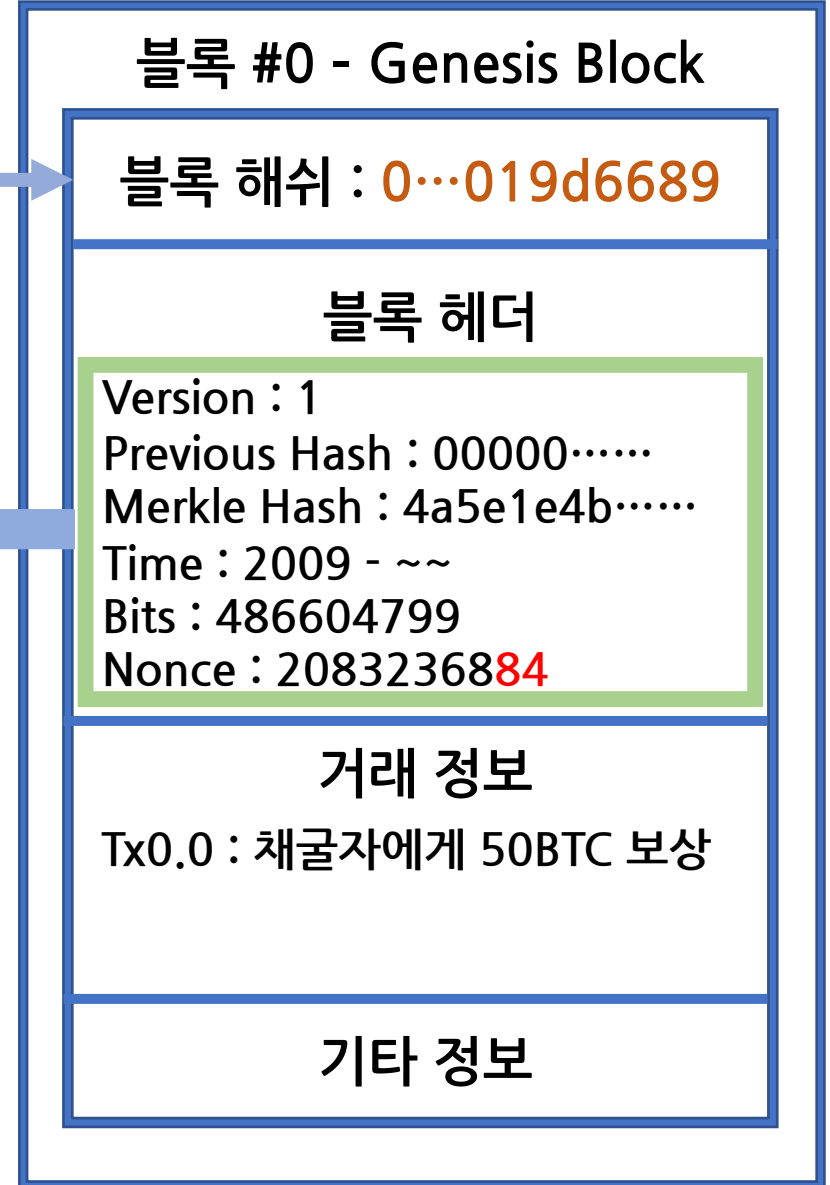
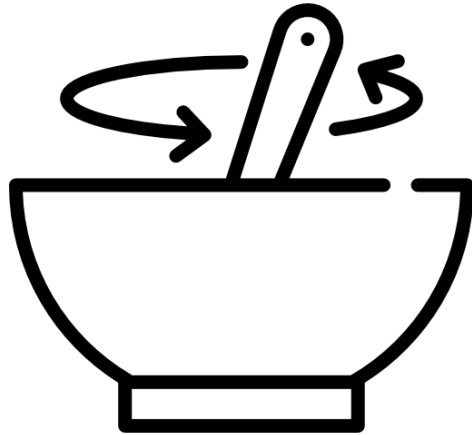
Blockchain Structure

- Block Structure (Genesis)



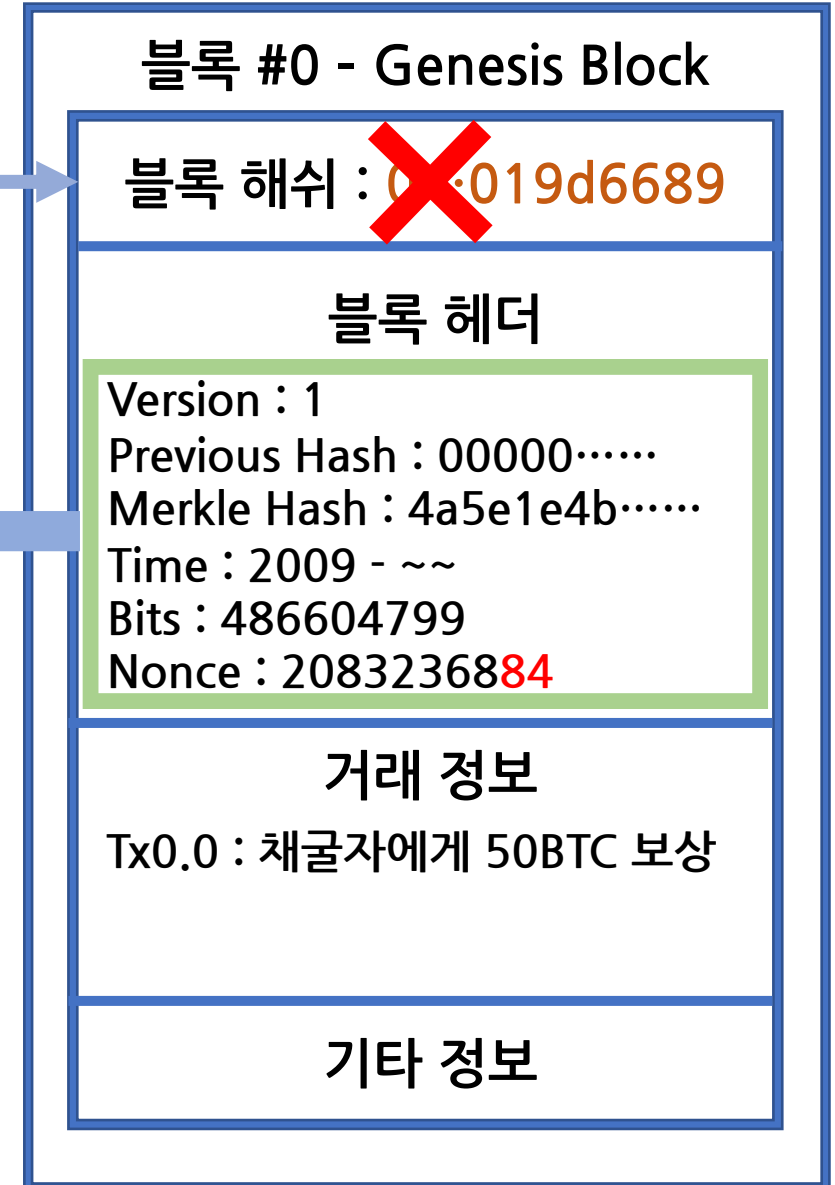
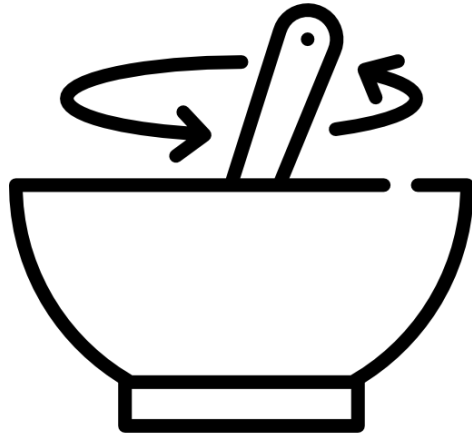
Blockchain Structure

- Block Structure (Genesis)



Blockchain Structure

- Block Structure (Genesis)



Blockchain Structure

- Chain Structure

**Block +
Chain**



Basically Blockchain is a compound word of Block and Chain

And literally it means a chain composed of several blocks.

Blockchain Structure

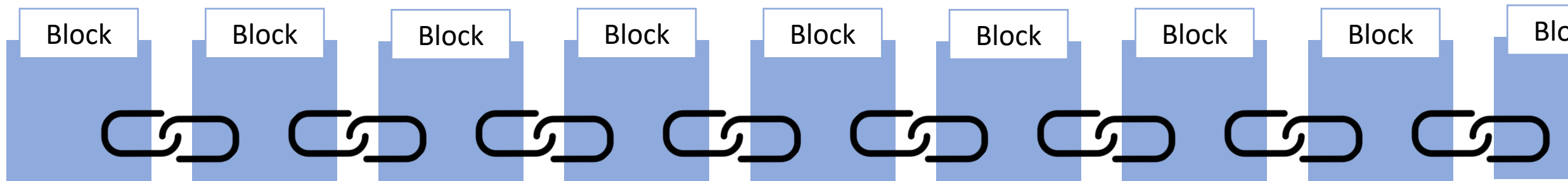
- Chain Structure

**Block +
Chain**



Basically Blockchain is a compound word of Block and Chain

And literally it means a chain composed of several blocks.



Blockchain Structure

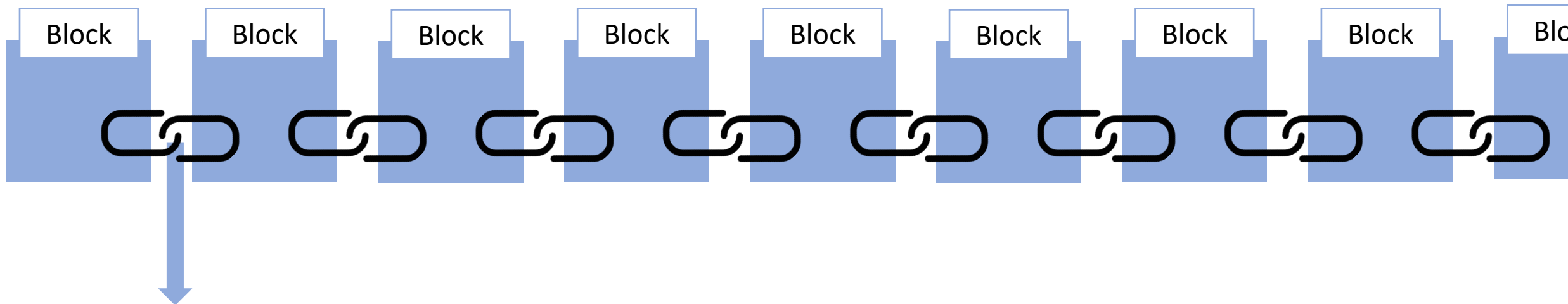
- Chain Structure

Block + Chain



Basically Blockchain is a compound word of Block and Chain

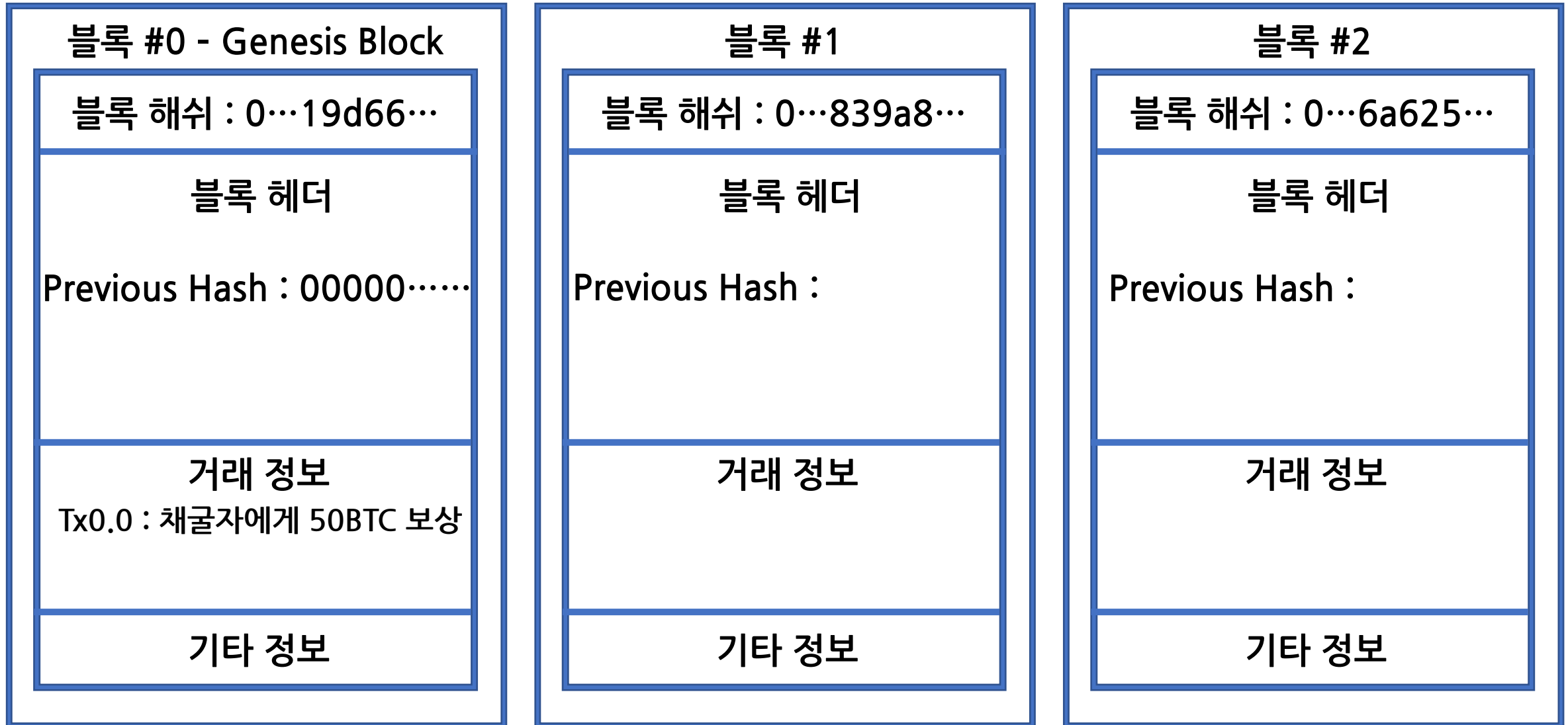
And literally it means a chain composed of several blocks.



All the blocks are connected by the value of hash.

