

# How to mine out a Bitcoin?



# Do you know.....?

**1 Bitcoin = 6153.52 US dollar**

**2018/10/15 10:00 am**

# Agenda

**You will learn:**

- **Definition of Bitcoin**
- **How to mine out a Bitcoin**
- **Reward from Bitcoin mining**



# What is Bitcoin?

- Crypto-currency
  - Digital or electronic cash
  - **Without** central bank and administrators
  - Sent from user-to-user
- Entity
  - **Transaction:** recorded in a **public** ledger
  - Block: define information, especially Puzzle
  - Each block has many transactions

# How to mine Bitcoin?



gold pan

# How to mine Bitcoin?



gold pan



sluice box

# How to mine Bitcoin?



gold pan



sluice box



placer mining

# How to mine Bitcoin?



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placer mining



pit mining



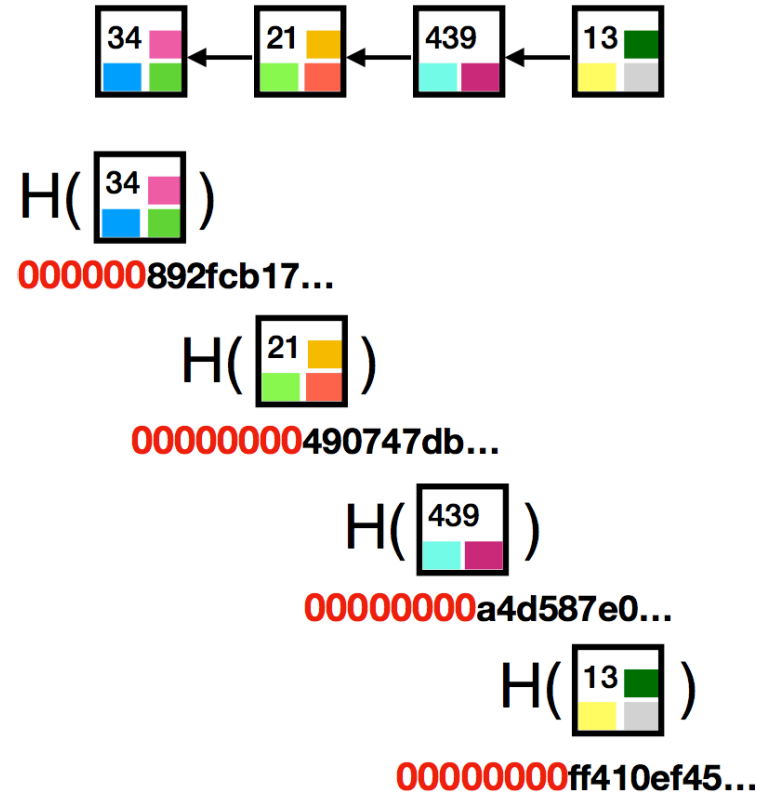
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pit mining

# Let's start game!

- Format

Individual or group-based

- Scenario

Transaction: transfer **100 BTC** to Nacha

Your task: add transaction into Bitcoin network

Your role: **miner**

- Rules

**First person** to solve puzzle have **award!**

Puzzle-solving: complex mathematical problem



Are you ready?

# How to mine Bitcoin?

- Puzzle (30s):