Blockchain Structure

- Chain Structure



Blockchain Structure

- Chain Structure



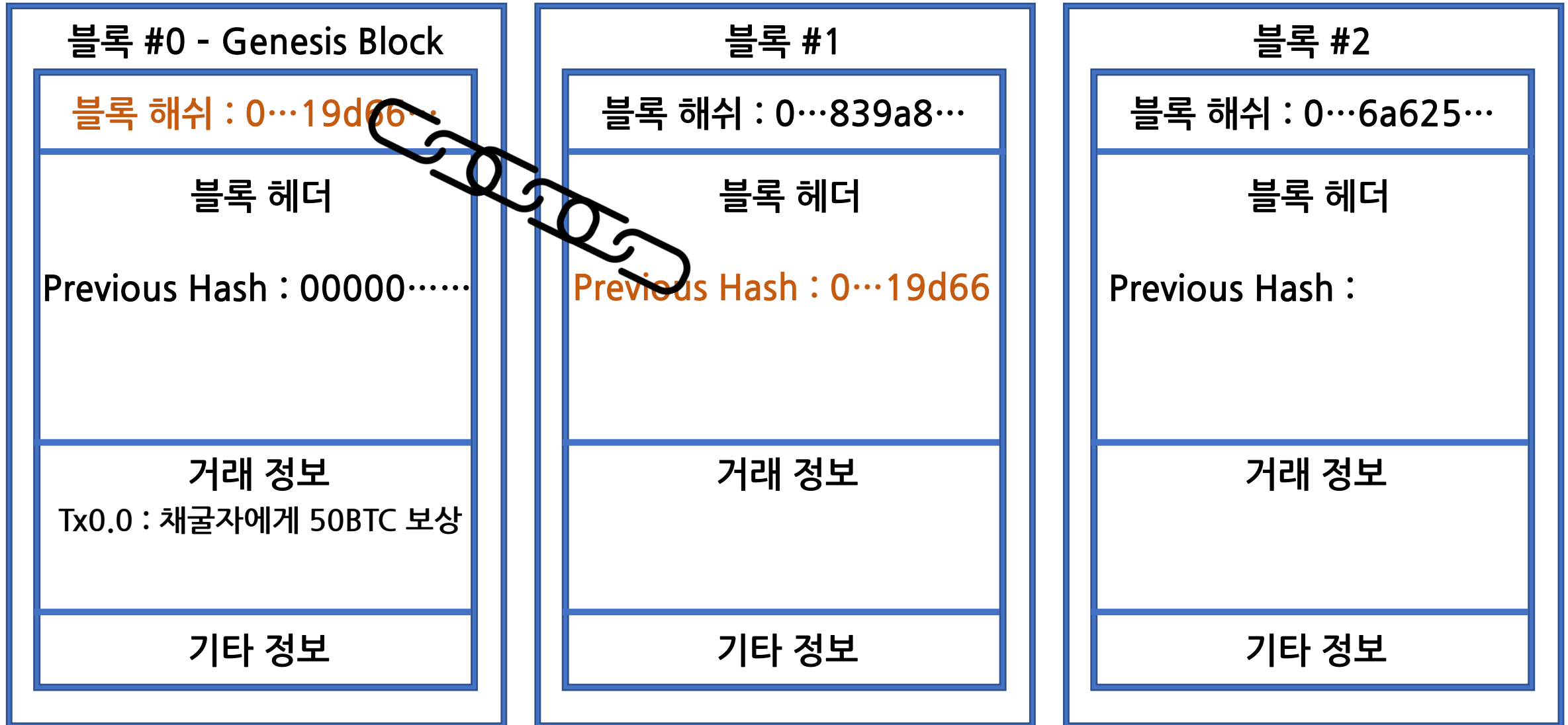
Blockchain Structure

- Chain Structure



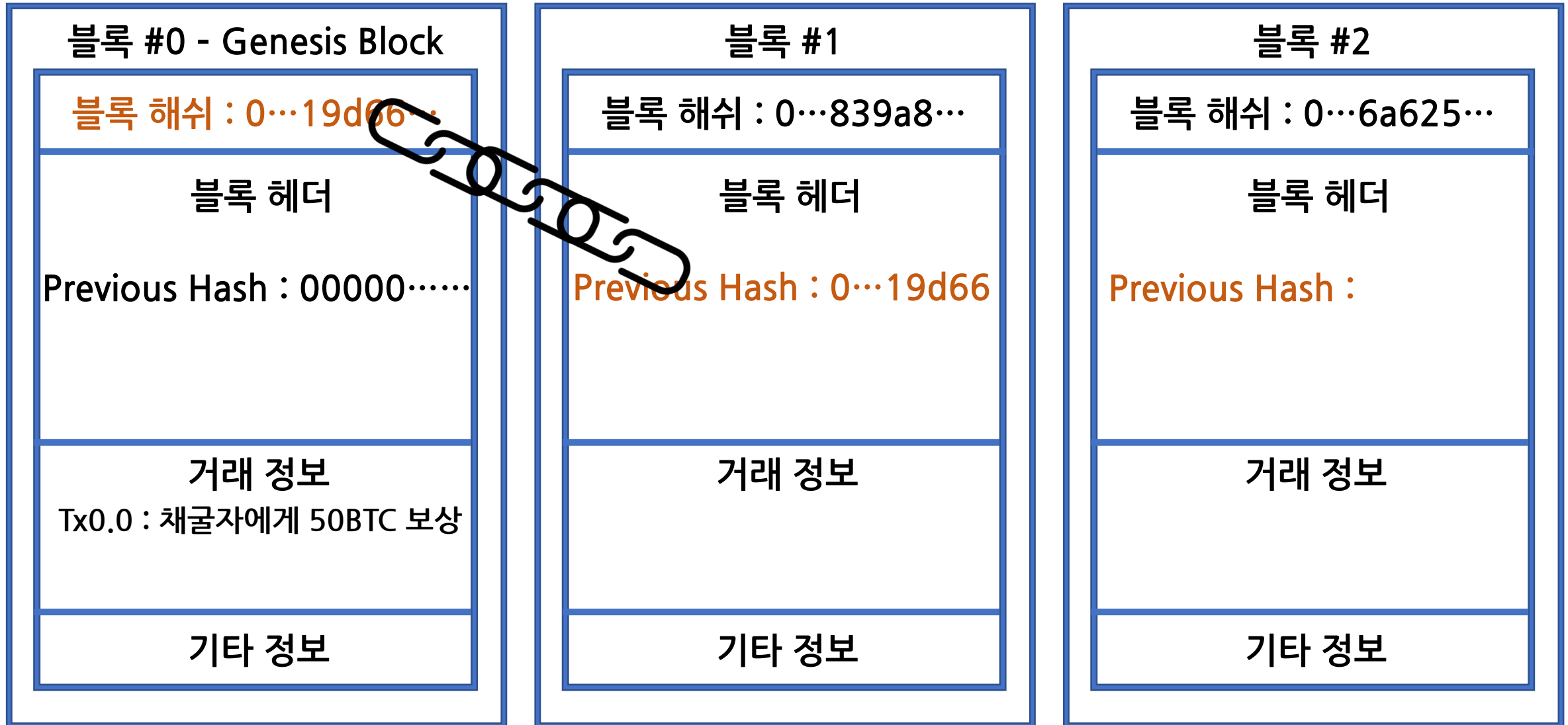
Blockchain Structure

- Chain Structure



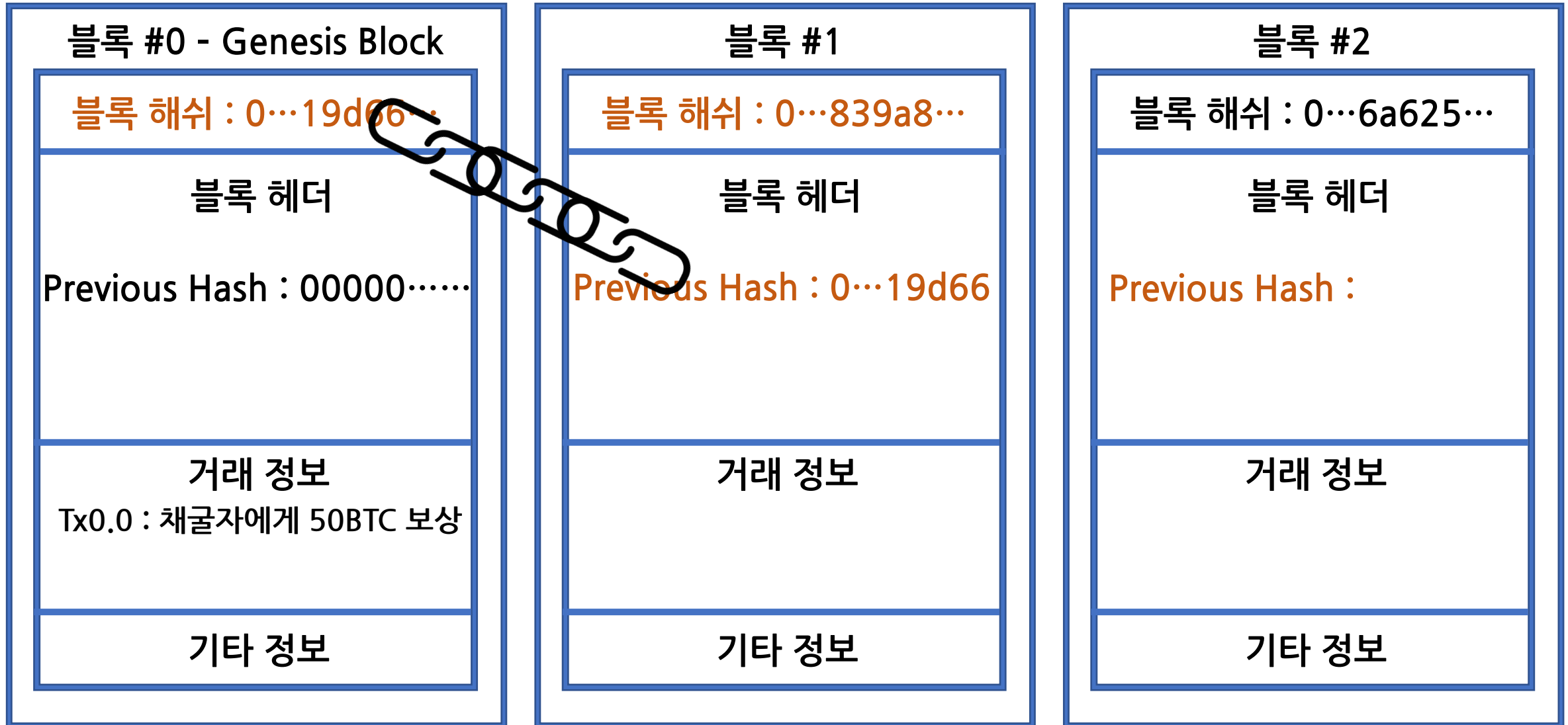
Blockchain Structure

- Chain Structure



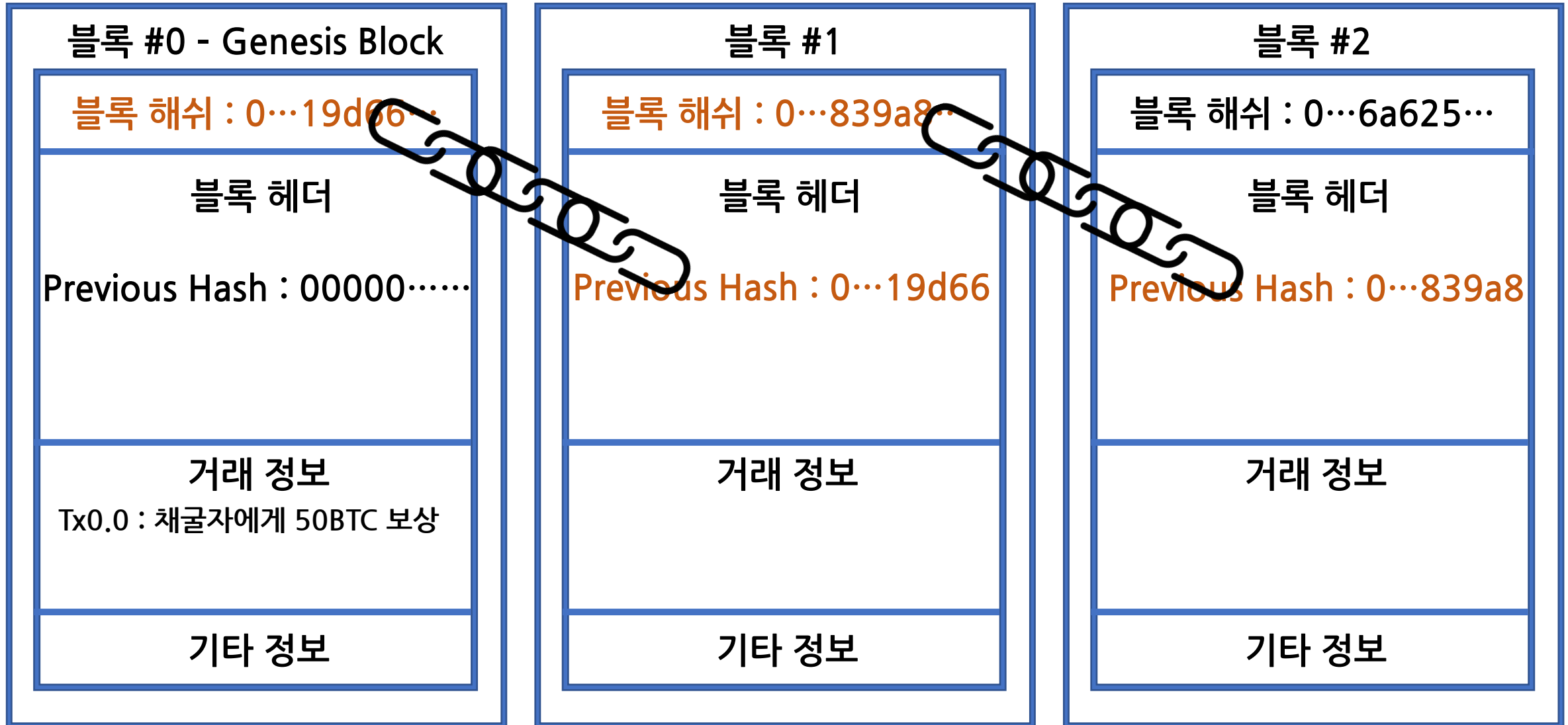
Blockchain Structure

- Chain Structure



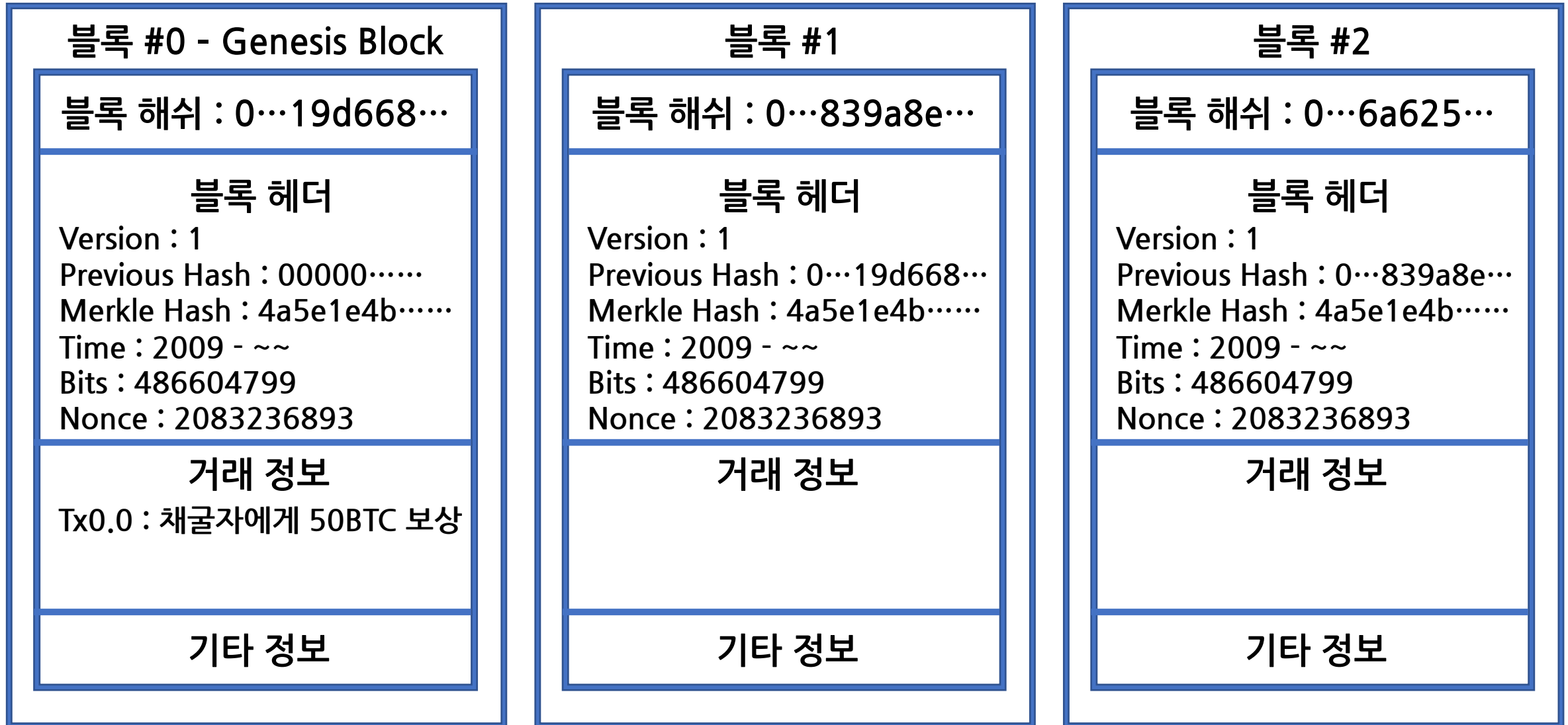
Blockchain Structure

- Chain Structure



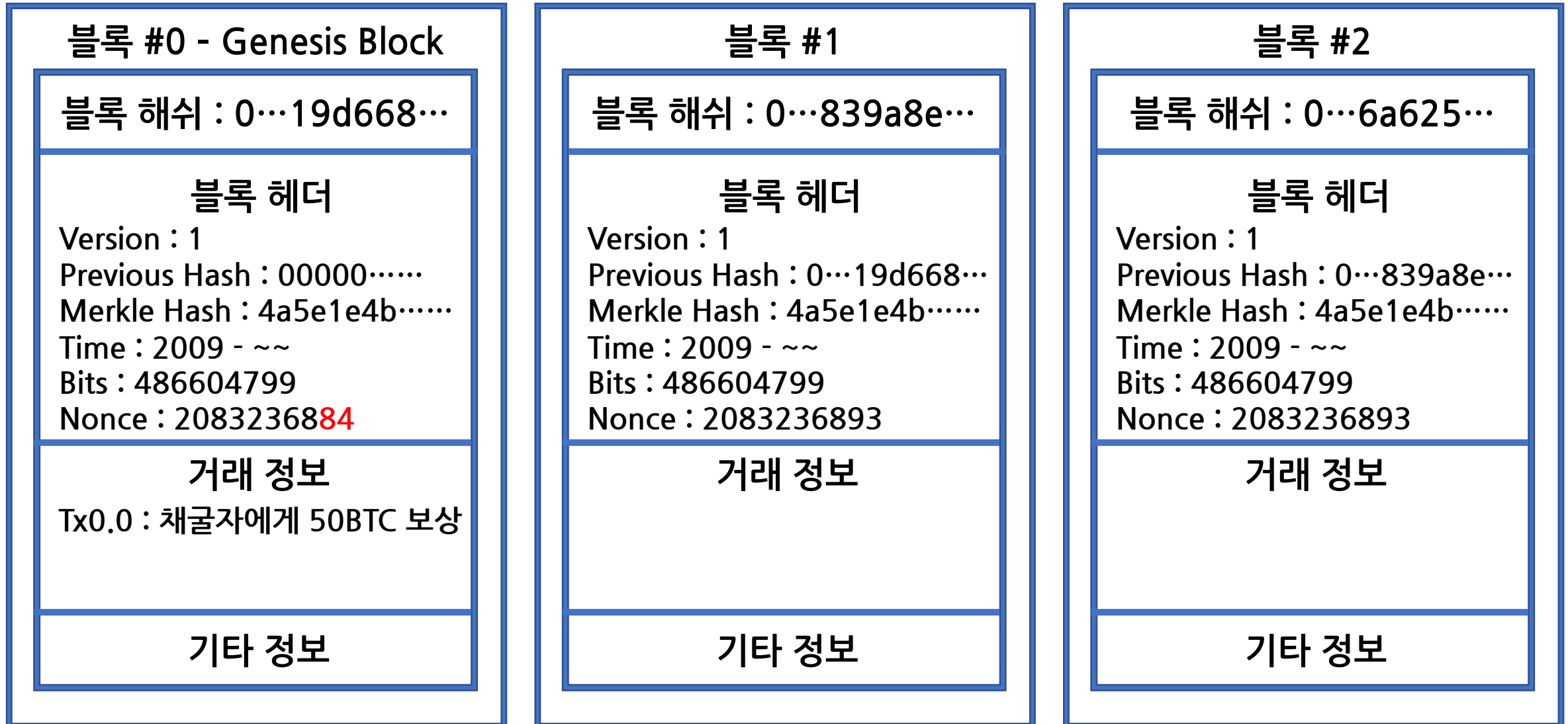
Blockchain Structure

- Chain Structure



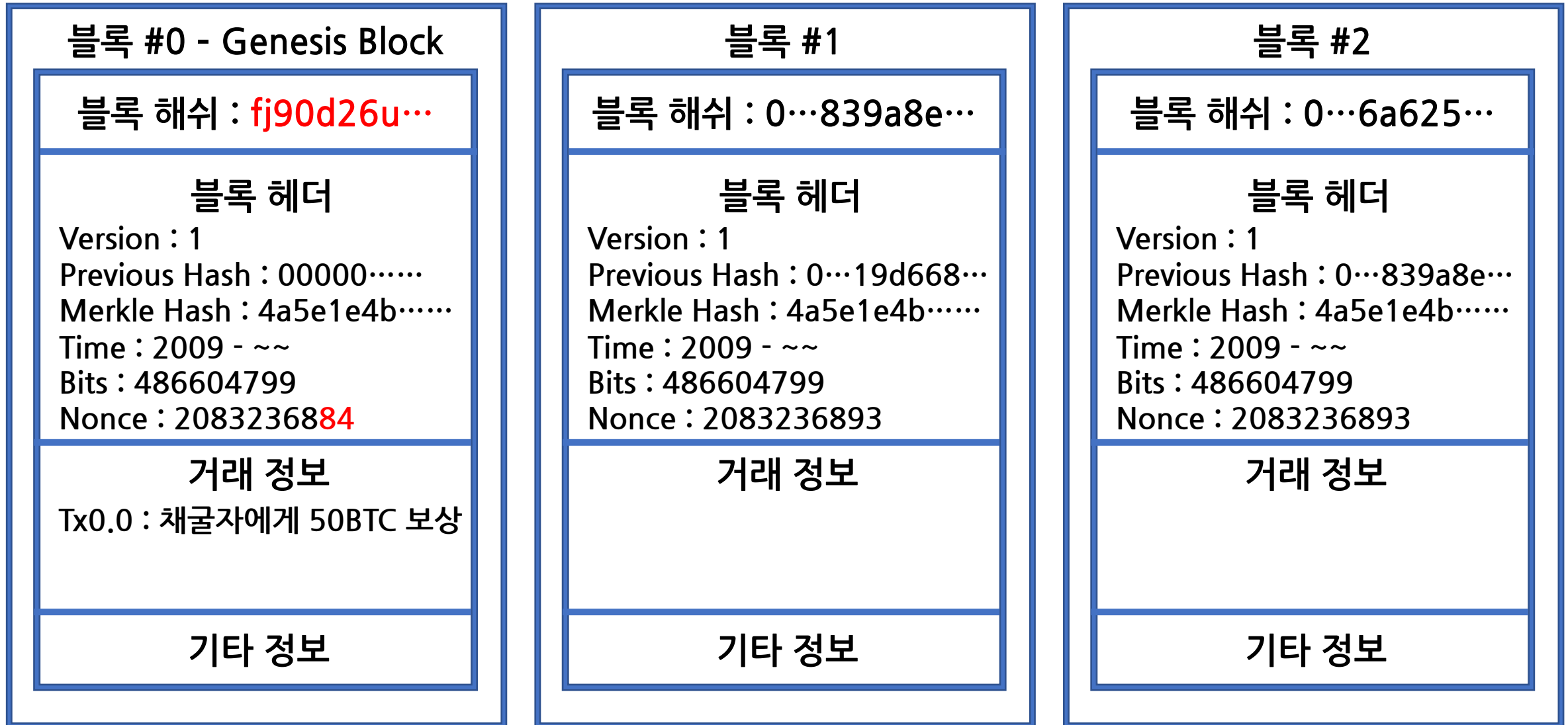
Blockchain Structure

- Chain Structure



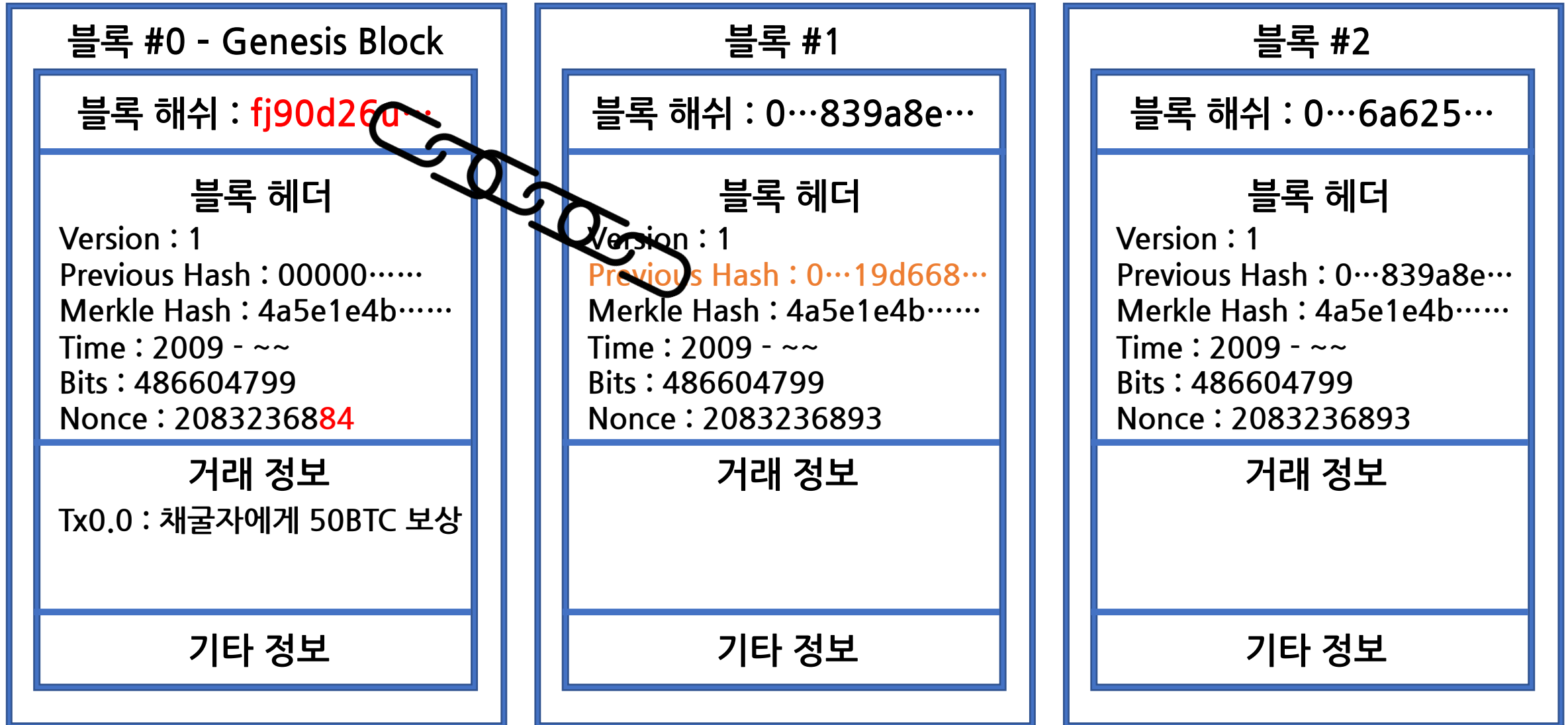
Blockchain Structure

- Chain Structure



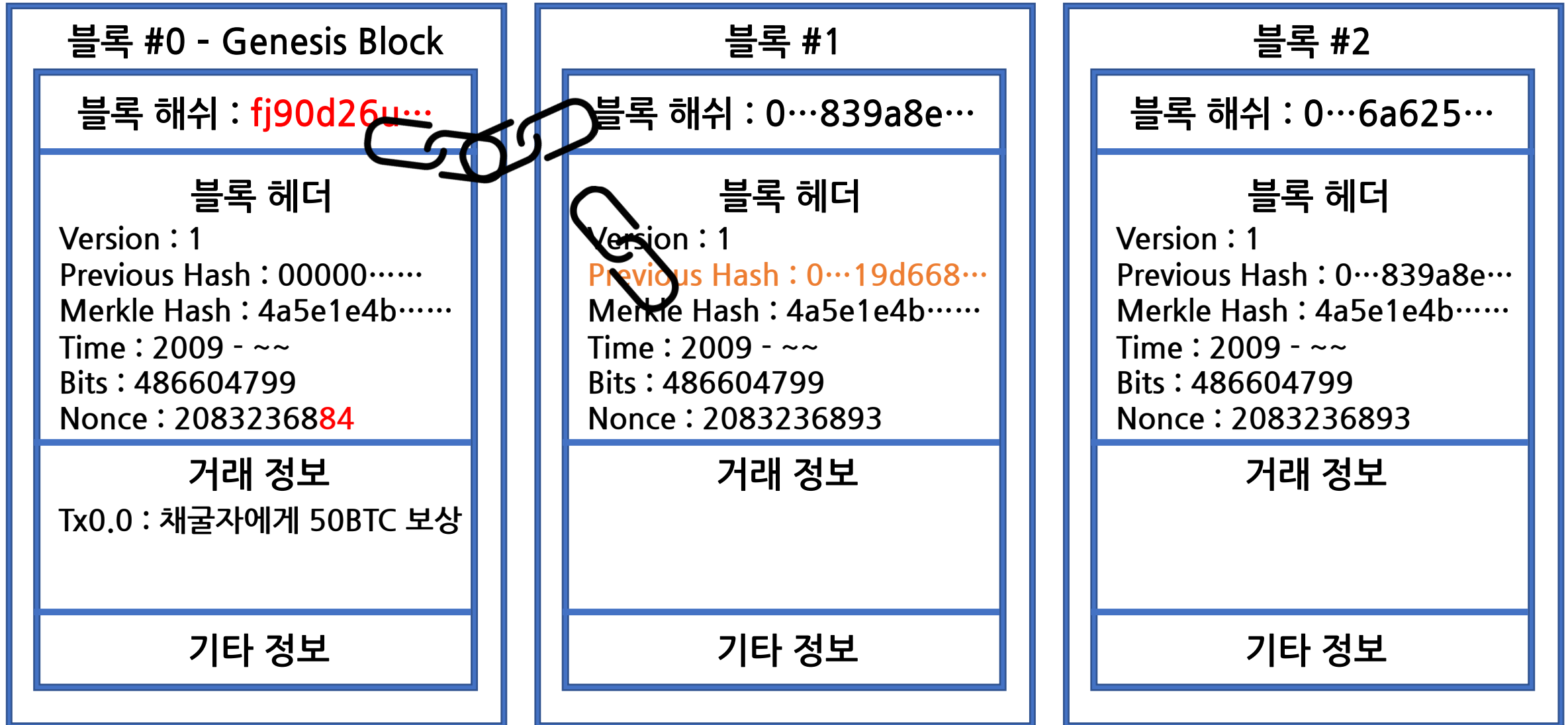
Blockchain Structure

- Chain Structure



Blockchain Structure

- Chain Structure

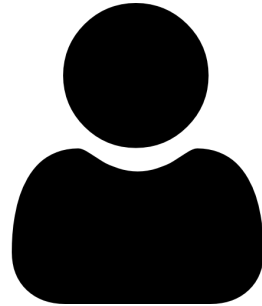


2. Blockchain Transaction

- Transaction Progress
- Public & Private Key

Blockchain Transaction

- Transaction Progress



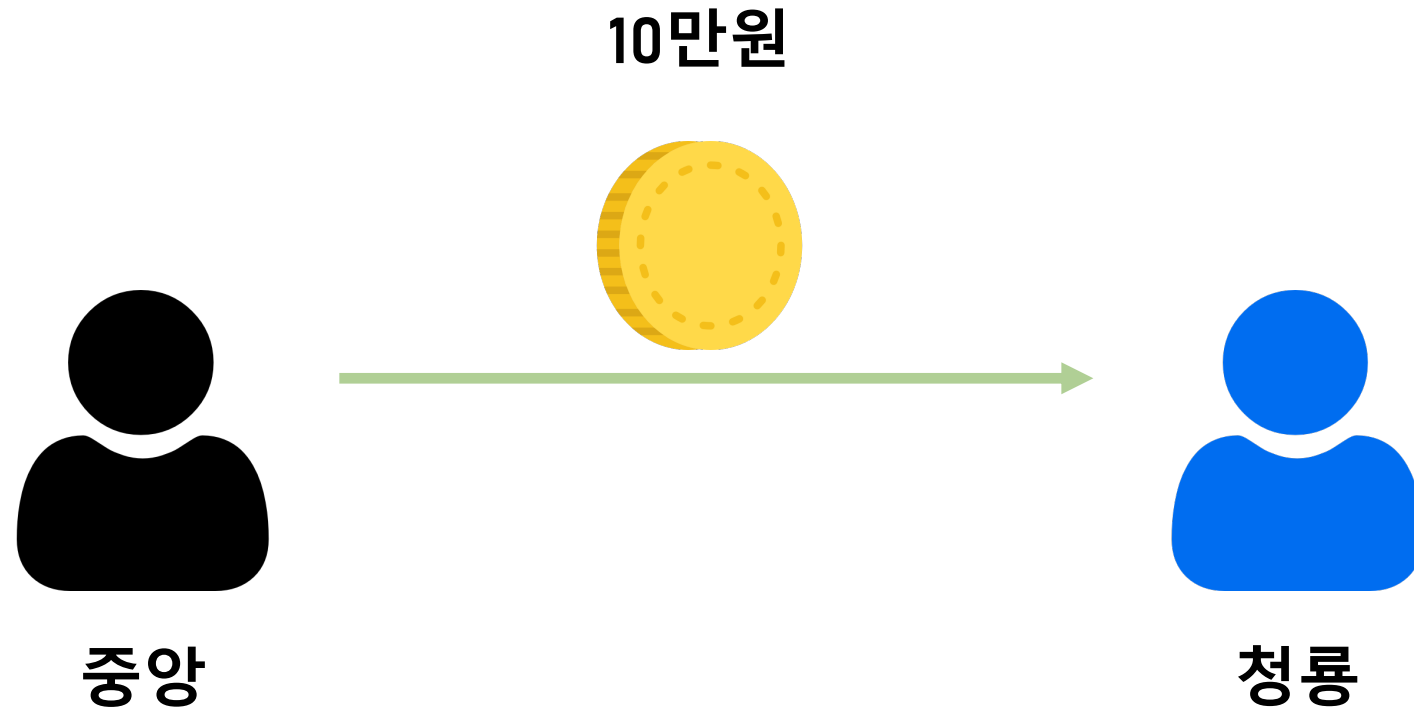
중앙



청룡

Blockchain Transaction

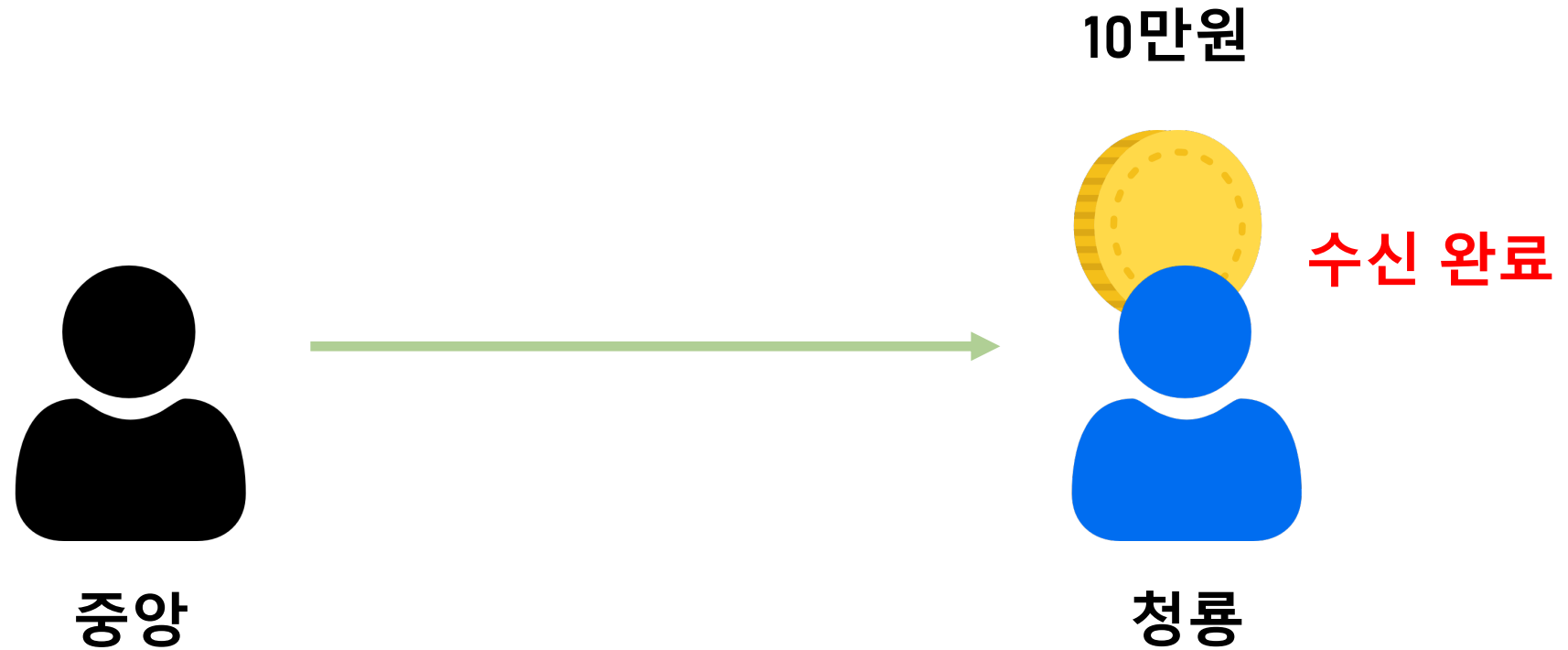
- Transaction Progress



Traditional Transaction

Blockchain Transaction

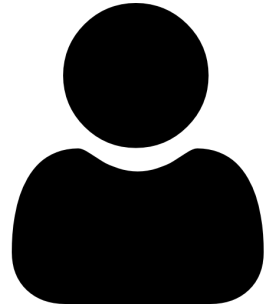
- Transaction Progress



Traditional Transaction

Blockchain Transaction

- Transaction Progress