$$\int_0^1 (3x^2 + 2x + 3) dx = ??$$

# How to mine Bitcoin?

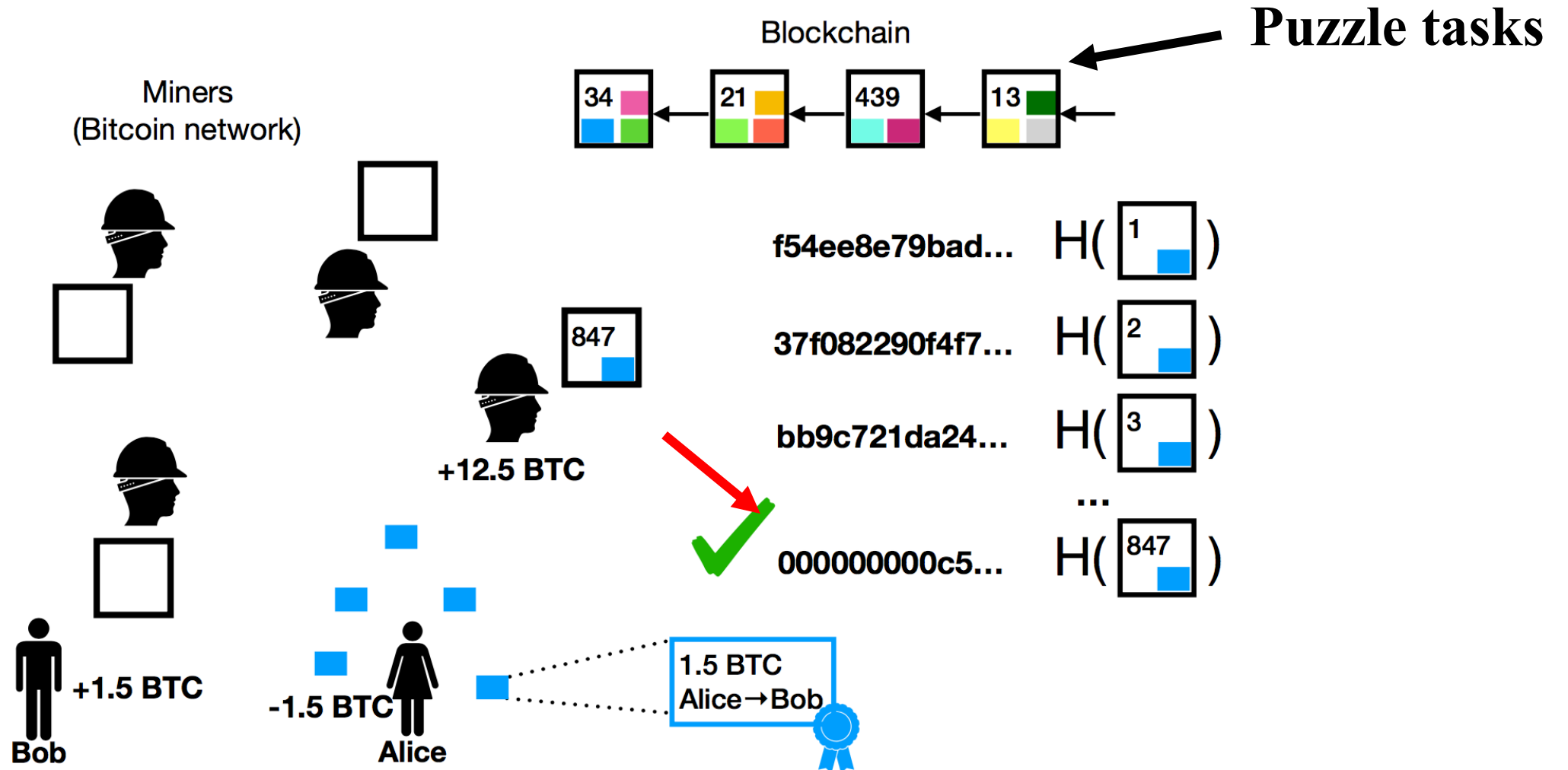
- Puzzle (30s):

$$\int_0^1 (3x^2 + 2x + 3) dx = ??$$

- Answer:

$$x^3 + x^2 + 3x \Big|_0^1 = 5$$

# How to mine Bitcoin?



# Reward of mining?

- Fixed income  
12.5 BTC from Bitcoin network
- Expense  
Expensive hardware, super-computing, hire miner

## Class Game

## Bitcoin

Income

cake

12.5BTC

Rules

Integration Puzzle

Cryptography Puzzle

Expense

Your time, calculation

Expensive computer, time

# Let's Pop-quiz

- a) Bitcoin is \_\_\_\_\_
  - a) digital currency
  - b) entity currency
  - c) not any form of currency
  
- b) \_\_\_\_\_ add transaction into Bitcoin block
  - a) Sender
  - b) Receiver
  - c) Miner



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- a) Miner add transaction into Bitcoin network only when he is the 1<sup>st</sup> person to figure out \_\_\_\_\_
- b) The rewards of each mining is fixed income \_\_\_\_\_  
miner's expense

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- a) Miner add transaction into Bitcoin network only when he is the 1<sup>st</sup> person to figure out \_\_puzzle\_\_
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miner's expense

# Let's Pop-quiz

- a) Miner add transaction into Bitcoin network only when he is the 1<sup>st</sup> person to figure out \_\_puzzle\_\_
- b) The rewards of each mining is fixed income \_\_minus\_\_ miner's expense

# Summary

## Key points:

1. Bitcoin is a new form of currency
2. Money transfer is added by miners
3. Miners needs to compete with each others
4. Rewards = fixed income(12.5 BTC) – miner's expense

# Exercise & Reading

After class:

Form group( 3-5 person)

Design & Broadcast your own puzzle to other teammates

Compete with puzzle-solving

Given award

Reading: <http://bitcoinbook.cs.princeton.edu/>

# Feedback

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Time: Monday 14:00-17:00



**Thanks!**

**Wish you be millionaire some day!**