종앙



청룡

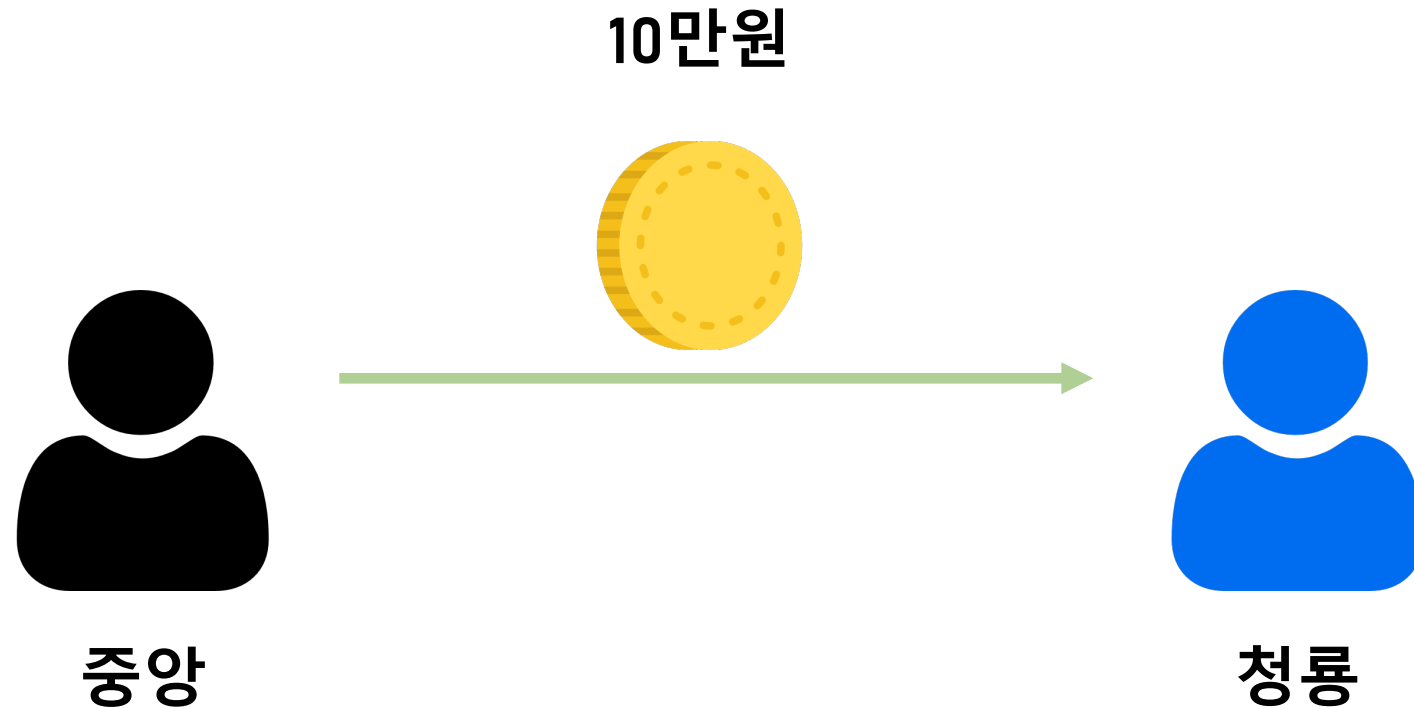
10만원

거래 완료

Traditional Transaction

Blockchain Transaction

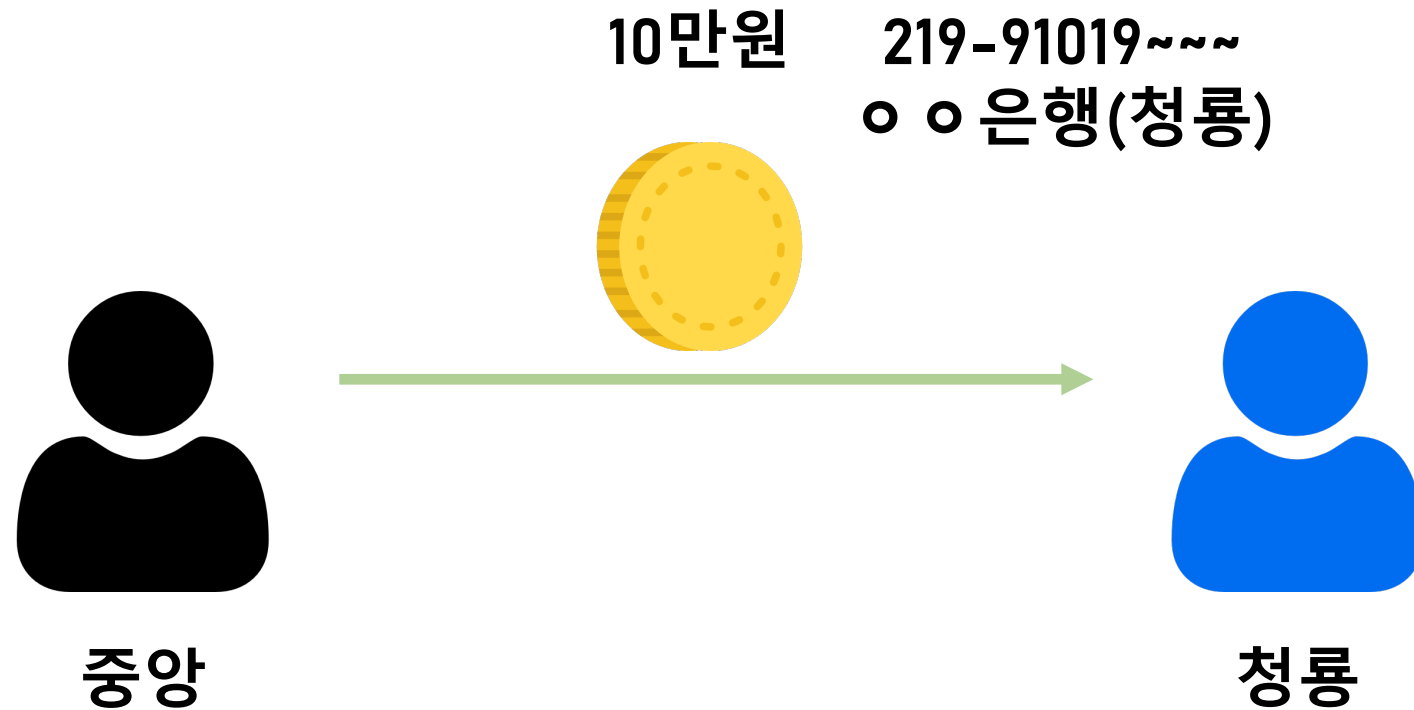
- Transaction Progress



Traditional Transaction

Blockchain Transaction

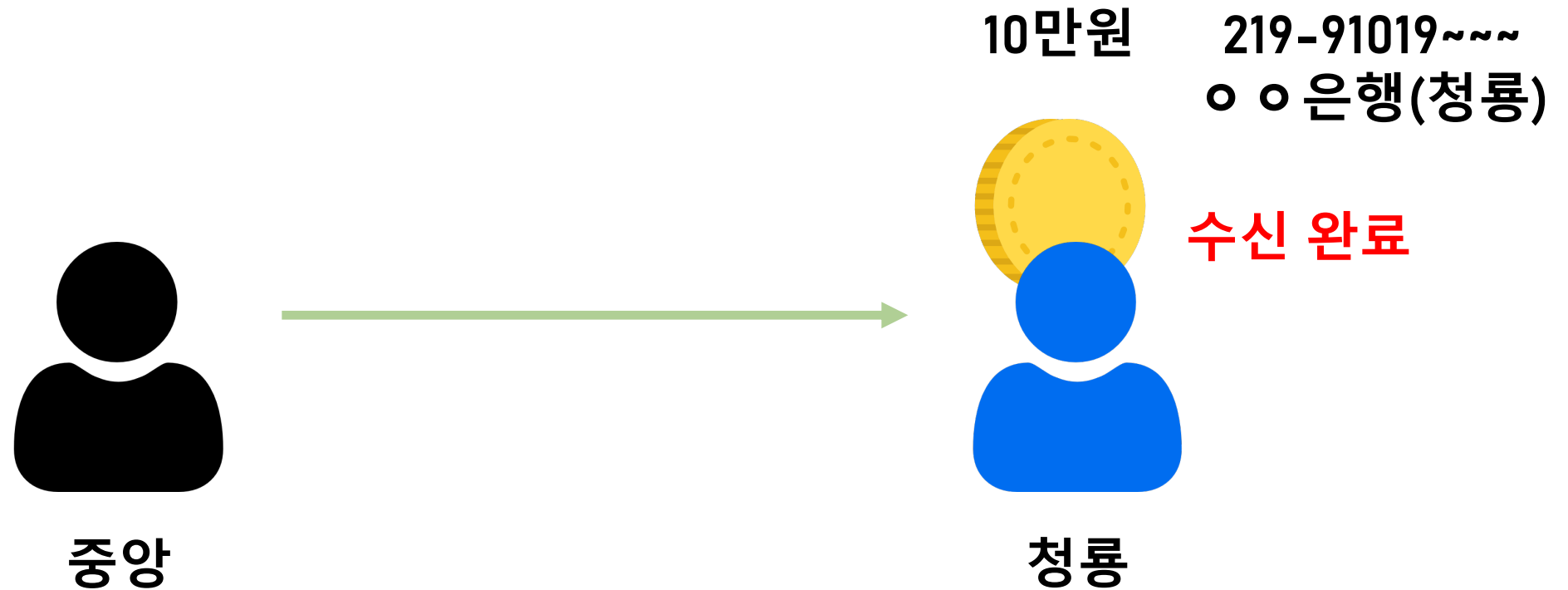
- Transaction Progress



Traditional Transaction

Blockchain Transaction

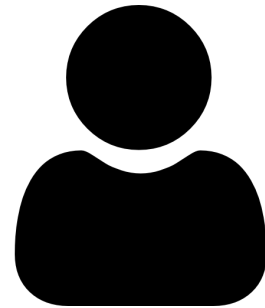
- Transaction Progress



Traditional Transaction

Blockchain Transaction

- Transaction Progress



중앙



청룡

10만원

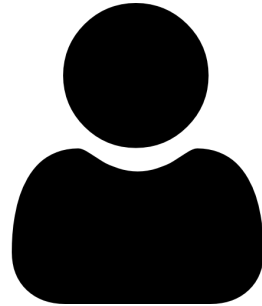
219-91019~~~
○○은행(청룡)

거래 완료

Traditional Transaction

Blockchain Transaction

- Transaction Progress



송장

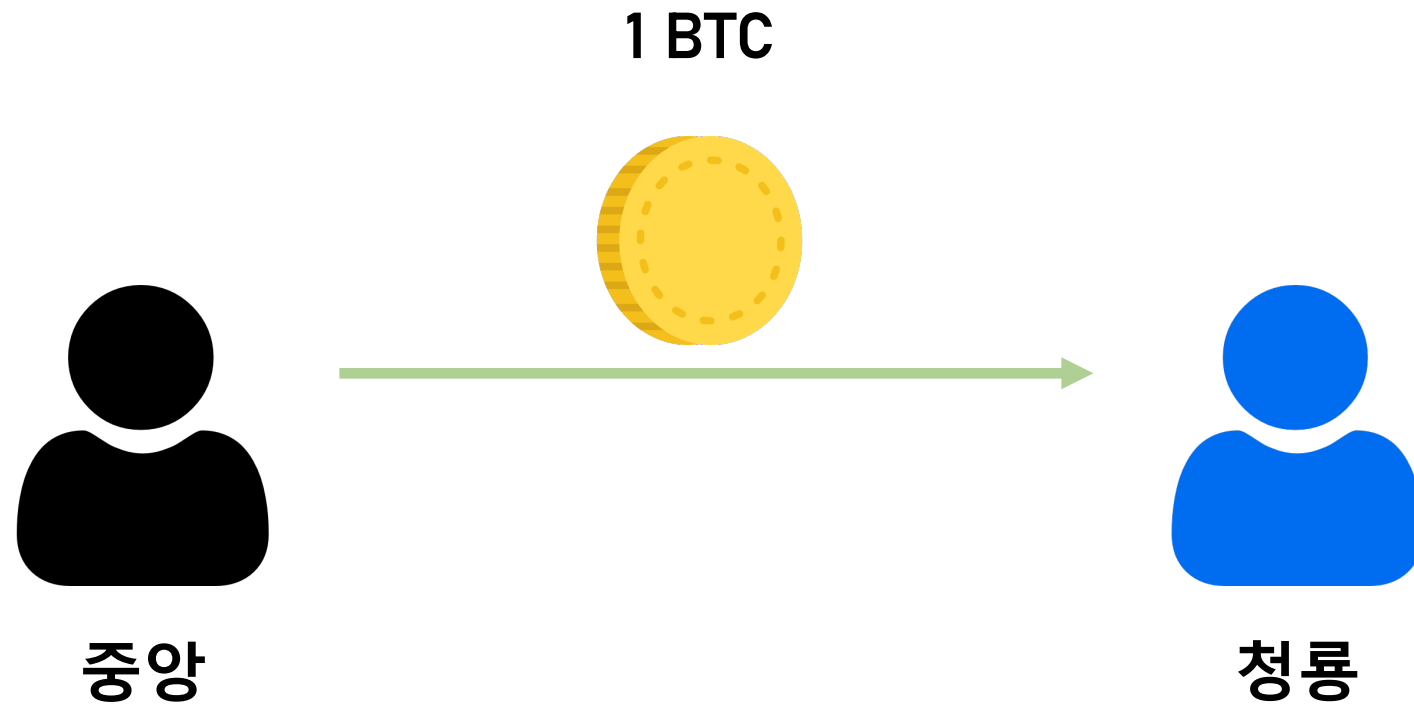


청룡

Blockchain Transaction

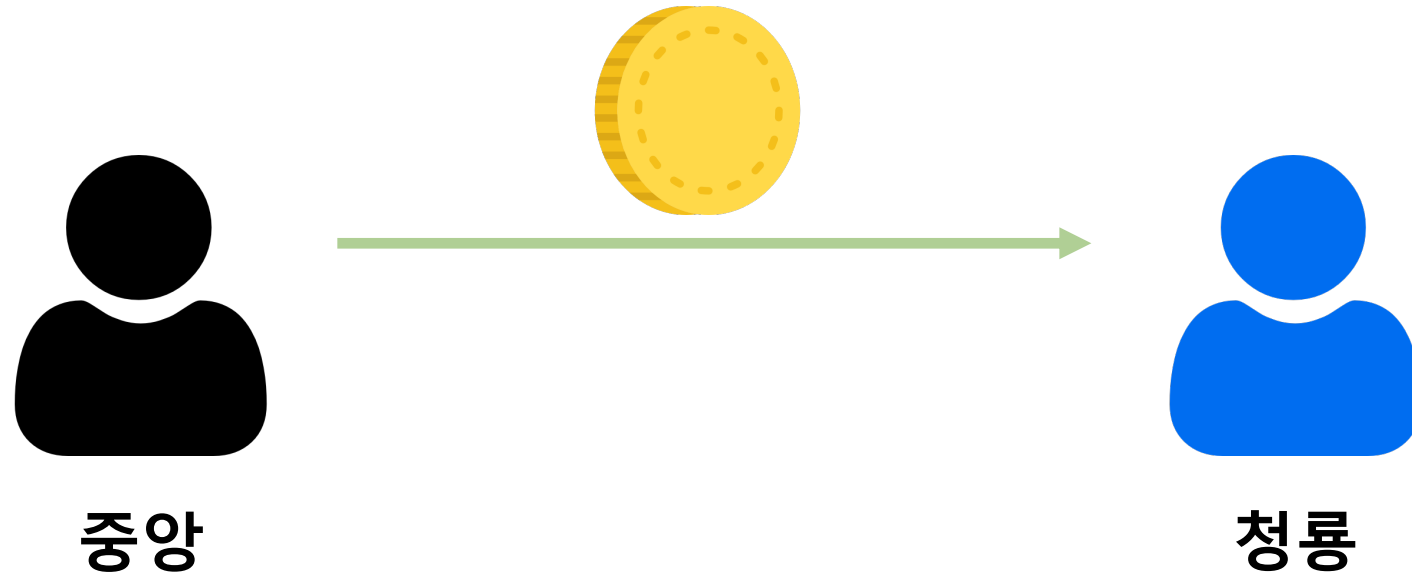
Blockchain Transaction

- Transaction Progress



Blockchain Transaction

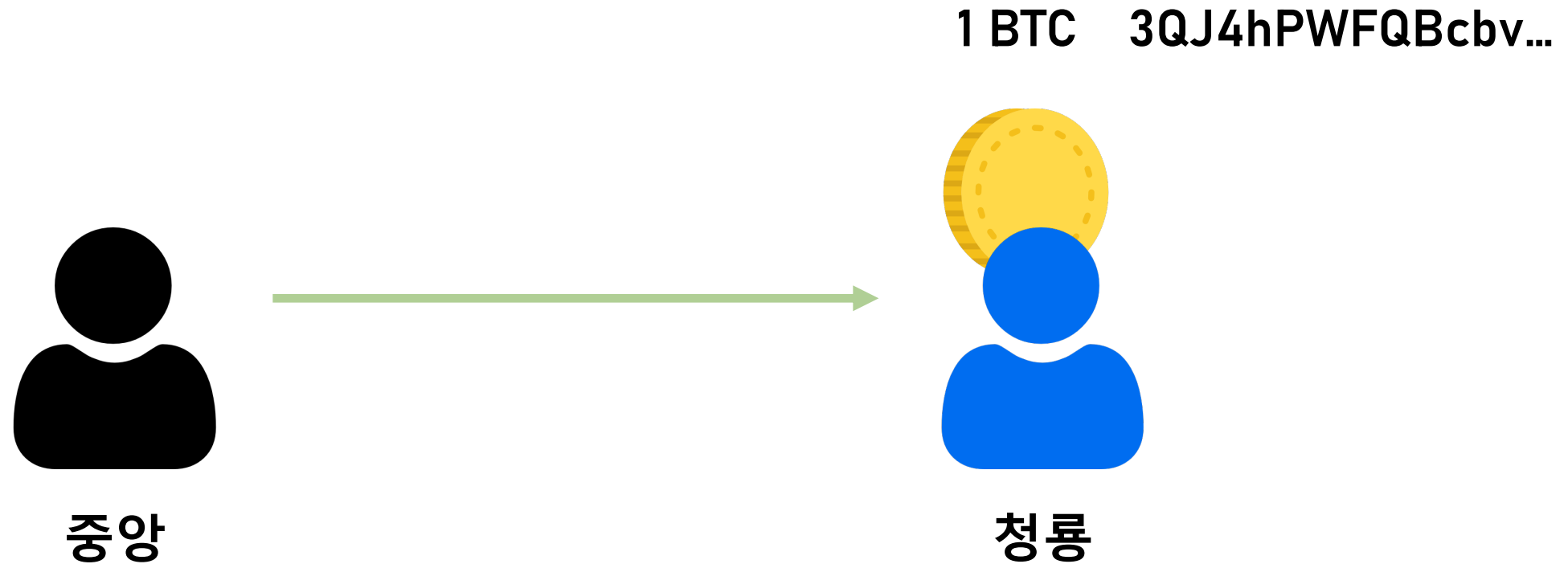
1 BTC 3QJ4hPWFQBcbv...



Blockchain Transaction

Blockchain Transaction

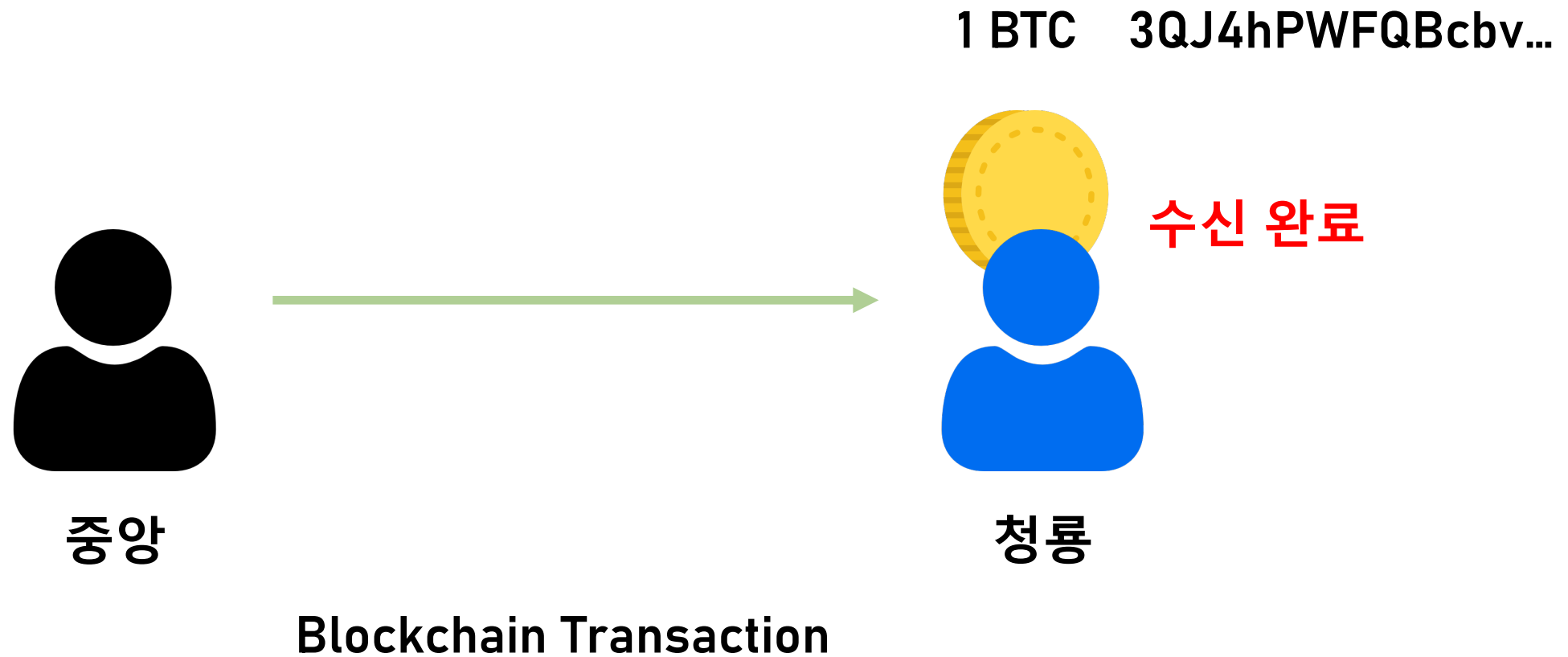
- Transaction Progress



Blockchain Transaction

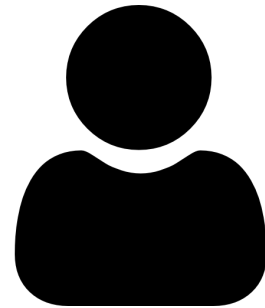
Blockchain Transaction

- Transaction Progress



Blockchain Transaction

- Transaction Progress



종앙

1 BTC 3QJ4hPWFQBcbv...

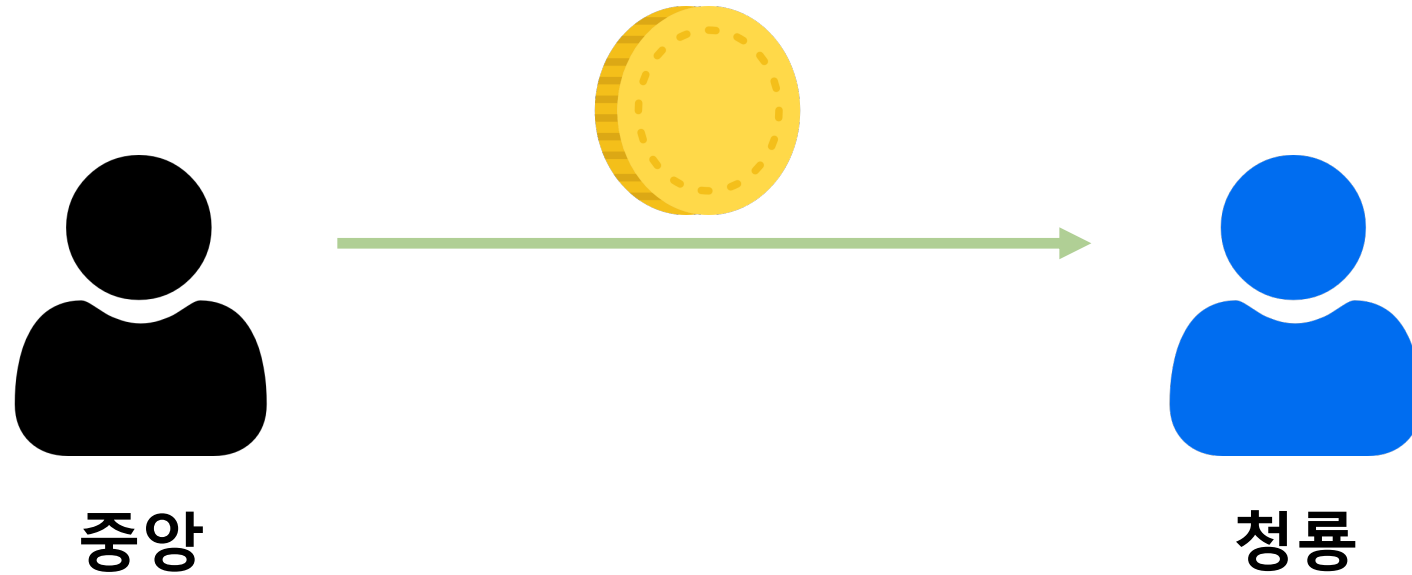


거래 완료

청룡

Blockchain Transaction

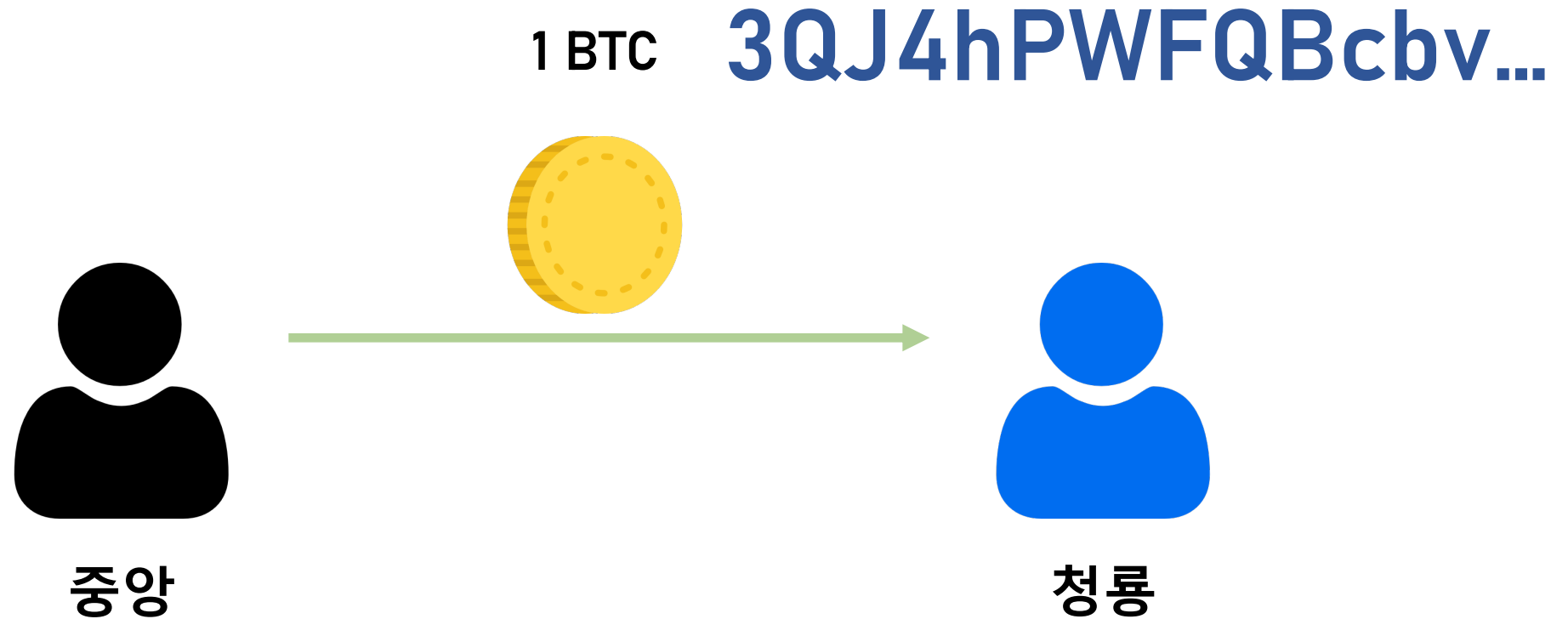
1 BTC 3QJ4hPWFQBcbv...



Blockchain Transaction

Blockchain Transaction

- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

- Public & Private Key & Address

3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd

(보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00

187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq (12.73973247 BTC
- 산출)



1MwYXDHfQdyKXHJ7ZgBZxmg8ochwdjHeJ4 - (지출)

3QJ4hPWFQBcbvJYTCho88rz4bq4PSzcNBp - (사용 12.73510584 BTC
하지 않은) 0.00212663 BTC

12.73723247 BTC

Blockchain Transaction

- Public & Private Key & Address

3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd

(보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00

187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq

- 산출)

12.73973247 BTC



1MwYXDHfQdyKXHJ7ZgBZxmg8ochwdjHeJ4 - (지출)

3QJ4hPWFQBcbvJYTCho88rz4bq4PSzcNBp

하지 않은)

(사용 12.73510584 BTC

0.00212663 BTC

12.73723247 BTC

Blockchain Transaction

- Public & Private Key & Address

3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd

(보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00

187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq

- 산출)

12.73973247 BTC



1MwYXDHfQdyKXHJ7ZgBZxmg8ochwdjHeJ4 - (지출)

3QJ4hPWFQBcbvJYTCho88rz4bq4PSzcNBp

하지 않은)

(사용 12.73510584 BTC

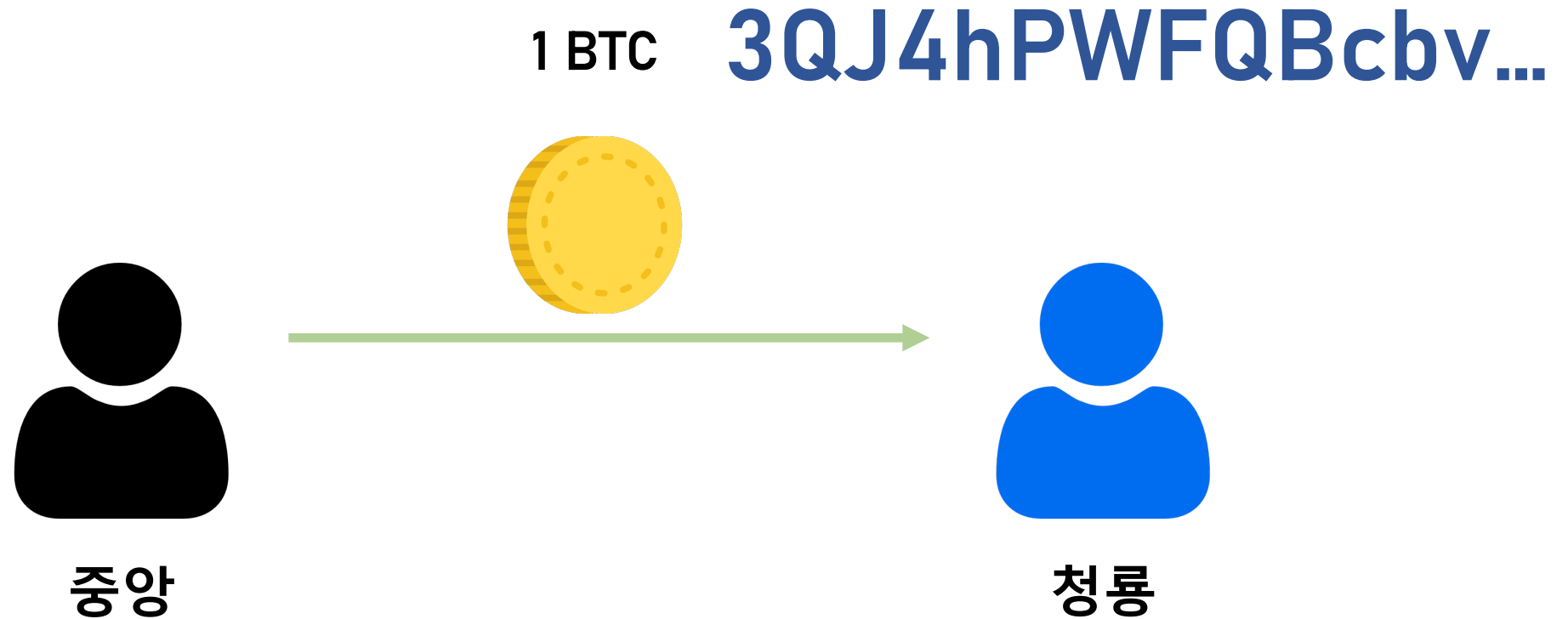
0.00212663 BTC

12.73723247 BTC

지갑 주소

Blockchain Transaction

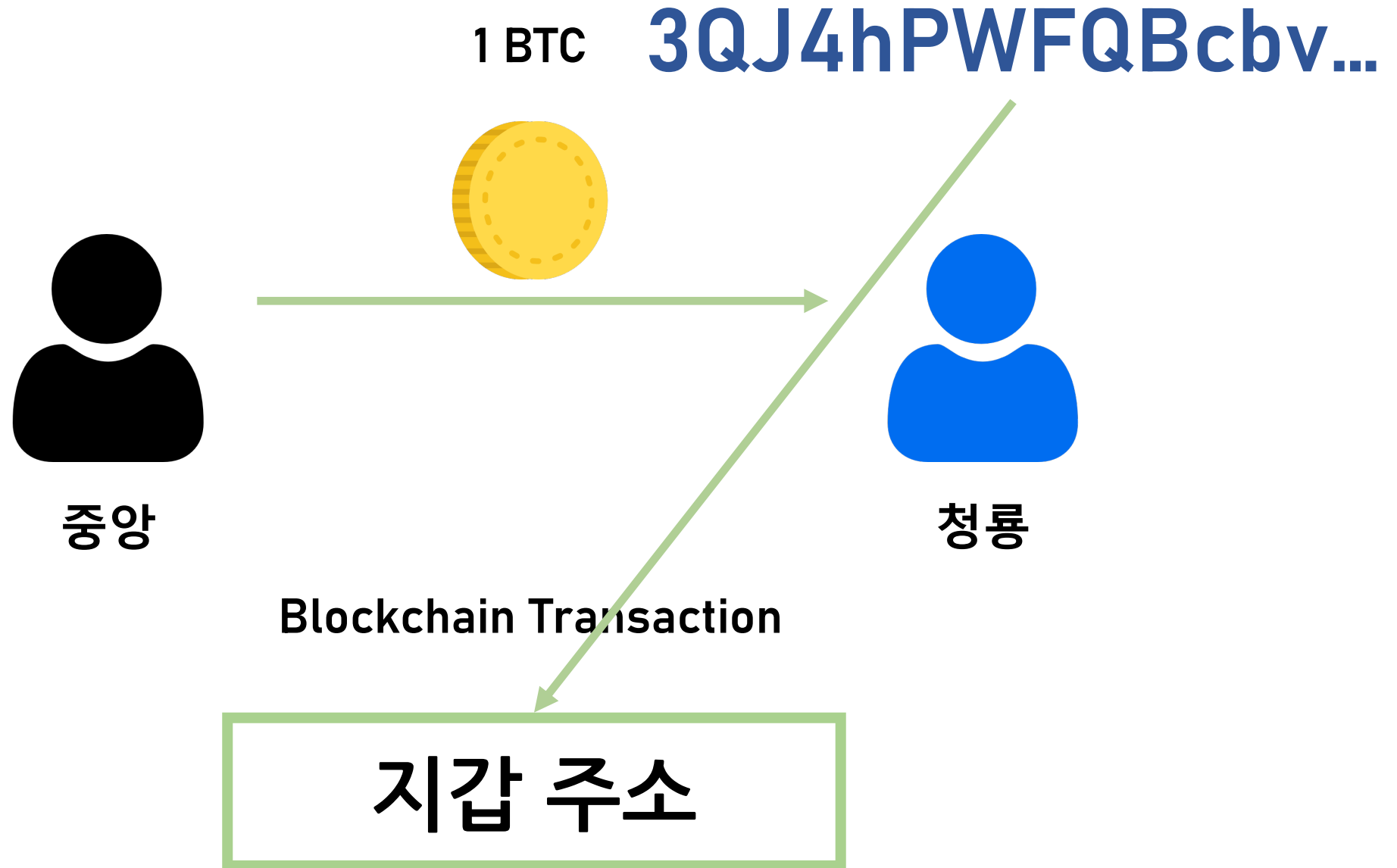
- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

- Public & Private Key & Address



Blockchain Transaction

- Public & Private Key & Address

1 BTC

3QJ4hPWFQBcbv...



지갑주소



중앙



청룡

Blockchain Transaction

지갑 주소

Blockchain Transaction

- Public & Private Key & Address

1 BTC

3QJ4hPWFQBcbv...



지갑주소



Public Key

(Technically it is a Bitcoin address produced by public key)

중앙

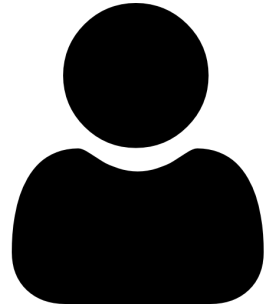
청룡

Blockchain Transaction

지갑 주소

Blockchain Transaction

- Transaction Progress



중앙



청룡

Traditional Transaction

Blockchain Transaction

- Transaction Progress



청룡

Traditional Transaction

Blockchain Transaction

- Transaction Progress



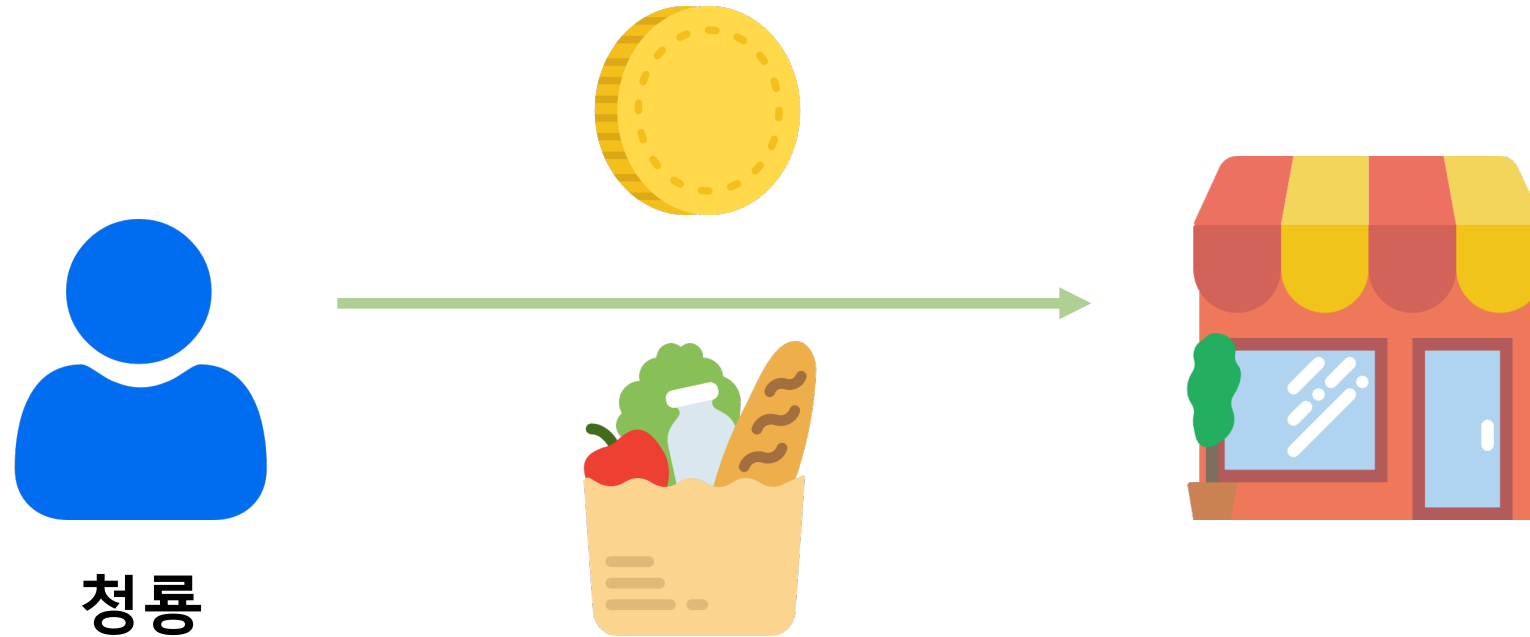
청룡



Traditional Transaction

Blockchain Transaction

- Transaction Progress

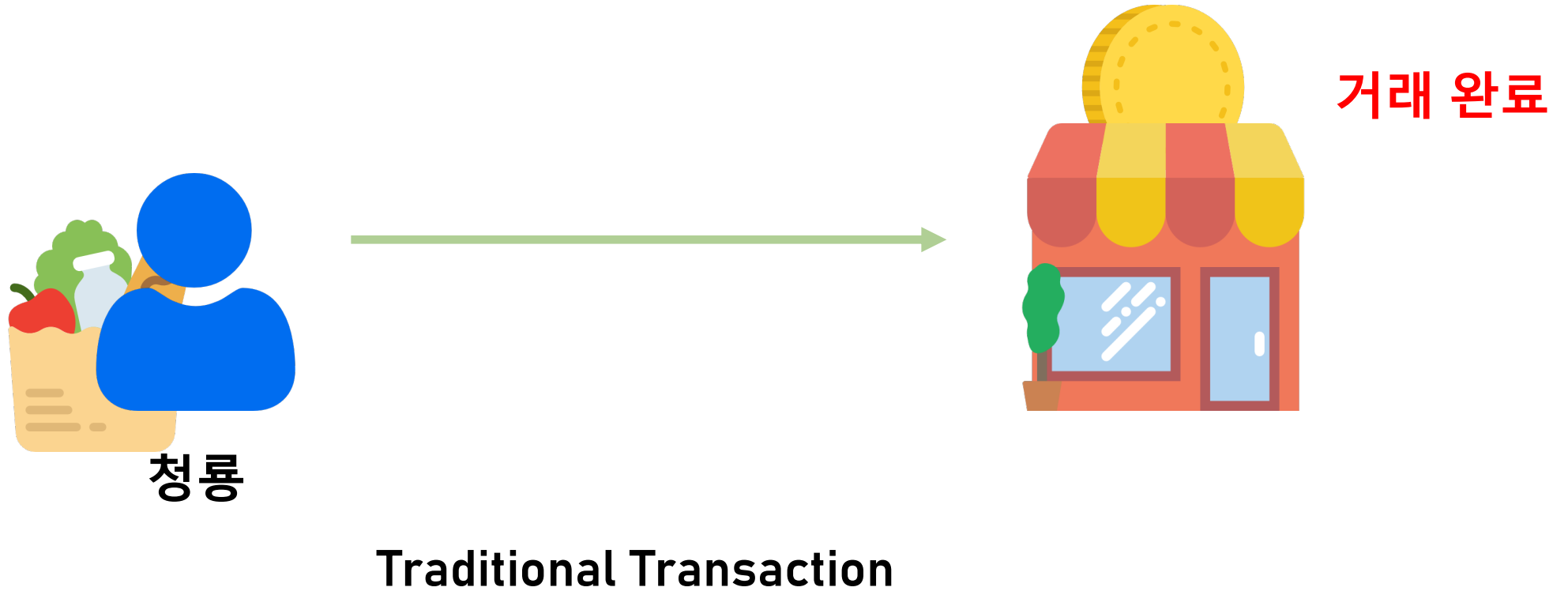


청룡

Traditional Transaction

Blockchain Transaction

- Transaction Progress



Blockchain Transaction

- Transaction Progress



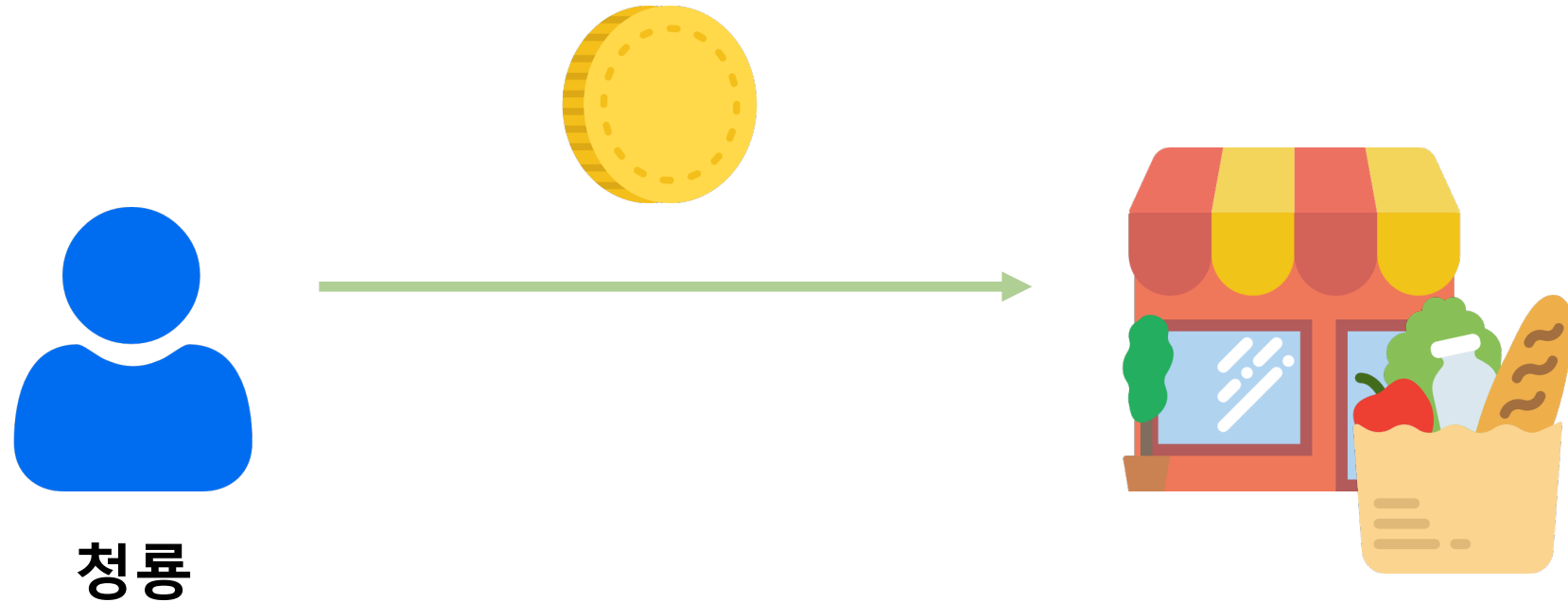
청룡



Blockchain Transaction

Blockchain Transaction

- Transaction Progress

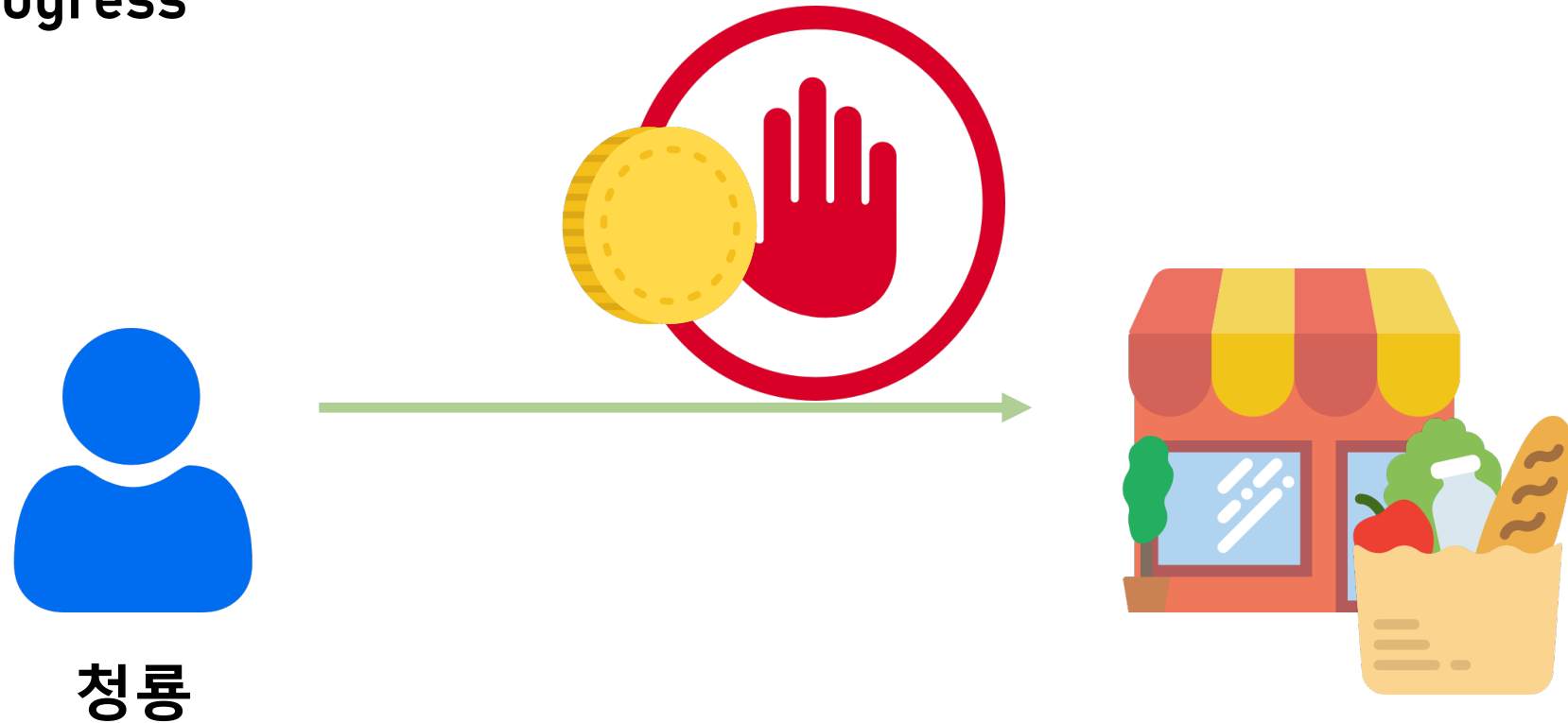


청룡

Blockchain Transaction

Blockchain Transaction

- Transaction Progress

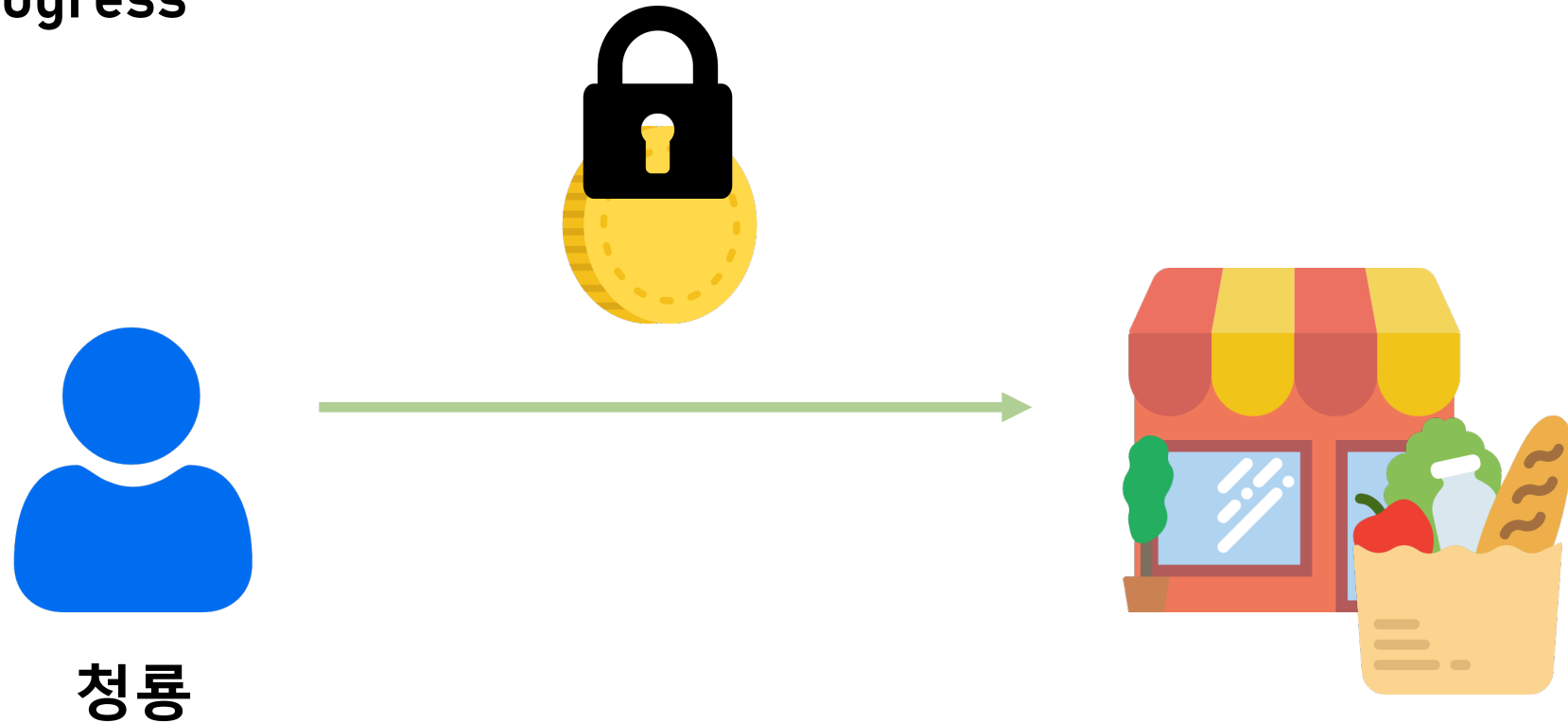


청룡

Blockchain Transaction

Blockchain Transaction

- Transaction Progress

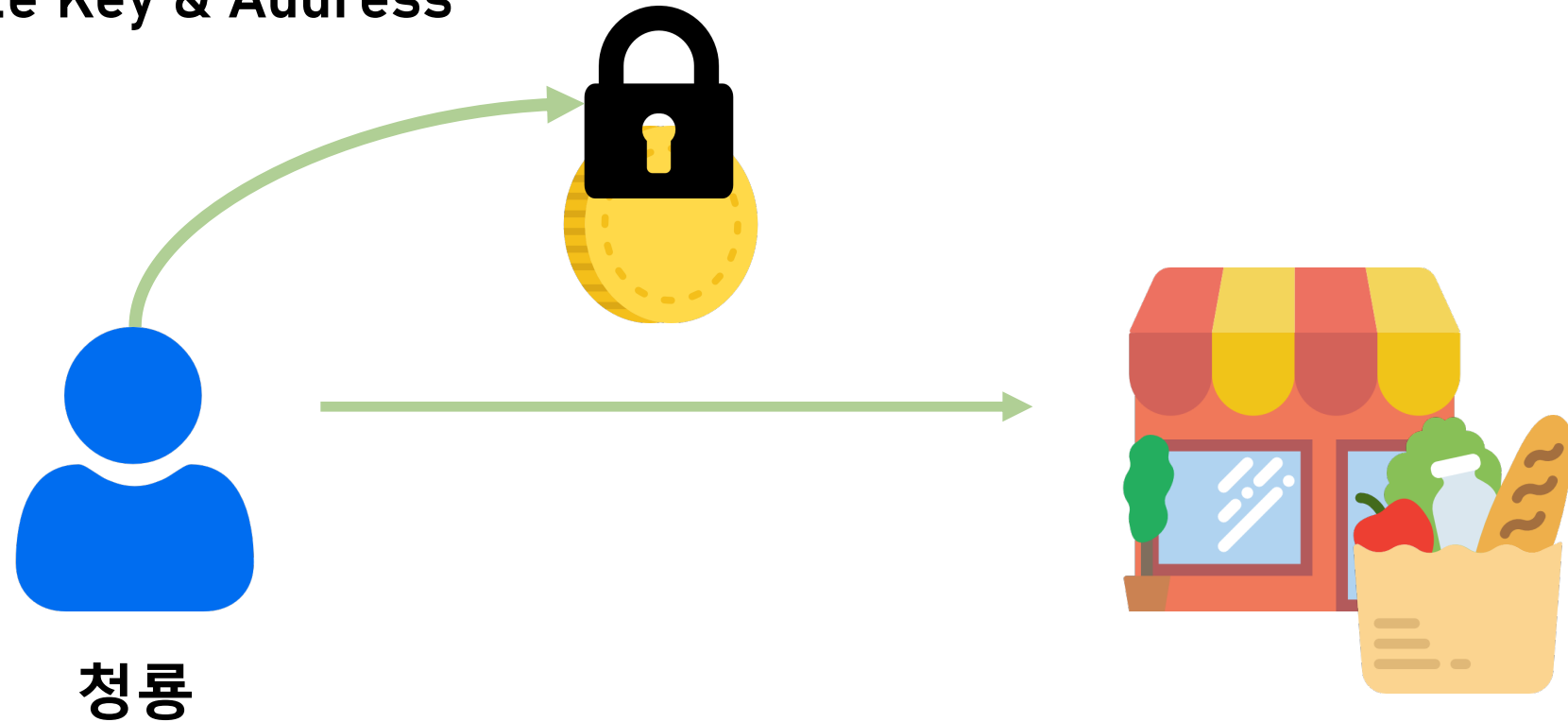


청룡

Blockchain Transaction

Blockchain Transaction

- Public & Private Key & Address

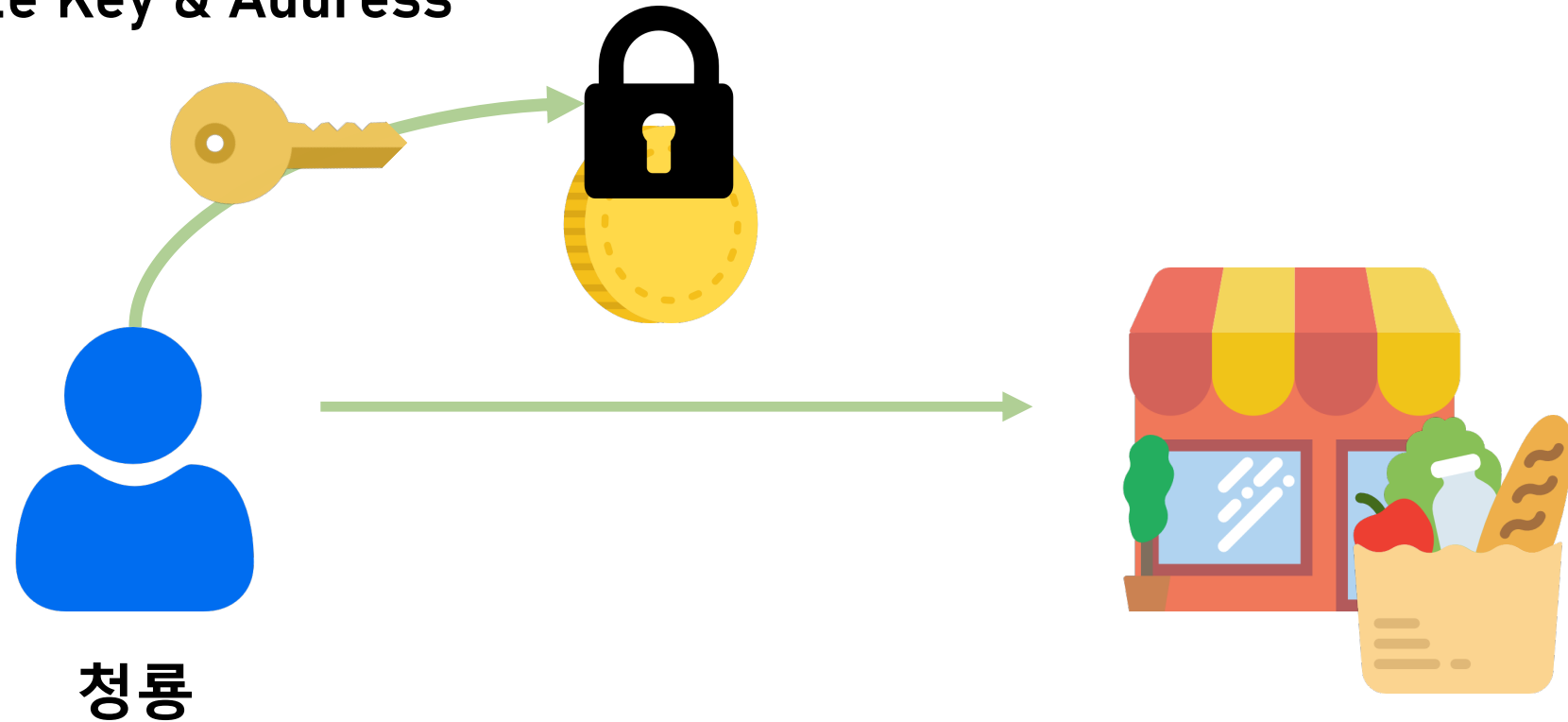


청룡

Blockchain Transaction

Blockchain Transaction

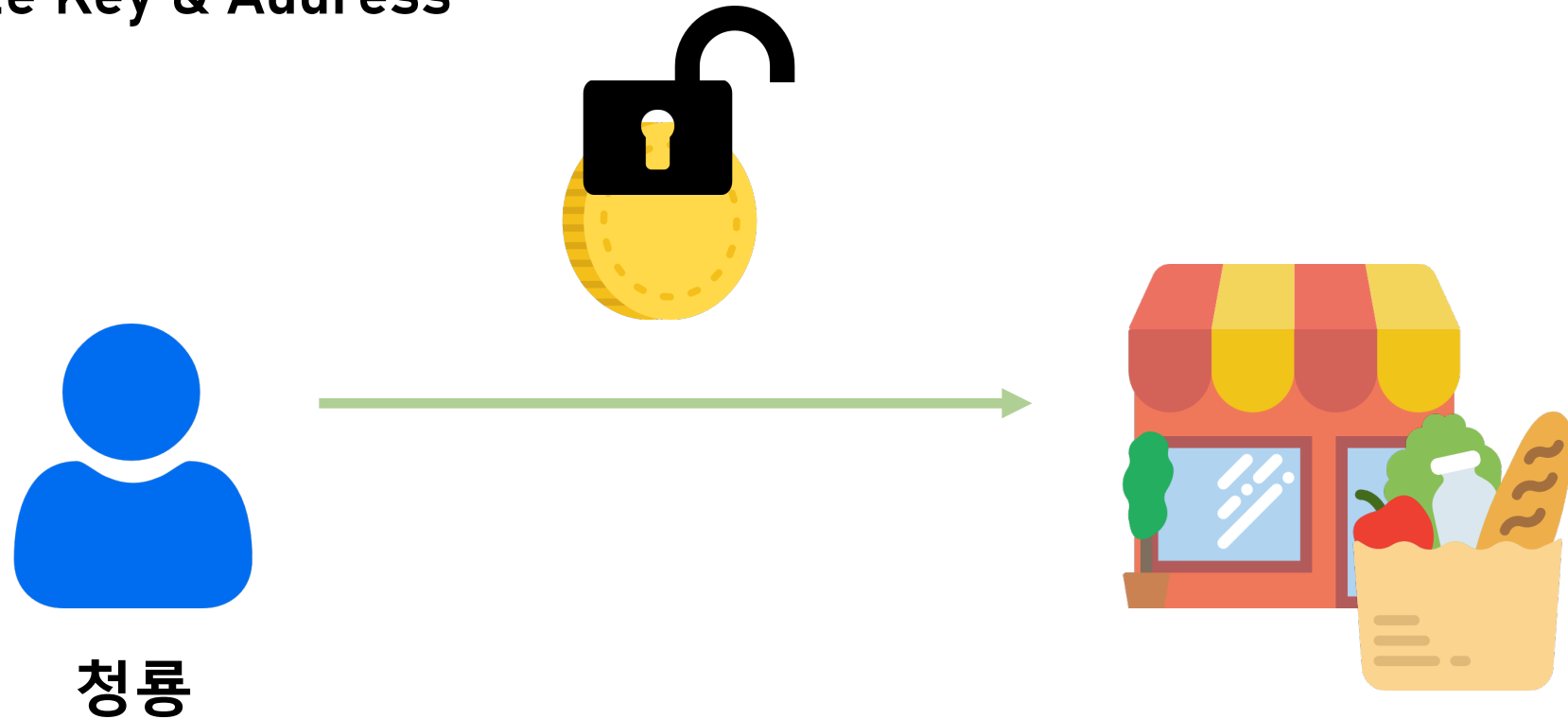
- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

- Public & Private Key & Address

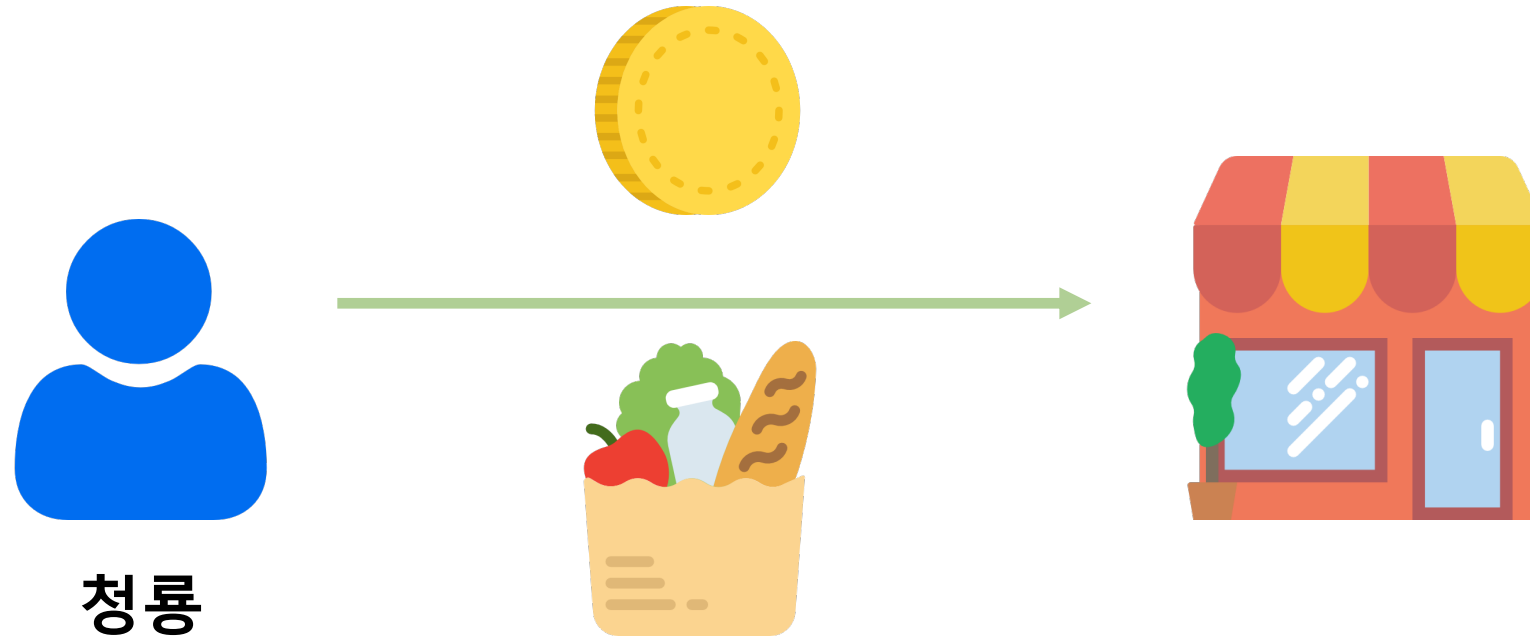


청룡

Blockchain Transaction

Blockchain Transaction

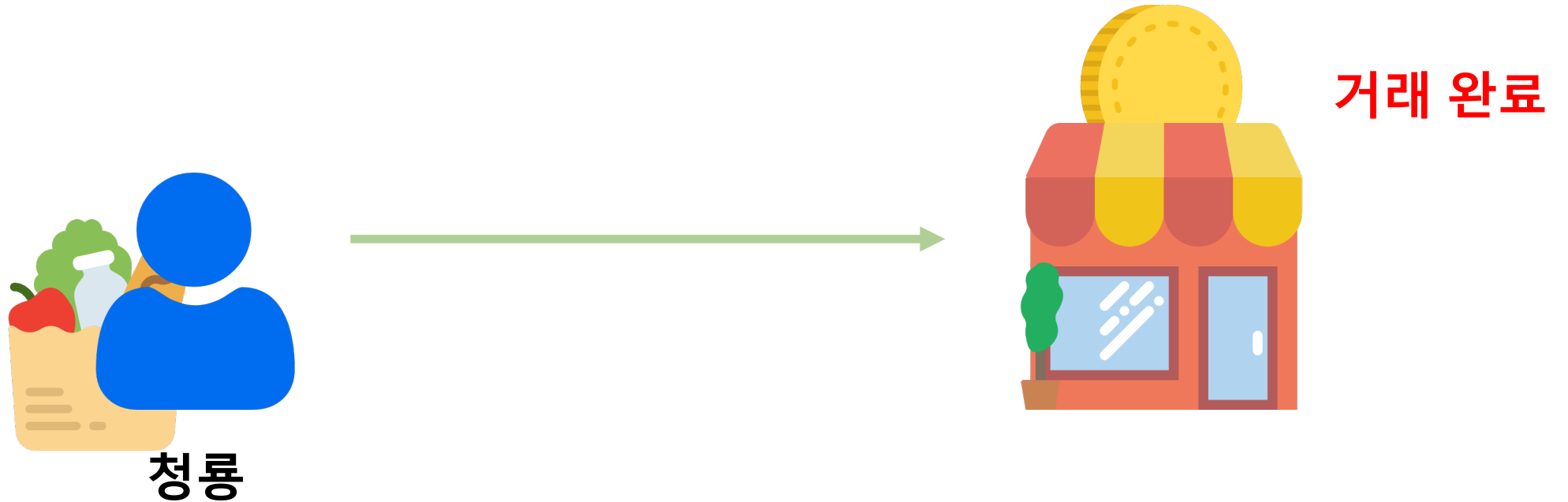
- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

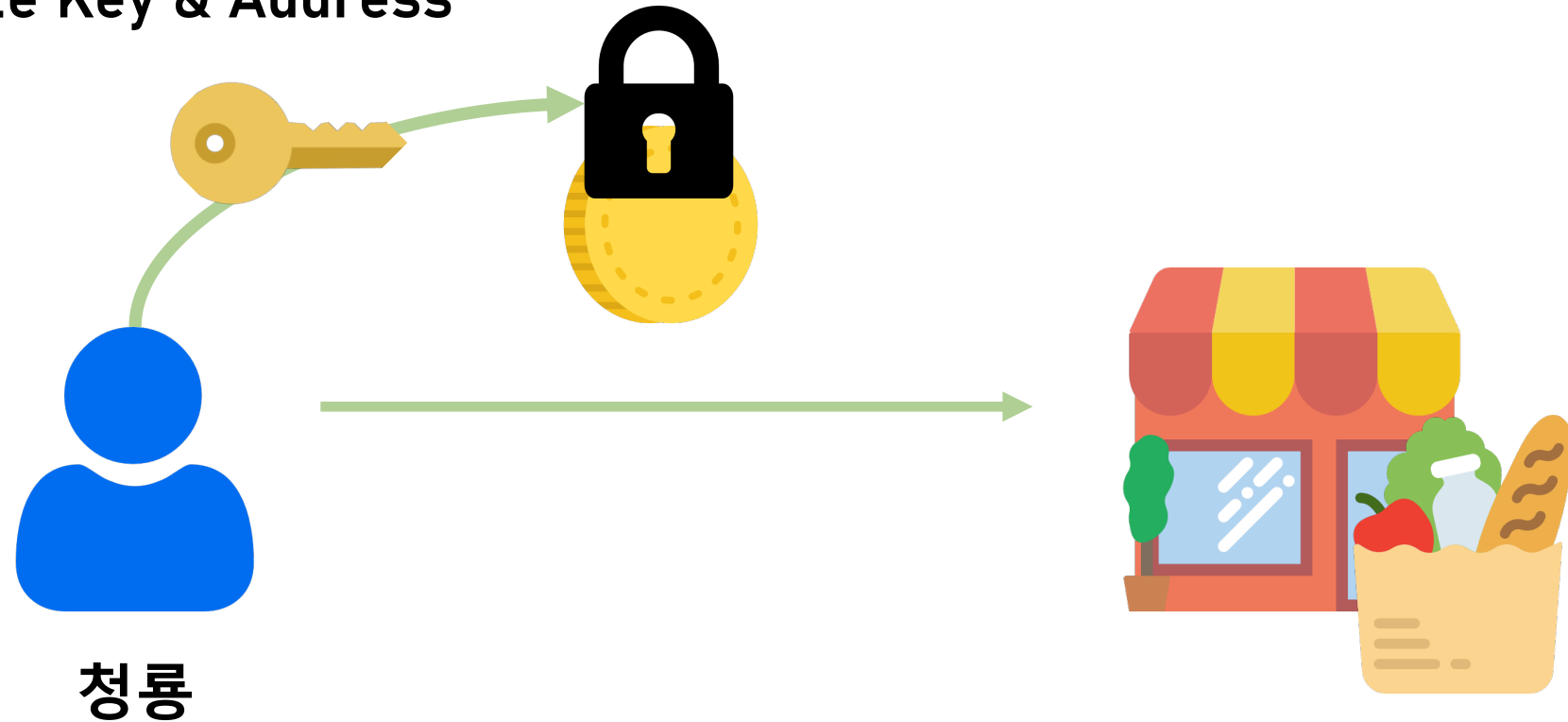
- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

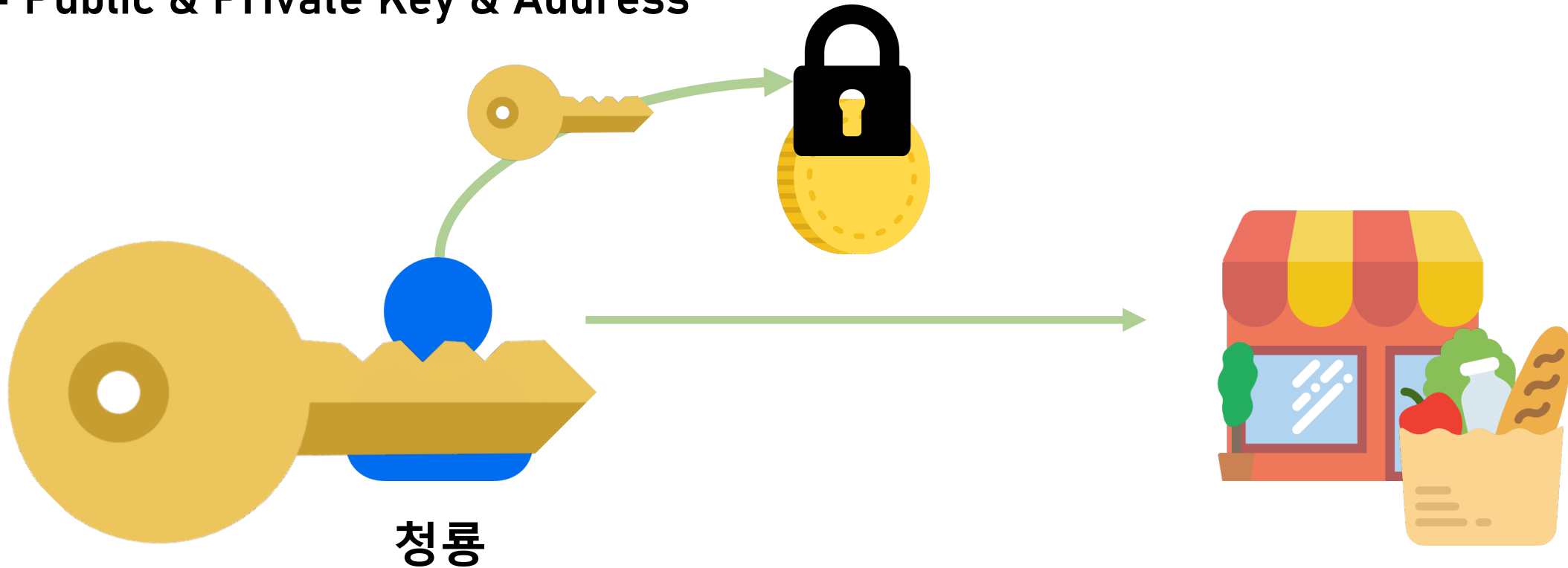
- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

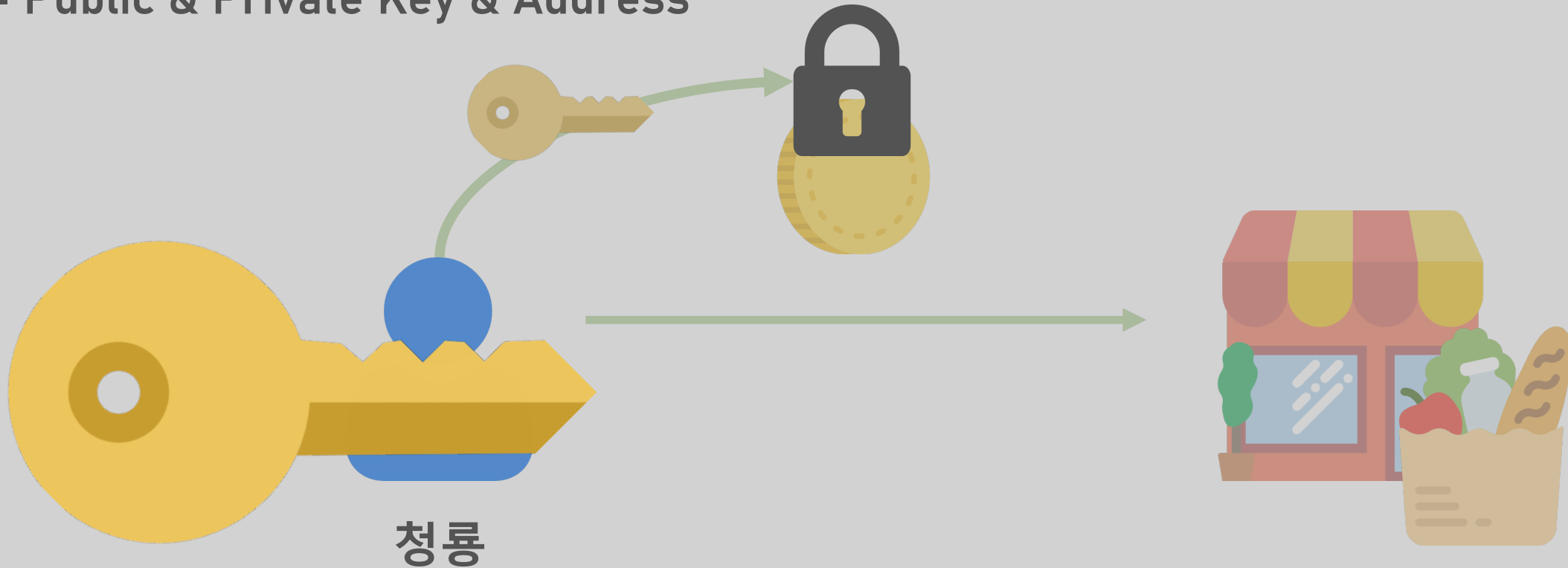
- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

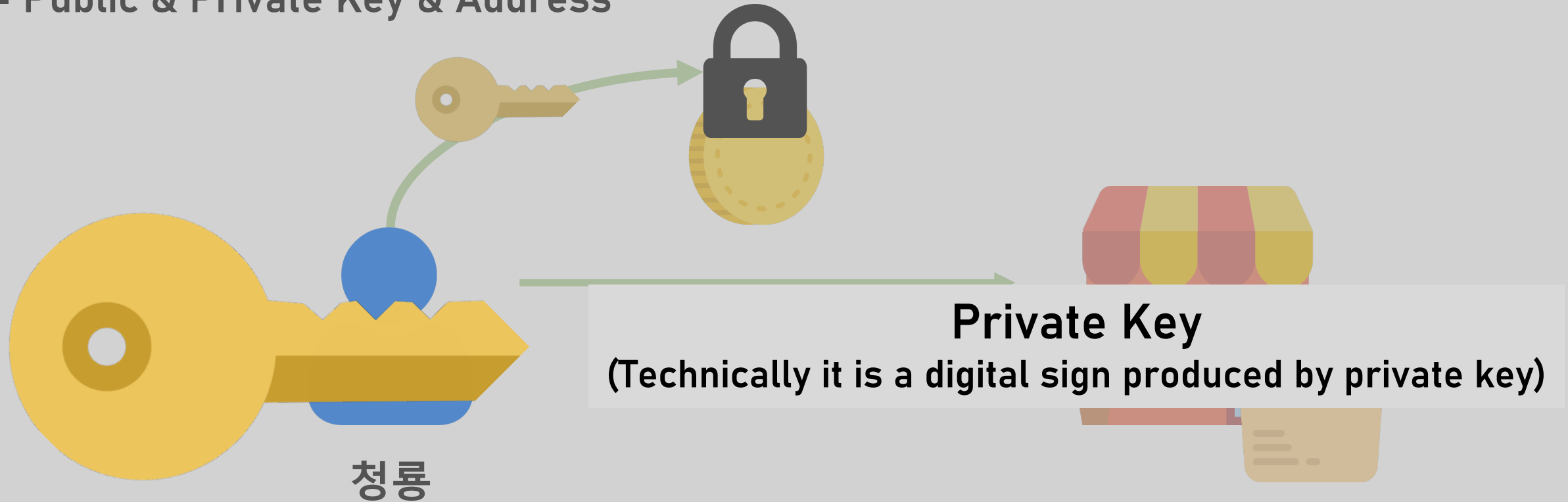
- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

- Public & Private Key & Address



Blockchain Transaction

Blockchain Transaction

- Public & Private Key & Address

▲ Public Key

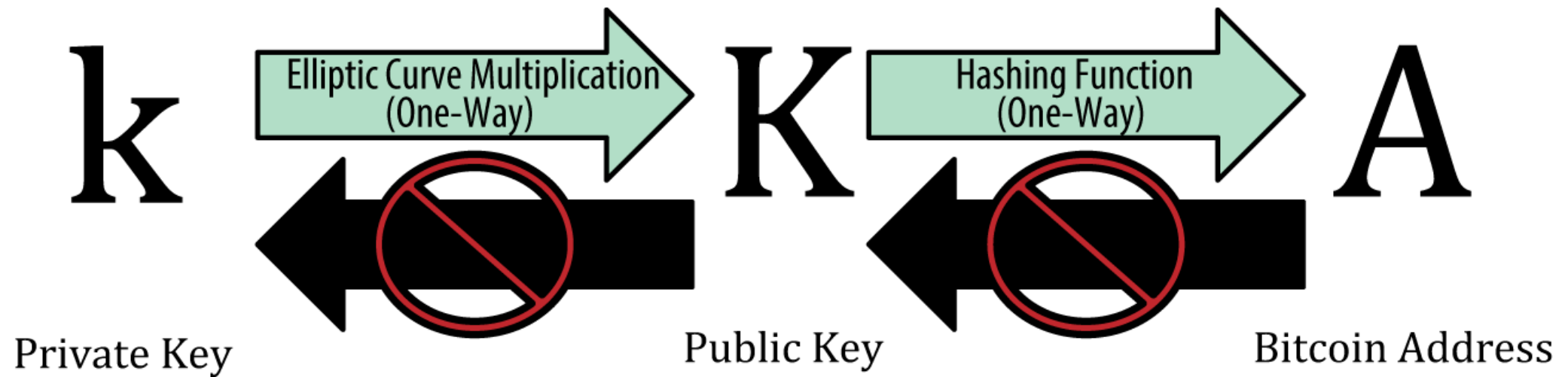
- Bank Account number
- Used at Transaction
- Can't make relationship with real human identity
- Produced from private key

▲ Private Key

- PIN number or Password
- Used for making digital sign key

Blockchain Transaction

- Public & Private Key & Address



3. Mining

- What does mining mean?
- Incentives
- Consensus Algorithm

Blockchain Mining

- What does mining mean?

Mining



A sequence progress of solving problem(producing block) by using computing power. (changing nonce)

▲ What mining means to Blockchain system?

- Gives motivation to maintain chain system
- Miners can get incentive after mining. (incentives are sum of fees of transactions)
- Mining is the actual action that makes new block and builds blockchain.
- Transactions in the mined block are treated as valid (not immediately after 6 more blocks mined)

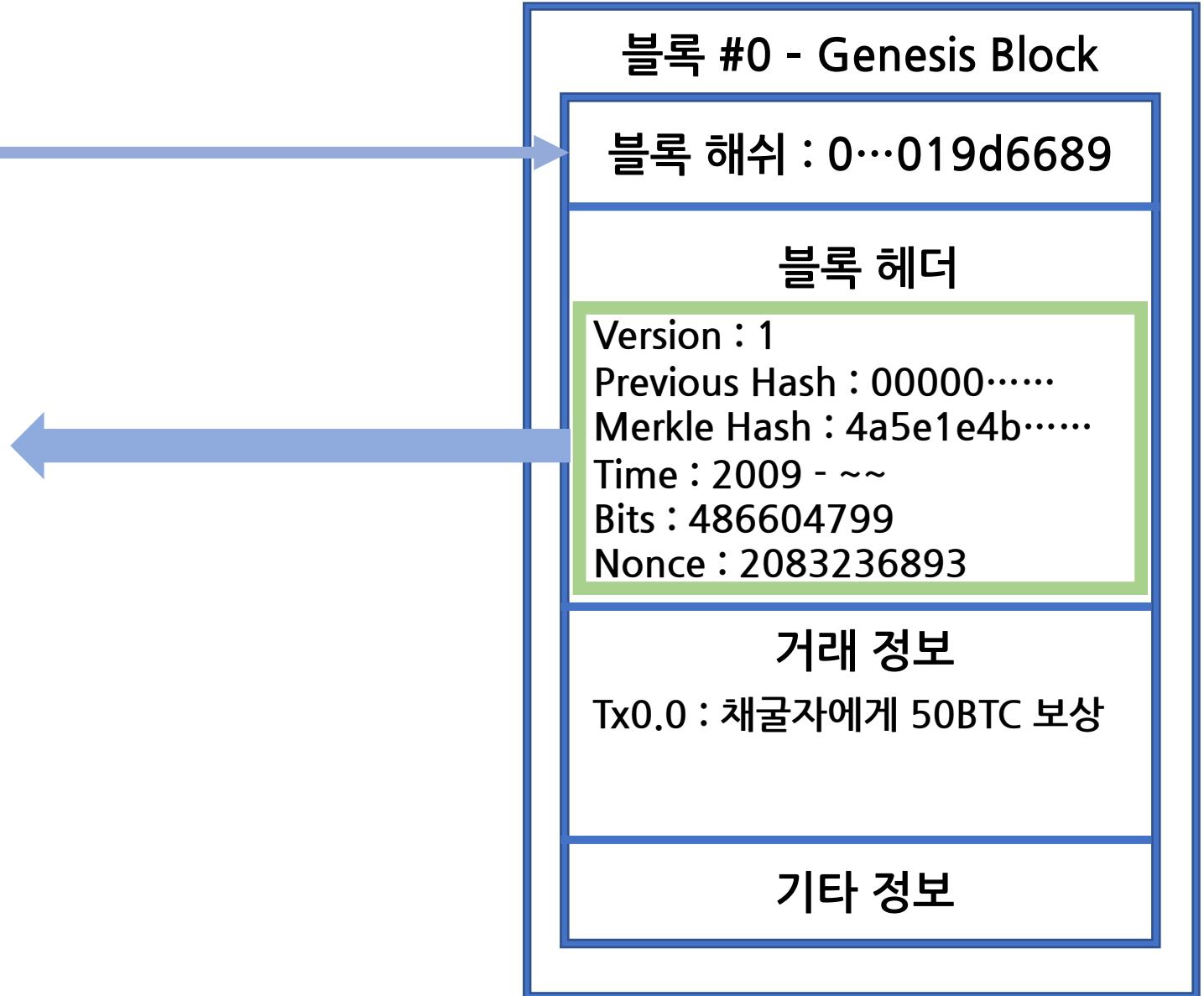
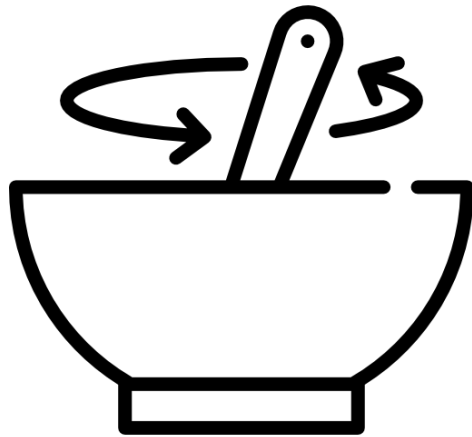
Blockchain Mining

- What does mining mean?

| | Components |
|--------|-------------------|
| Header | Hash |
| | Ver |
| | Prev Block |
| | Merkle Root |
| | Timestamp |
| | Bits & Difficulty |
| | Nonce |

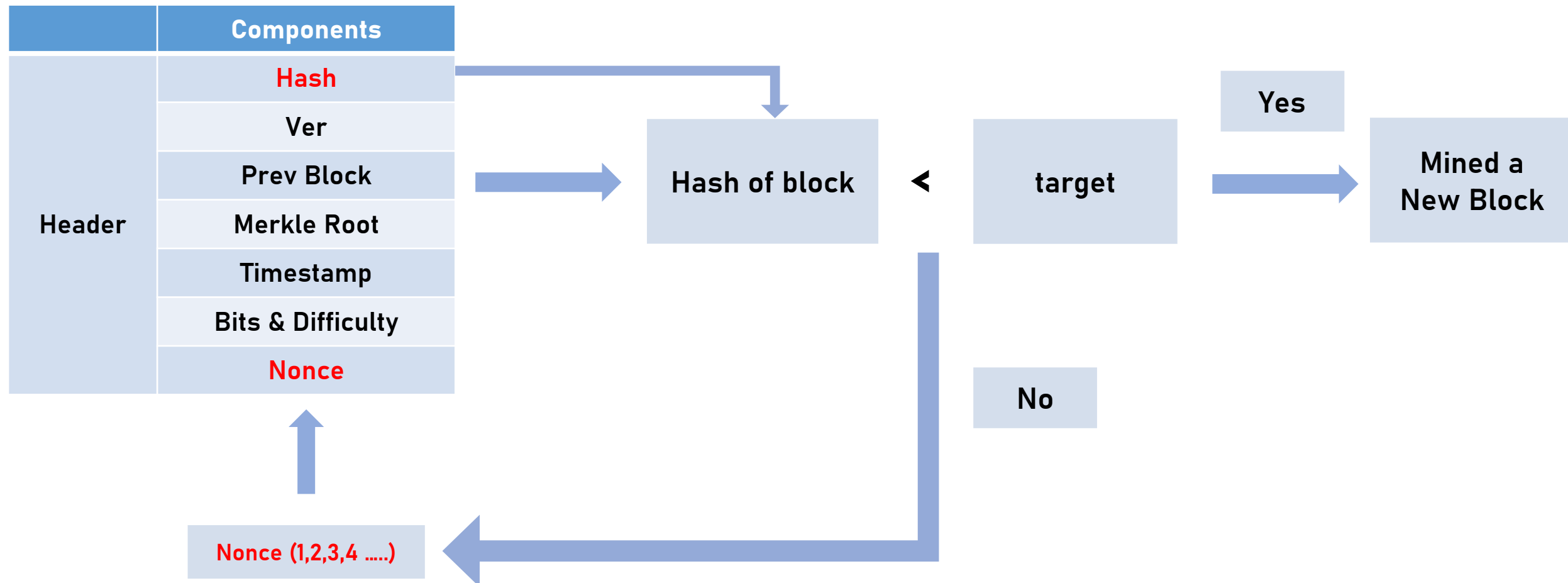
Blockchain Mining

- What does mining mean?



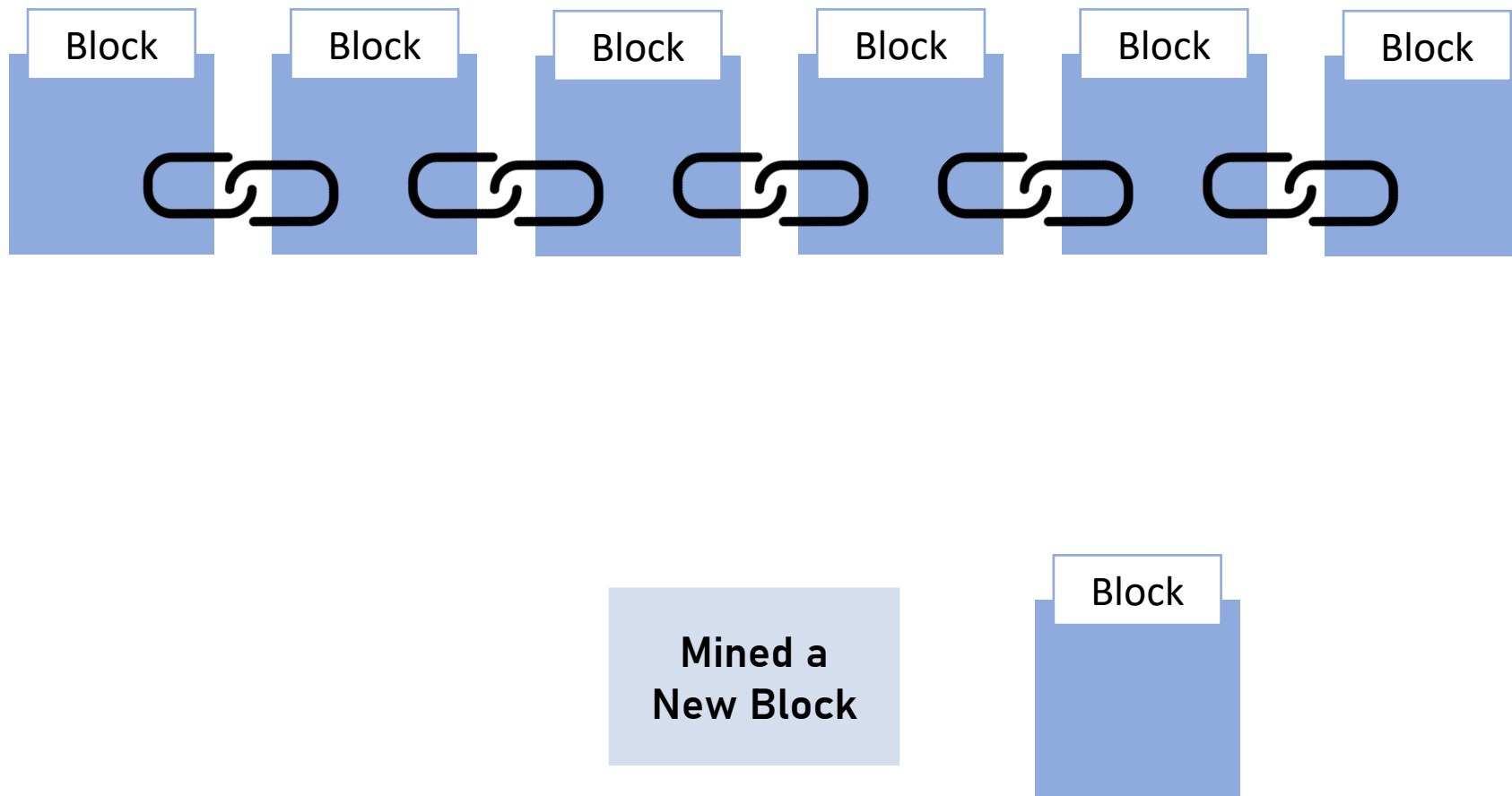
Blockchain Mining

- What does mining mean?



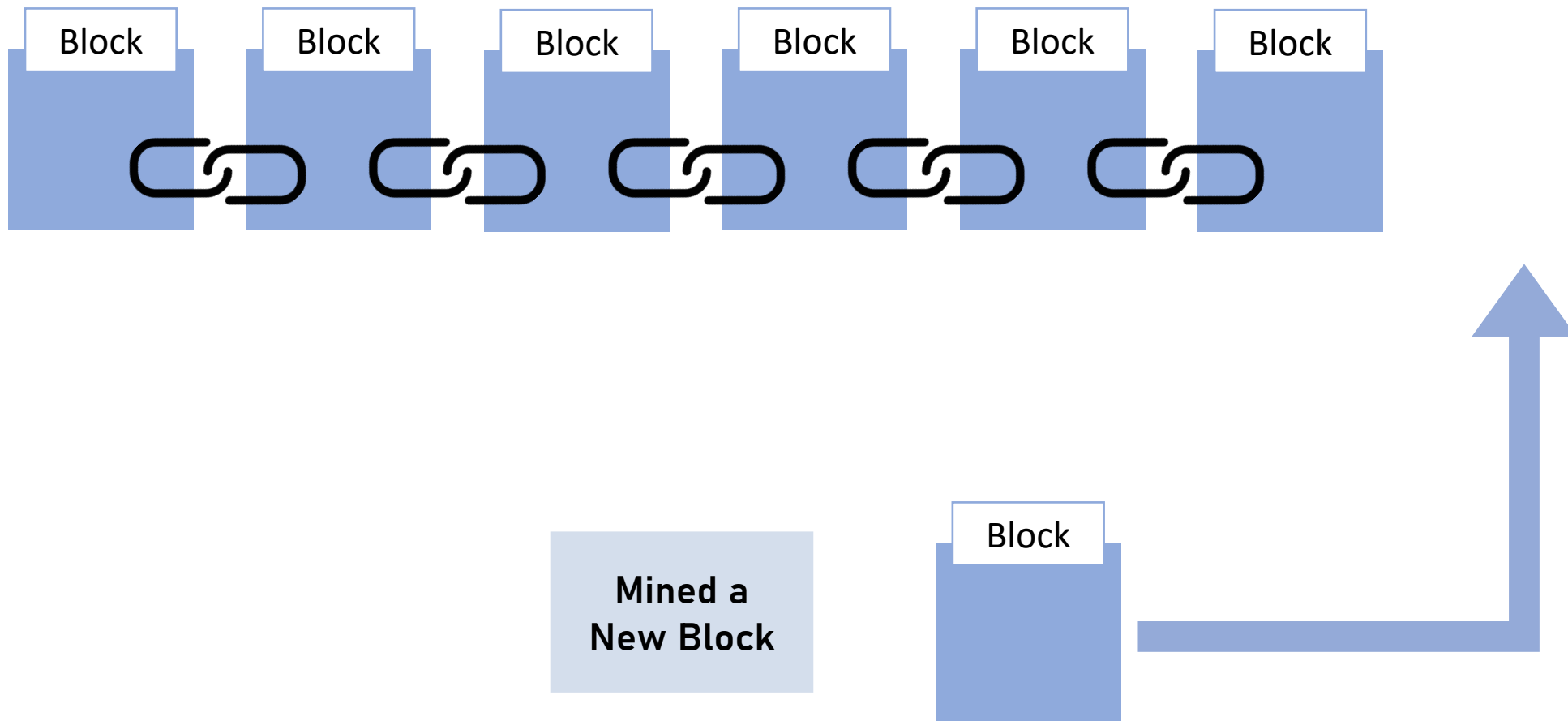
Blockchain Mining

- What does mining mean?



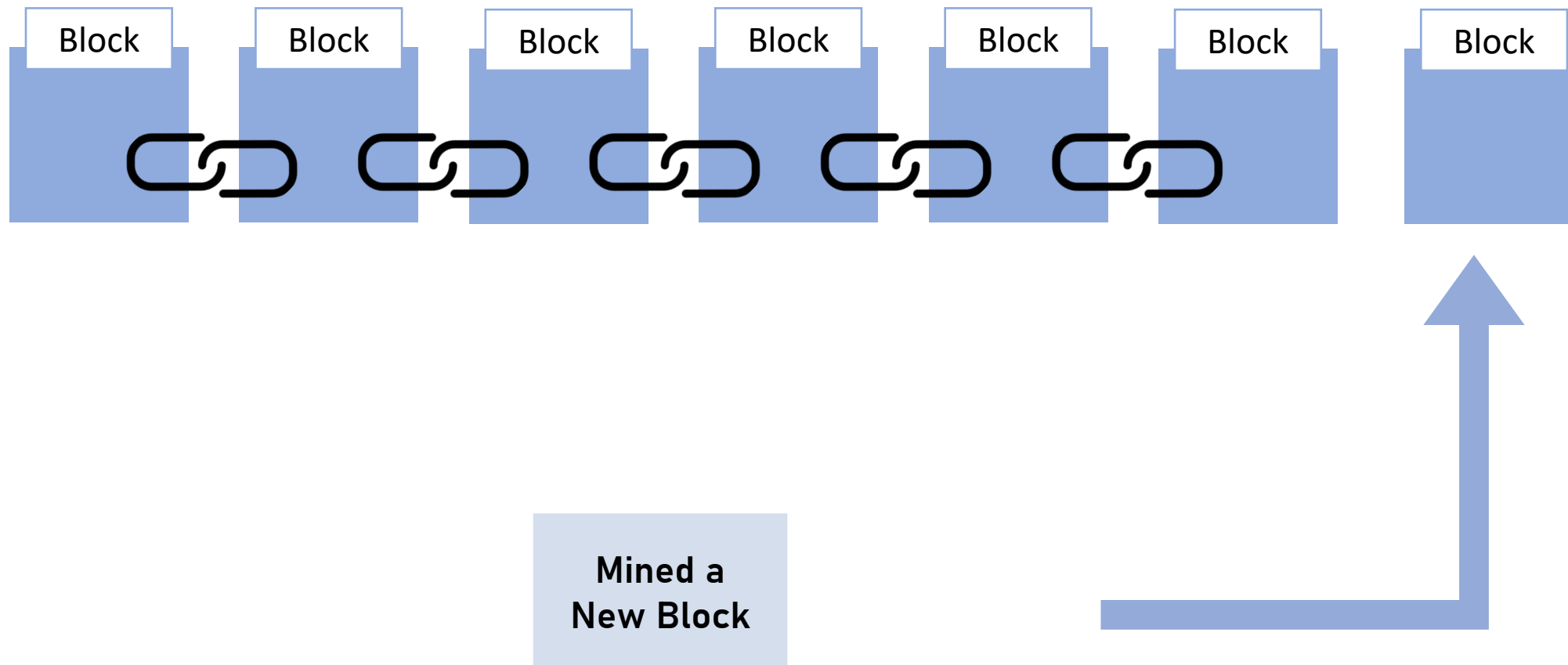
Blockchain Mining

- What does mining mean?



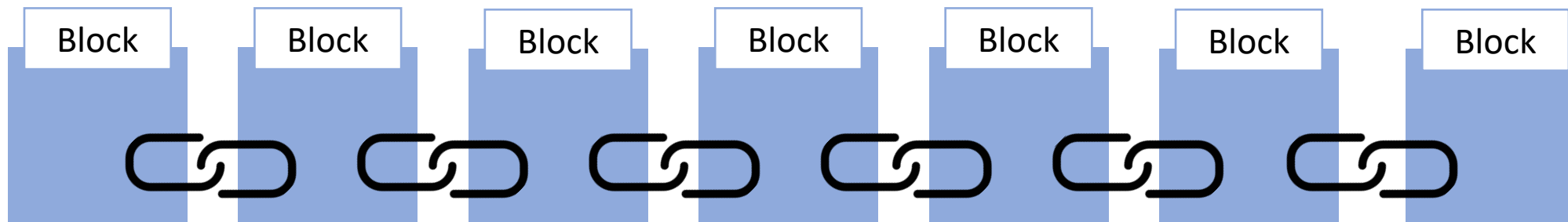
Blockchain Mining

- What does mining mean?



Blockchain Mining

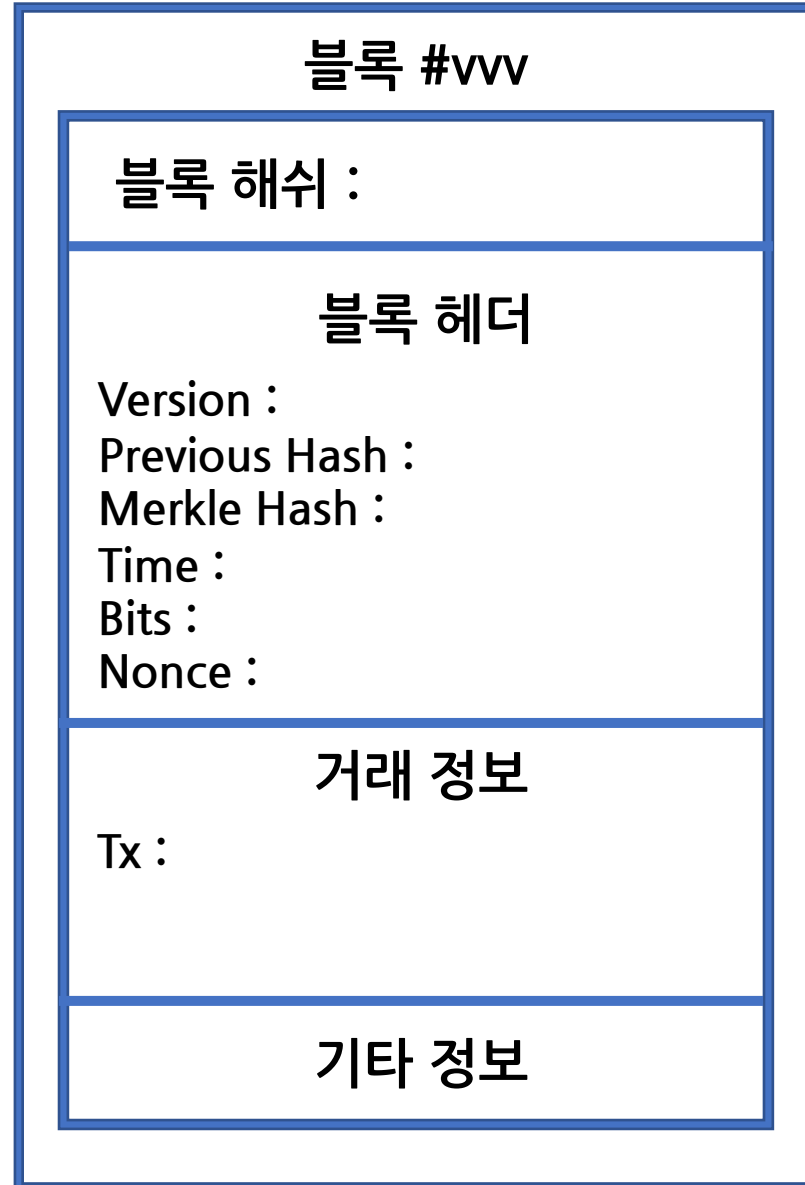
- What does mining mean?



Mined a
New Block

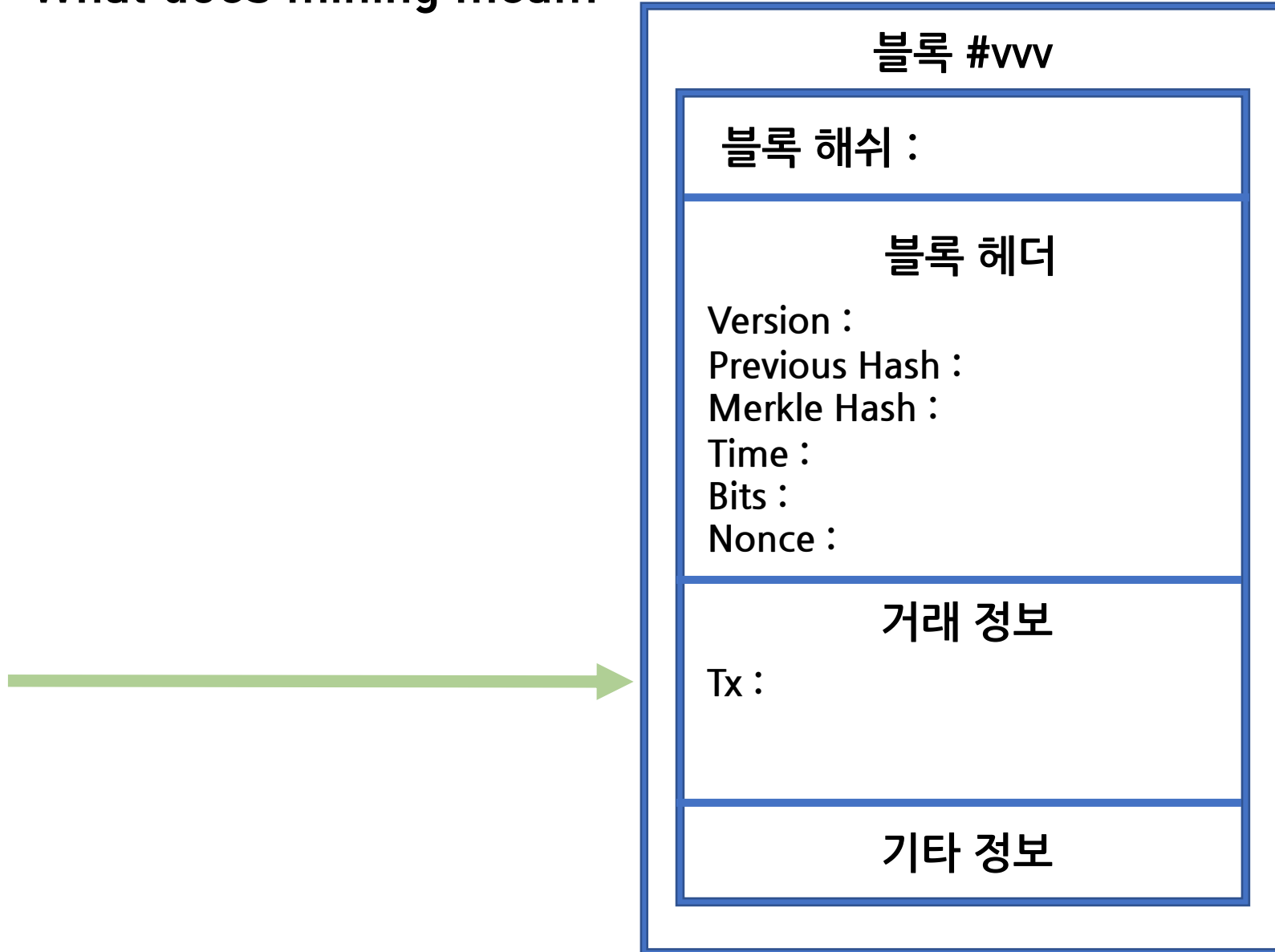
Blockchain Mining

- What does mining mean?



Blockchain Mining

- What does mining mean?



Blockchain Mining

- What does mining mean?

블록 #0

| 요약 | |
|---------|---------------------|
| 거래 수 | 1 |
| 출력 합계 | 50 BTC |
| 예상된 거래량 | 0 BTC |
| 거래 수수료 | 0 BTC |
| 높이 | 0 (주요 체인) |
| 타임 스탬프 | 2009-01-03 18:15:05 |
| 수신 시간 | 2009-01-03 18:15:05 |
| 릴레이된 곳 | Unknown |
| 난이도 | 1 |
| Bits | 486604799 |
| 크기 | 0.285 kB |
| 무게 | 0.896 kWU |
| 번역 | 1 |
| 해시 난수 | 2083236893 |
| 블록 보상 | 50 BTC |

| 해시 | |
|-------------|--|
| 해시 | 00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f |
| 이전 차단 | 00 |
| 다음 블록 | 00000000839a8e6886ab5951d76f411475428afc90947ee320161bbf18eb6048 |
| Merkle Root | 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b |



거래

| | |
|--|--|
| 4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b (크기: 204 bytes) 2009-01-03 18:15:05 | |
| 투입물 없음 (새로 생성 된 동전) | 1A1zP1eP5QGefi... (Genesis of Bitcoin) - (사용하지 않음) |
| | 50 BTC |
| | 50 BTC |

블록 #539832

| 요약 | |
|---------|----------------------|
| 거래 수 | 2106 |
| 출력 합계 | 5,235.7911477 BTC |
| 예상된 거래량 | 543.85239667 BTC |
| 거래 수수료 | 0.1561294 BTC |
| 높이 | 539832 (주요 체인) |
| 타임 스탬프 | 2018-09-03 20:49:16 |
| 수신 시간 | 2018-09-03 20:49:16 |
| 릴레이된 곳 | AntPool |
| 난이도 | 6,727,225,469,722.53 |
| Bits | 388618029 |
| 크기 | 1159.523 kB |
| 무게 | 3992.678 kWU |
| 번역 | 0x20000000 |
| 해시 난수 | 2551954848 |
| 블록 보상 | 12.5 BTC |

| 해시 | |
|-------------|---|
| 해시 | 000000000000000000053bd5de314f61add5c7b0614372ccfce2f0b7fce39743 |
| 이전 차단 | 00000000000000000001b5f1026e9b67348761c98906e522f7fed52d555730182 |
| 다음 블록 | 00000000000000000003299e4701aa1adea5c7075b3be6142dc8c44c6419fb81 |
| Merkle Root | a903b4c6a39b8d625ea4f1a0b640eaf226bf225b7462b71f2190d3ade97c986b |



거래

| | |
|--|--|
| 4da0badb7482e7883fe95d1b438fed03598c03b2017fc007f4d8e1aa6114eb45 (크기: 248 bytes) 2018-09-03 20:49:16 | |
| 투입물 없음 (새로 생성 된 동전) | 1Nh7uHdvY6fNwtQtM1G5EzAFPLC33B59rB - (사용하지 않음) 출력 주소를 디코딩 할 수 없습니다. - (사용하지 않음) |
| | 12.6561294 BTC 0 BTC 12.6561294 BTC |
| e9c809cc208bc6af6d8346d141374e97e21da9c59b2754e3fbf69c577133caf8c (보수: 0.0025 BTC - 280.27 sat/WU - 1,121 sat/B - 크기: 223 bytes) 2018-09-03 20:42:25 | |
| 15xeZss37GAwXx8d2MQq9RVg7YfEdJ1LV3 (4.83064584 BTC - 산출) | 3Ggd46Rt36oDotZyZdyGUWSakTpfmoSYhZ - (사용하지 않음) 1LNmcAB3NRLHo8JCpcGevCv1Jhzt34W4M5 - (지출) 4.82614584 BTC |
| | 0.002 BTC 4.82614584 BTC 4.82614584 BTC |
| 3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd (보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00 | |
| 187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq (12.73973247 BTC - 산출) | 1MwYXDHfQdyKXhJ7ZgBZxmg8ochwdjHeJ4 - (지출) 3QJ4hPWFQBcbvJYTcho88rz4bq4PSzcNBp - (사용하지 않음) 12.73510584 BTC 0.00212663 BTC |
| | 12.73723247 BTC |
| ec0f4186fa16c8cc41c47ee9dd99e95aa3d8751b486c26311ba933416d175f6 (보수: 0.0025 BTC - 277.78 sat/WU - 1,111 sat/B - 크기: 225 bytes) 2018-09-03 20:41:05 | |
| 114M4Qsato5HctQPFnBTgdBpL9JctmZJet (10.36602916 BTC - 산출) | 12ovmyLbtYEQNckCPJrNz7vCLZC2BwxL3 - (지출) 15ZJ9ztHxst9j3AMDca4AnjzhsvNRjcUtn - (사용하지 않음) 10.35762916 BTC 0.0059 BTC |
| | 10.36352916 BTC |
| 3b960d047214930761f4faca5e258b841af3d47f4b8a230d983088e6815dfb50 (보수: 0.00187508 BTC - 210.31 sat/WU - 841.24 sat/B - 크기: 223 bytes) 2018-09-03 20:33:51 | |

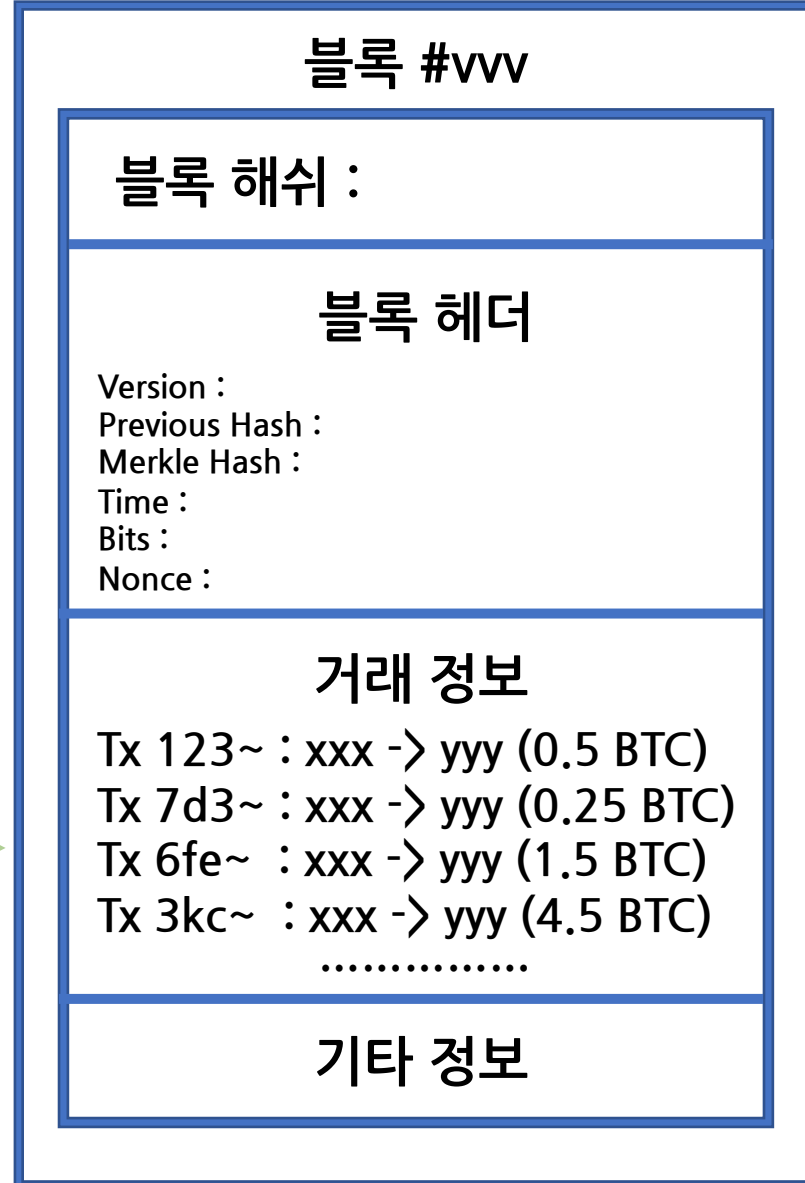
Blockchain Mining

- What does mining mean?

| | | |
|--|---|---|
| 4da0badb7482e7883fe95d1b438fed03598c03b2017fc007f4d8e1aa6114eb45 | | (크기: 248 bytes) 2018-09-03 20:49:16 |
| 투입물 없음 (새로 생성 된 동전) | → 1Nh7uHdvY6fNwtQtM1G5EZAFLC33B59rB - (사용하지 않은) 출력 주소를 디코딩 할 수 없습니다. - (사용하지 않은) | 12.6561294 BTC 0 BTC |
| | | 12.6561294 BTC |
| e9c809cc208bcaf6d8346d141374e97e21da9c59b2754e3fbf69c577133caf8c | | (보수: 0.0025 BTC - 280.27 sat/WU - 1,121 sat/B - 크기: 223 bytes) 2018-09-03 20:42:25 |
| 15xeZss37GAwXx8d2MQq9RVg7YfEdJ1LV3 (4.83064584 BTC - 산출) | → 3Ggd46Rt36oDotZyZdyGUWSakTpfmoSYhZ - (사용하지 않은) 1LNmcAB3NRLho8JCpcGevCv1Jhzt34W4M5 - (지출) | 0.002 BTC 4.82614584 BTC |
| | | 4.82814584 BTC |
| 3253ecc1e196e2e4e58e6a109dae7ee4e2c5924b4db016a8a5effcb818056dfd | | (보수: 0.0025 BTC - 279.02 sat/WU - 1,116 sat/B - 크기: 224 bytes) 2018-09-03 20:39:00 |
| 187zLaxtTg72vMaNYK3fdRwq5f6gAk1Gsq (12.73973247 BTC - 산출) | → 1MwYXDHfQdyKXHJ7ZgBZxmg8ochwdjHeJ4 - (지출) 3QJ4hPWFQBcbvJYTCho88rz4bq4PSzcNBp - (사용하지 않은) | 12.73510584 BTC 0.00212663 BTC |
| | | 12.73723247 BTC |
| ec0f4186fa16c8cc41c47ee9dd99e95aa3d8751b486c26311baf933416d175f6 | | (보수: 0.0025 BTC - 277.78 sat/WU - 1,111 sat/B - 크기: 225 bytes) 2018-09-03 20:41:05 |
| 114M4Qsato5HctQPFnBTgdBpL9JctmZJet (10.36602916 BTC - 산출) | → 12ovmyLtbtyEQNckCPJrNz7vCLZC2BwxL3 - (지출) 15ZJ9zHxst9j3AMDca4AnjzhsvNRjcUtqn - (사용하지 않은) | 10.35762916 BTC 0.0059 BTC |
| | | 10.36352916 BTC |
| 3b960d047214930761f4faca5e258b841af3d47f4b8a230d983088e6815dfb50 | | (보수: 0.00187596 BTC - 210.31 sat/WU - 841.24 sat/B - 크기: 223 bytes) 2018-09-03 20:33:51 |

Blockchain Mining

- What does mining mean?



Blockchain Mining

- What does mining mean?



Blockchain Mining

- What does mining mean?



Blockchain Mining

- What does mining mean?



Blockchain Mining

- Incentives



Blockchain Mining

- Incentives

Inputs - Outputs = Fee



Blockchain Mining

- Incentives

Inputs - Outputs = Fee
 Inputs - Outputs = Fee



블록 #vvv

블록 해쉬 : g67&Hb12...

블록 헤더

Version :

Previous Hash :

Merkle Hash : j57D3f.....

Time :

Bits :

Nonce : 2083236893

거래 정보

Tx 123~ : xxx -> yyy (0.5 BTC)

Tx 7d3~ : xxx -> yyy (0.25 BTC)

Tx 6fe~ : xxx -> yyy (1.5 BTC)

Tx 3kc~ : xxx -> yyy (4.5 BTC)

.....

기타 정보

Blockchain Basic

Blockchain Mining

- Incentives

Inputs - Outputs = Fee
 Inputs - Outputs = Fee
 Inputs - Outputs = Fee



Blockchain Mining

- Incentives

Inputs - Outputs = Fee
 Inputs - Outputs = Fee
 Inputs - Outputs = Fee
 Inputs - Outputs = Fee



블록 #vvv

블록 해쉬 : g67&Hb12...

블록 헤더

Version :

Previous Hash :

Merkle Hash : j57D3f.....

Time :

Bits :

Nonce : 2083236893

거래 정보

Tx 123~ : xxx -> yyy (0.5 BTC)

Tx 7d3~ : xxx -> yyy (0.25 BTC)

Tx 6fe~ : xxx -> yyy (1.5 BTC)

Tx 3kc~ : xxx -> yyy (4.5 BTC)

.....

기타 정보

Blockchain Basic

Blockchain Mining

- Incentives

Inputs - Outputs = Fee



Blockchain Mining

- Incentives

Miner

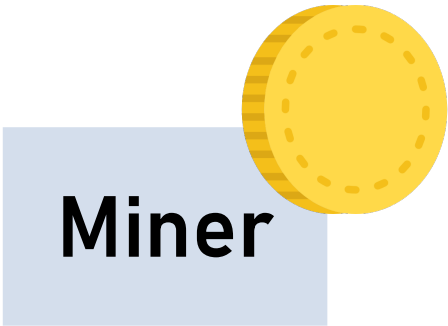


Inputs - Outputs = Fee



Blockchain Mining

- Incentives



Inputs - Outputs = Fee



Blockchain Mining

- Consensus Algorithm

Mining



A sequence progress of solving problem(producing block) by using computing power. (changing nonce)

▲ What mining means to Blockchain system?

- Gives motivation to maintain chain system
- Miners can get incentive after mining. (incentives are sum of fees of transactions)
- Mining is the actual action that makes new block and builds blockchain.
- Transactions in the mined block are treated as valid (not immediately after 6 more blocks mined)

Blockchain Mining

- Consensus Algorithm

Miner → Miners can get incentives by mining the block

User → Their transactions can be treated as valid one

System → By mining, the system itself can be maintained

Blockchain Mining

- Consensus Algorithm

**Consensus
Algorithm**



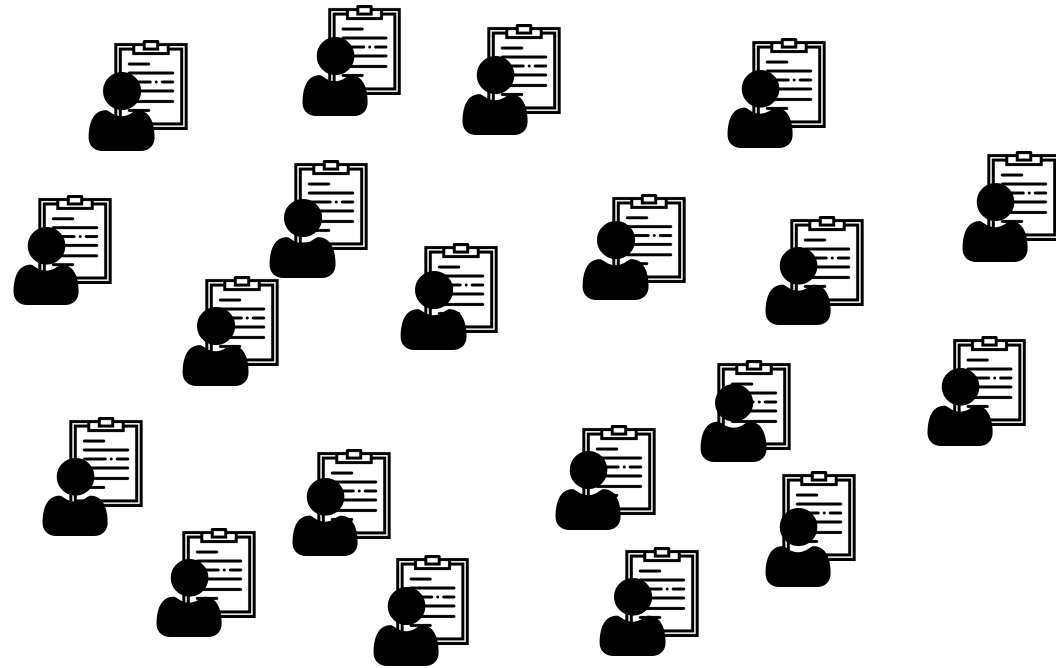
Hard to solve, Easy to proof

4. Frequently Asked Question

- 51% Attack
- Transaction Fee / 거래가 블록에 채워지는 과정
- How difficulty changes? / 난이도 조절 과정 및 주기

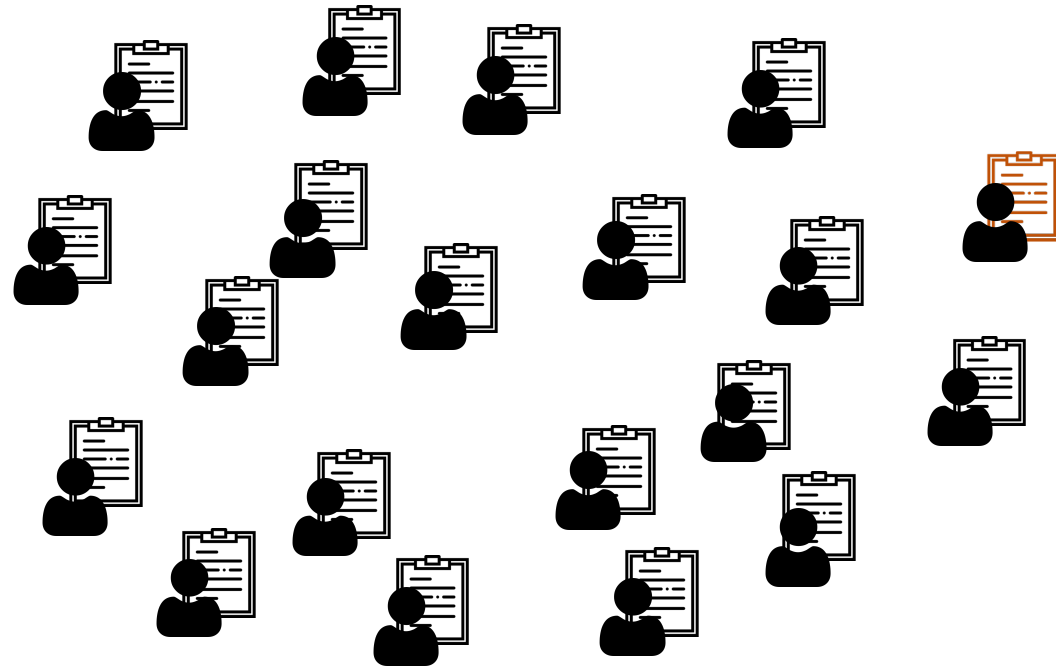
Frequently Asked Question

- 51% Attack



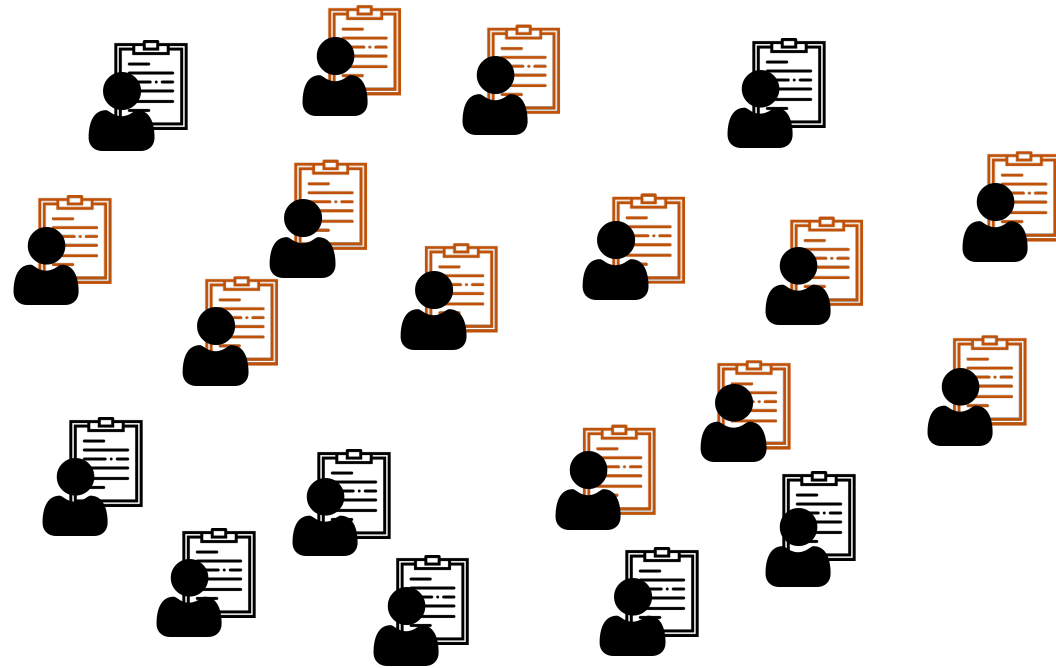
Frequently Asked Question

- 51% Attack



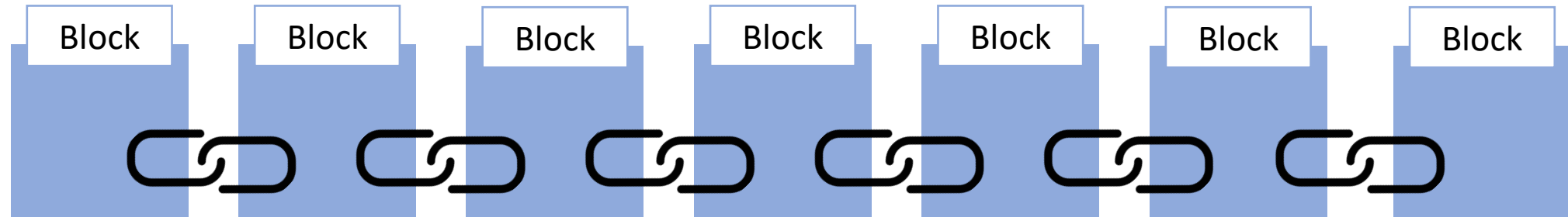
Frequently Asked Question

- 51% Attack



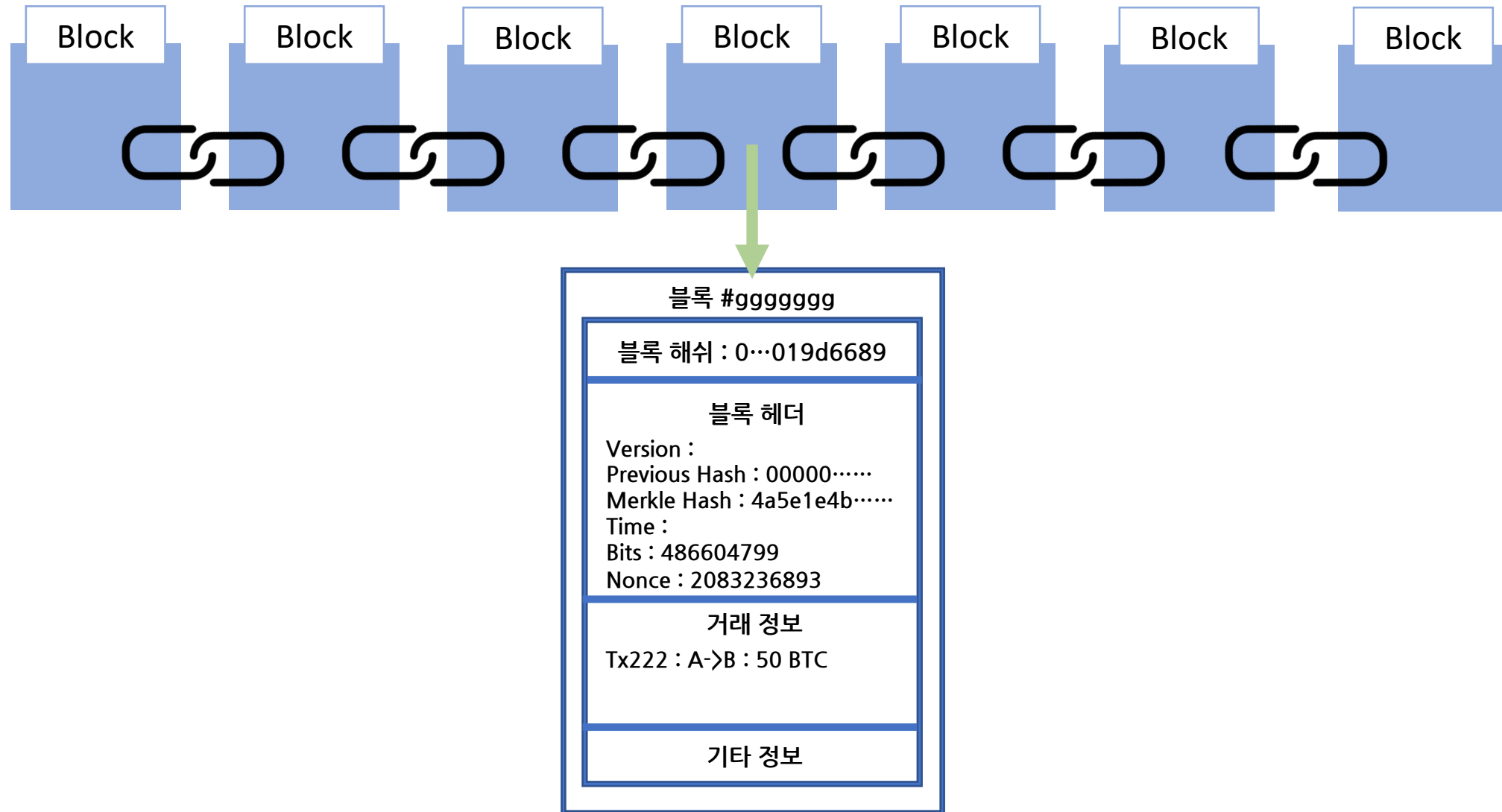
Frequently Asked Question

- 51% Attack



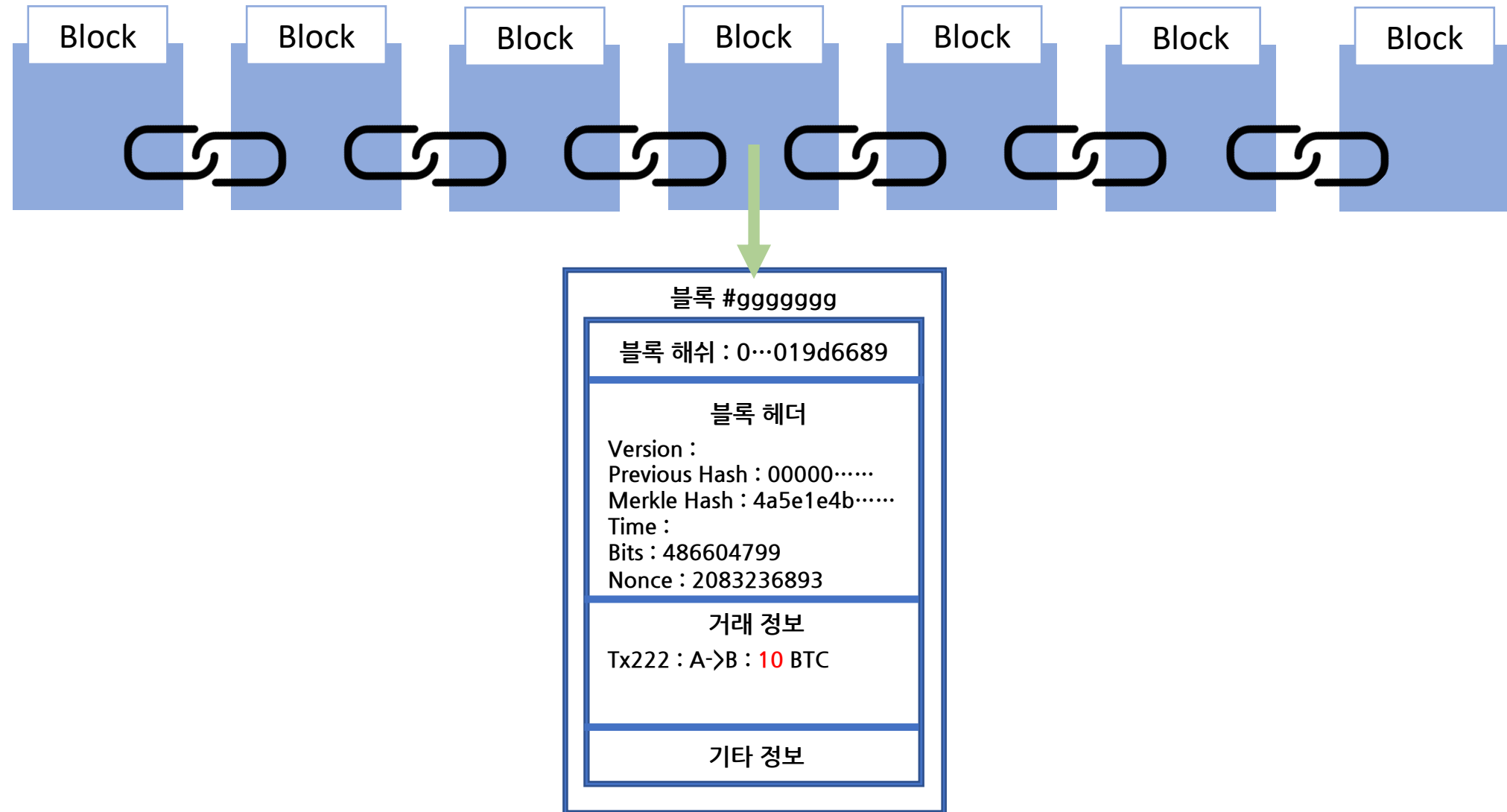
Frequently Asked Question

- 51% Attack



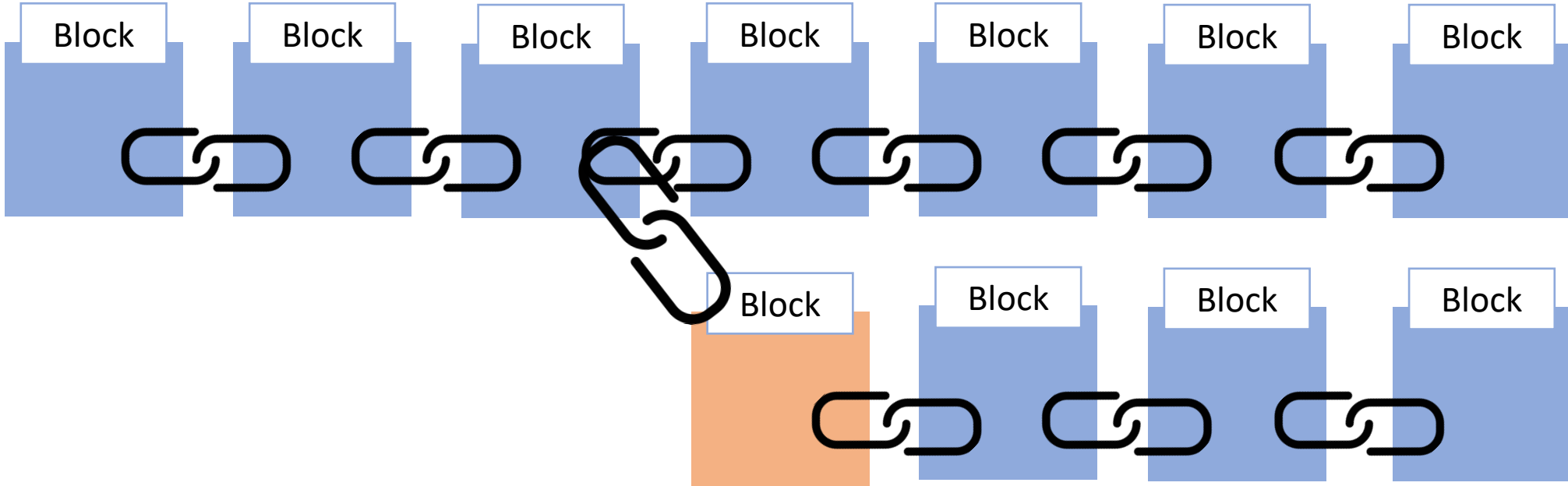
Frequently Asked Question

- 51% Attack



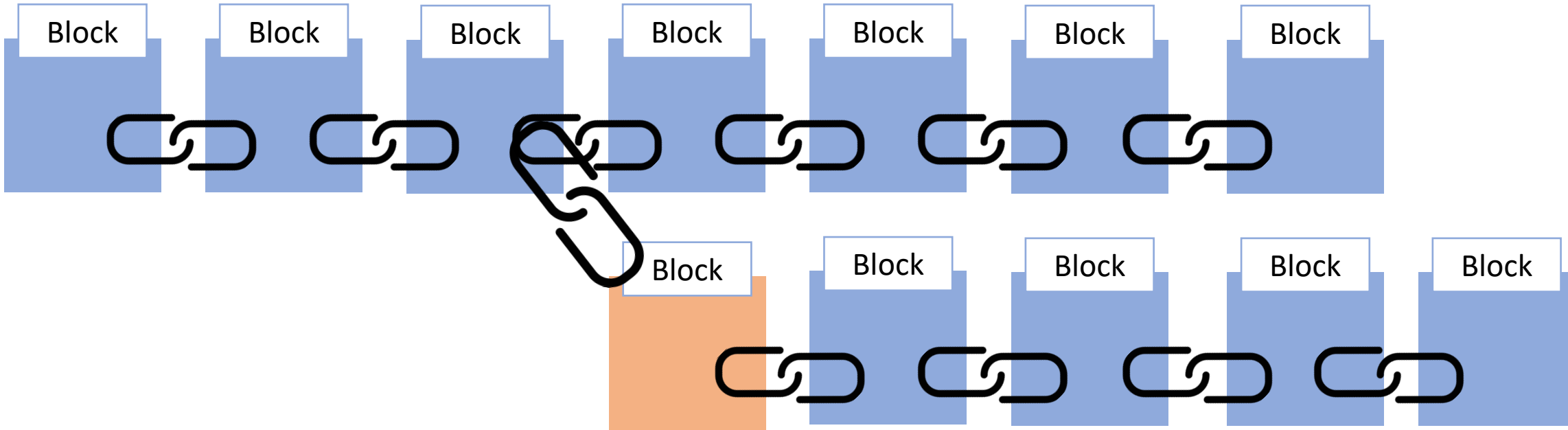
Frequently Asked Question

- 51% Attack



Frequently Asked Question

- 51% Attack



Frequently Asked Question

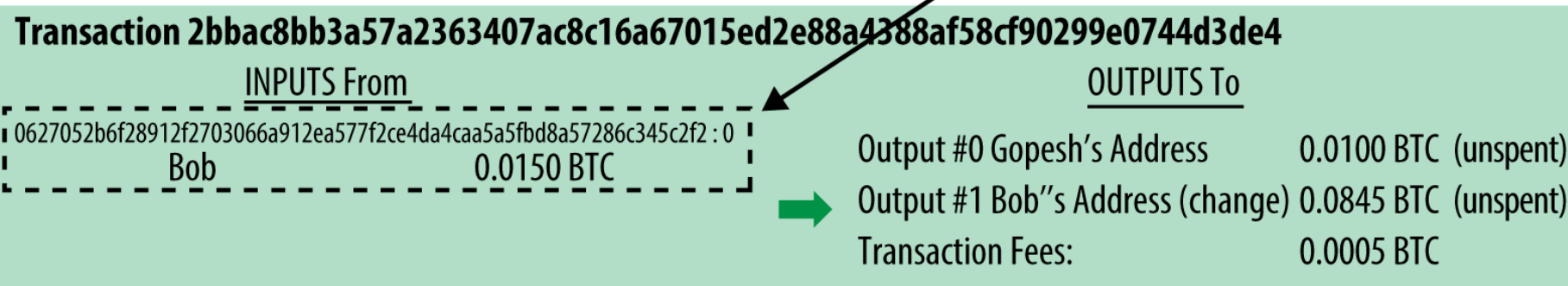
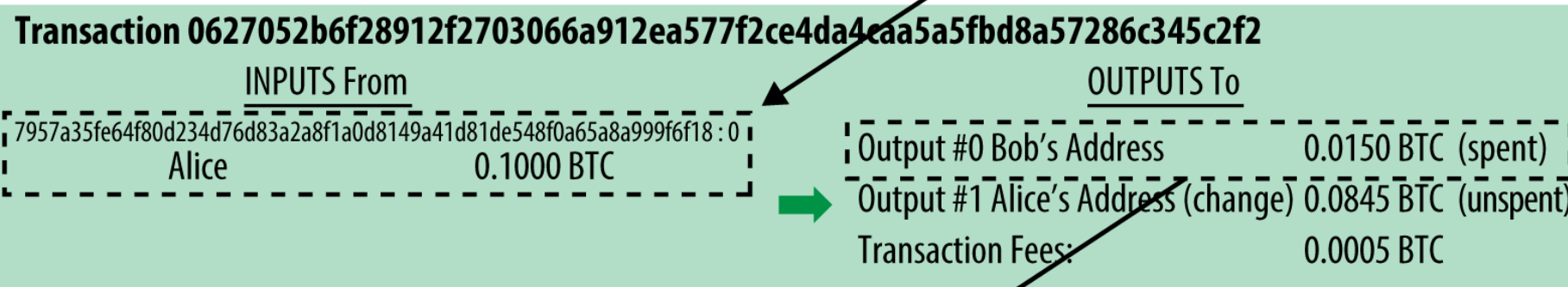
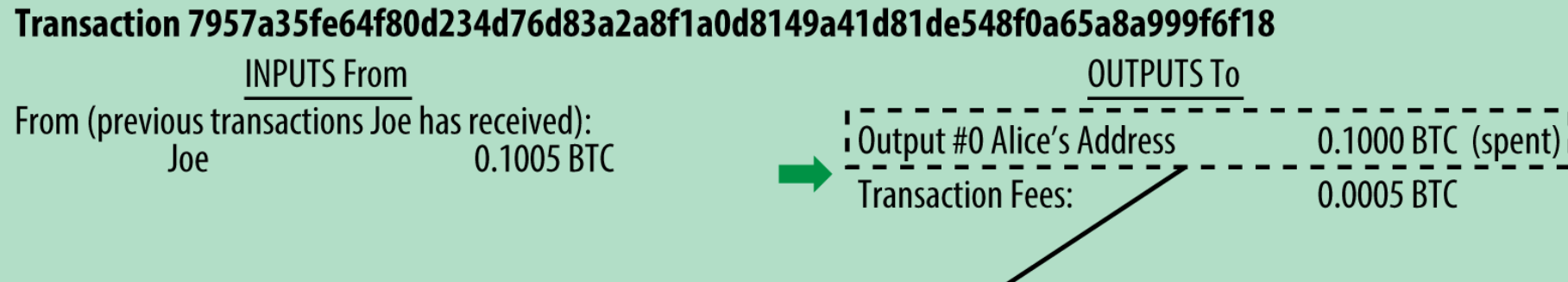
- Transaction Fee

Inputs - Outputs = Fee



Frequently Asked Question

- Transaction Fee



Frequently Asked Question

- Transaction Fee



Frequently Asked Question

- Transaction Fee

Miner 가 pick 할 수 있음



Frequently Asked Question

- Transaction Fee

수수료가 0이라면?



Frequently Asked Question

- Transaction Fee

일정 용량은 오래된
거래로 채워지게 됨



Frequently Asked Question

-How difficulty changes?



Frequently Asked Question

-How difficulty changes?



Frequently Asked Question

-How difficulty changes?

블록은 평균 10분당 1개

Frequently Asked Question

-How difficulty changes?

블록은 평균 10분당 1개
2016개의 블록마다 난이도 조절

Frequently Asked Question

-How difficulty changes?

블록은 평균 10분당 1개
2016개의 블록마다 난이도 조절
즉, $2016 * 10\text{분} = \text{평균 } 20160\text{분마다 조절}$

Frequently Asked Question

-How difficulty changes?

블록은 평균 10분당 1개
2016개의 블록마다 난이도 조절
즉, $2016 * 10\text{분} = \text{평균 } 20160\text{분마다 조절}$
 $20160 / 60 = 336\text{시간}$, $336 / 24 = 14\text{일}$

Frequently Asked Question

-How difficulty changes?

블록은 평균 10분당 1개
2016개의 블록마다 난이도 조절
즉, $2016 * 10\text{분} = \text{평균 } 20160\text{분마다 조절}$
 $20160 / 60 = 336\text{시간}$, $336 / 24 = 14\text{일}$
평균 14일마다 난이도 조절

Frequently Asked Question

-How difficulty changes?

블록 #526176

| 요약 | |
|---------|--------------------------------|
| 거래 수 | 687 |
| 출력 합계 | 1,058.07204535 BTC |
| 예상된 거래량 | 307.48701422 BTC |
| 거래 수수료 | 0.10104805 BTC |
| 높이 | 526176 (주요 체인) |
| 타임 스탬프 | 2018-06-05 18:18:06 |
| 수신 시간 | 2018-06-05 18:18:06 |
| 릴레이된 곳 | Unknown |
| 난이도 | 4,940,704,885,521.83 |

블록 #528192

| 요약 | |
|---------|--------------------------------|
| 거래 수 | 1557 |
| 출력 합계 | 7,186.63323868 BTC |
| 예상된 거래량 | 808.90263525 BTC |
| 거래 수수료 | 0.12250843 BTC |
| 높이 | 528192 (주요 체인) |
| 타임 스탬프 | 2018-06-19 09:20:45 |
| 수신 시간 | 2018-06-19 09:20:45 |
| 릴레이된 곳 | AntPool |
| 난이도 | 5,077,499,034,879.02 |

블록 #530208

| 요약 | |
|---------|--------------------------------|
| 거래 수 | 2659 |
| 출력 합계 | 10,774.91054878 BTC |
| 예상된 거래량 | 1,535.36297981 BTC |
| 거래 수수료 | 0.27878567 BTC |
| 높이 | 530208 (주요 체인) |
| 타임 스탬프 | 2018-07-02 15:34:21 |
| 수신 시간 | 2018-07-02 15:34:21 |
| 릴레이된 곳 | BTC.com |
| 난이도 | 5,363,678,461,481.36 |

블록 #532224

| 요약 | |
|---------|--------------------------------|
| 거래 수 | 2037 |
| 출력 합계 | 20,114.76933373 BTC |
| 예상된 거래량 | 951.69099137 BTC |
| 거래 수수료 | 0.20568773 BTC |
| 높이 | 532224 (주요 체인) |
| 타임 스탬프 | 2018-07-17 03:50:49 |
| 수신 시간 | 2018-07-17 03:50:49 |
| 릴레이된 곳 | BTCC Pool |
| 난이도 | 5,178,671,069,072.25 |

블록 #534240

| 요약 | |
|---------|--------------------------------|
| 거래 수 | 52 |
| 출력 합계 | 437.93707035 BTC |
| 예상된 거래량 | 6.98342819 BTC |
| 거래 수수료 | 0.0021805 BTC |
| 높이 | 534240 (주요 체인) |
| 타임 스탬프 | 2018-07-29 08:19:31 |
| 수신 시간 | 2018-07-29 08:19:31 |
| 릴레이된 곳 | Unknown |
| 난이도 | 5,949,437,371,609.53 |

Frequently Asked Question

-How difficulty changes?

블록 #526176

| 요약 | |
|---------|----------------------|
| 거래 수 | 687 |
| 출력 합계 | 1,058.07204535 BTC |
| 예상된 거래량 | 307.48701422 BTC |
| 거래 수수료 | 0.10104805 BTC |
| 높이 | 526176 (주요 체인) |
| 타임 스탬프 | 2018-06-05 18:18:06 |
| 수신 시간 | 2018-06-05 18:18:06 |
| 릴레이된 곳 | Unknown |
| 난이도 | 4,940,704,885,521.83 |

블록 #528192

| 요약 | |
|---------|----------------------|
| 거래 수 | 1557 |
| 출력 합계 | 7,186.63323868 BTC |
| 예상된 거래량 | 808.90263525 BTC |
| 거래 수수료 | 0.12250843 BTC |
| 높이 | 528192 (주요 체인) |
| 타임 스탬프 | 2018-06-19 09:20:45 |
| 수신 시간 | 2018-06-19 09:20:45 |
| 릴레이된 곳 | AntPool |
| 난이도 | 5,077,499,034,879.02 |

블록 #530208

| 요약 | |
|---------|----------------------|
| 거래 수 | 2659 |
| 출력 합계 | 10,774.91054878 BTC |
| 예상된 거래량 | 1,535.36297981 BTC |
| 거래 수수료 | 0.27878567 BTC |
| 높이 | 530208 (주요 체인) |
| 타임 스탬프 | 2018-07-02 15:34:21 |
| 수신 시간 | 2018-07-02 15:34:21 |
| 릴레이된 곳 | BTC.com |
| 난이도 | 5,363,678,461,481.36 |

블록 #532224

| 요약 | |
|---------|----------------------|
| 거래 수 | 2037 |
| 출력 합계 | 20,114.76933373 BTC |
| 예상된 거래량 | 951.69099137 BTC |
| 거래 수수료 | 0.20568773 BTC |
| 높이 | 532224 (주요 체인) |
| 타임 스탬프 | 2018-07-17 03:50:49 |
| 수신 시간 | 2018-07-17 03:50:49 |
| 릴레이된 곳 | BTCC Pool |
| 난이도 | 5,178,671,069,072.25 |

블록 #534240

| 요약 | |
|---------|----------------------|
| 거래 수 | 52 |
| 출력 합계 | 437.93707035 BTC |
| 예상된 거래량 | 6.98342819 BTC |
| 거래 수수료 | 0.0021805 BTC |
| 높이 | 534240 (주요 체인) |
| 타임 스탬프 | 2018-07-29 08:19:31 |
| 수신 시간 | 2018-07-29 08:19:31 |
| 릴레이된 곳 | Unknown |
| 난이도 | 5,949,437,371,609.53 |

Frequently Asked Question

-How difficulty changes?

+ 2016

블록 #526176

| 요약 | |
|---------|----------------------|
| 거래 수 | 687 |
| 출력 합계 | 1,058.07204535 BTC |
| 예상된 거래량 | 307.48701422 BTC |
| 거래 수수료 | 0.10104805 BTC |
| 높이 | 526176 (주요 체인) |
| 타임 스탬프 | 2018-06-05 18:18:06 |
| 수신 시간 | 2018-06-05 18:18:06 |
| 릴레이된 곳 | Unknown |
| 난이도 | 4,940,704,885,521.83 |

+ 2016

블록 #528192

| 요약 | |
|---------|----------------------|
| 거래 수 | 1557 |
| 출력 합계 | 7,186.63323868 BTC |
| 예상된 거래량 | 808.90263525 BTC |
| 거래 수수료 | 0.12250843 BTC |
| 높이 | 528192 (주요 체인) |
| 타임 스탬프 | 2018-06-19 09:20:45 |
| 수신 시간 | 2018-06-19 09:20:45 |
| 릴레이된 곳 | AntPool |
| 난이도 | 5,077,499,034,879.02 |

+ 2016

블록 #530208

| 요약 | |
|---------|----------------------|
| 거래 수 | 2659 |
| 출력 합계 | 10,774.91054878 BTC |
| 예상된 거래량 | 1,535.36297981 BTC |
| 거래 수수료 | 0.27878567 BTC |
| 높이 | 530208 (주요 체인) |
| 타임 스탬프 | 2018-07-02 15:34:21 |
| 수신 시간 | 2018-07-02 15:34:21 |
| 릴레이된 곳 | BTC.com |
| 난이도 | 5,363,678,461,481.36 |

+ 2016

블록 #532224

| 요약 | |
|---------|----------------------|
| 거래 수 | 2037 |
| 출력 합계 | 20,114.76933373 BTC |
| 예상된 거래량 | 951.69099137 BTC |
| 거래 수수료 | 0.20568773 BTC |
| 높이 | 532224 (주요 체인) |
| 타임 스탬프 | 2018-07-17 03:50:49 |
| 수신 시간 | 2018-07-17 03:50:49 |
| 릴레이된 곳 | BTCC Pool |
| 난이도 | 5,178,671,069,072.25 |

블록 #534240

| 요약 | |
|---------|----------------------|
| 거래 수 | 52 |
| 출력 합계 | 437.93707035 BTC |
| 예상된 거래량 | 6.98342819 BTC |
| 거래 수수료 | 0.0021805 BTC |
| 높이 | 534240 (주요 체인) |
| 타임 스탬프 | 2018-07-29 08:19:31 |
| 수신 시간 | 2018-07-29 08:19:31 |
| 릴레이된 곳 | Unknown |
| 난이도 | 5,949,437,371,609.53 |

Frequently Asked Question

-How difficulty changes?

+ 2016

블록 #526176

| | |
|---------|--------------------|
| 요약 | |
| 거래 수 | 687 |
| 출력 합계 | 1,058.07204535 BTC |
| 예상된 거래량 | 30 |
| 거래 수수료 | 0.00000000 |

14일

2018-06-05 18:18:06

| | |
|--------|----------------------|
| 수신 시간 | 2018-06-05 18:18:06 |
| 릴레이된 곳 | Unknown |
| 난이도 | 4,940,704,885,521.83 |

+ 2016

블록 #528192

| | |
|---------|--------------------|
| 요약 | |
| 거래 수 | 1557 |
| 출력 합계 | 7,186.63323868 BTC |
| 예상된 거래량 | 808.9 |
| 거래 수수료 | 0.12000000 |

13일

2018-06-19 09:20:45

| | |
|--------|----------------------|
| 수신 시간 | 2018-06-19 09:20:45 |
| 릴레이된 곳 | AntPool |
| 난이도 | 5,077,499,034,879.02 |

+ 2016

블록 #530208

| | |
|---------|---------------------|
| 요약 | |
| 거래 수 | 2659 |
| 출력 합계 | 10,774.91054878 BTC |
| 예상된 거래량 | 1,535.3 |
| 거래 수수료 | 0.27870000 |

15일

2018-07-02 15:34:21

| | |
|--------|----------------------|
| 수신 시간 | 2018-07-02 15:34:21 |
| 릴레이된 곳 | BTC.com |
| 난이도 | 5,363,678,461,481.36 |

+ 2016

블록 #532224

| | |
|---------|---------------------|
| 요약 | |
| 거래 수 | 2037 |
| 출력 합계 | 20,114.76933373 BTC |
| 예상된 거래량 | 951.690 |
| 거래 수수료 | 0.20560000 |

12일

2018-07-17 03:50:49

| | |
|--------|----------------------|
| 수신 시간 | 2018-07-17 03:50:49 |
| 릴레이된 곳 | BTCC Pool |
| 난이도 | 5,178,671,069,072.25 |

블록 #534240

| | |
|---------|------------------|
| 요약 | |
| 거래 수 | 52 |
| 출력 합계 | 437.93707035 BTC |
| 예상된 거래량 | 6.98342819 BTC |
| 거래 수수료 | 0.0021805 BTC |

2018-07-29 08:19:31

| | |
|--------|----------------------|
| 수신 시간 | 2018-07-29 08:19:31 |
| 릴레이된 곳 | Unknown |
| 난이도 | 5,949,437,371,609.53 |

Q & A