

# Cryptography and Information Theory

## Information Entropy

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## Module Objectives

### 1. Deterministic vs. Random

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1. Deterministic vs. Random
2. Randomness/Entropy Examples

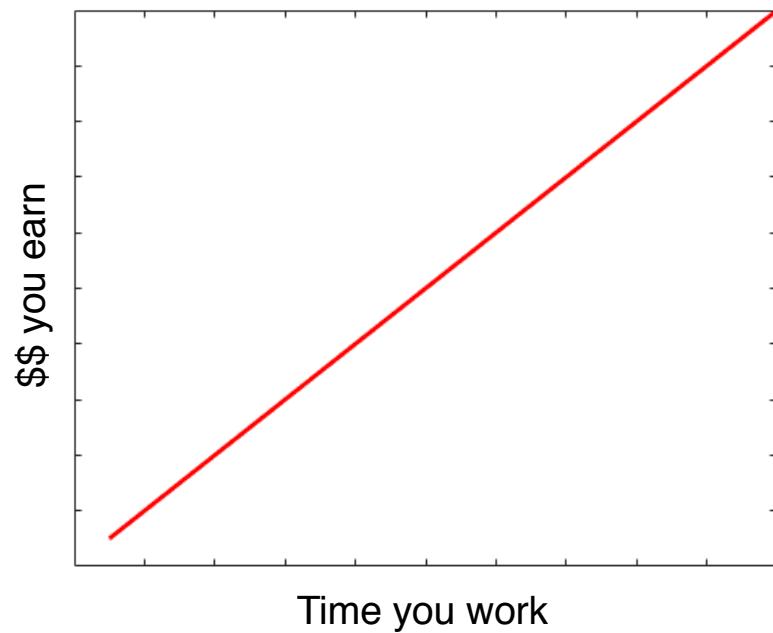
## Module Objectives

1. Deterministic vs. Random
2. Randomness/Entropy Examples
3. Information Entropy Equation  
(Alphabet Size and Distribution)



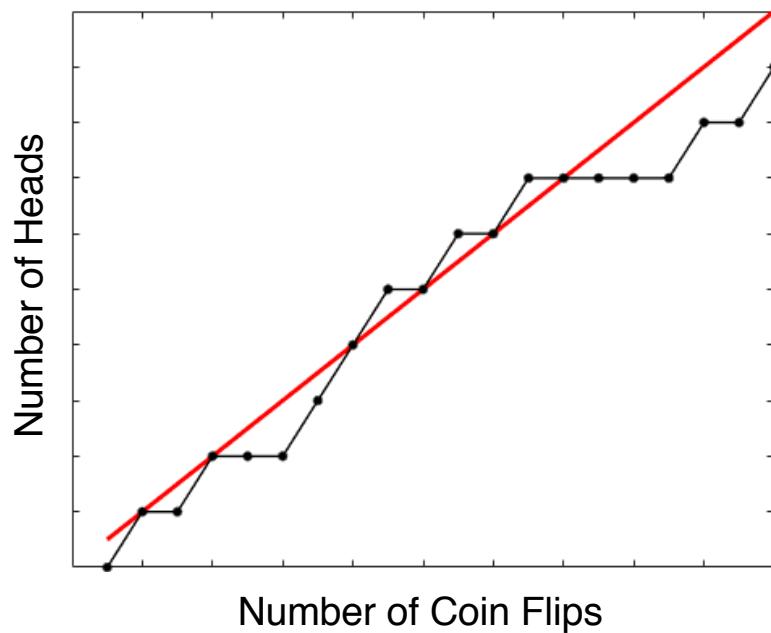
Deterministic process:

The outcome is known with certainty  
(occurring with a probability of 1)



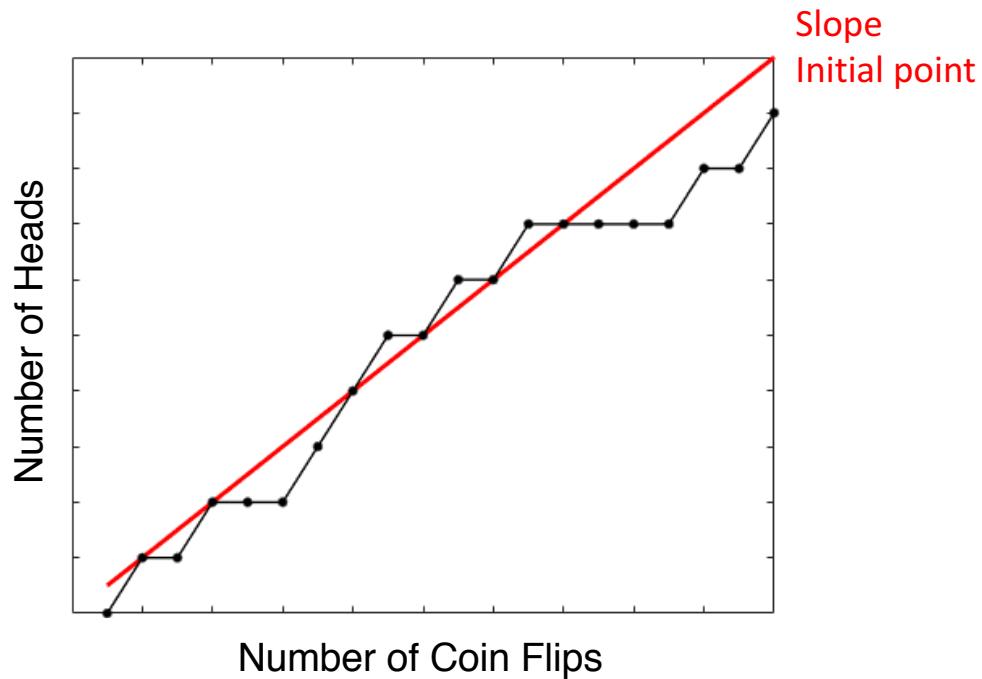
Random process:

Multiple outcomes possible and they occur  
randomly (modeled by a probability distribution)



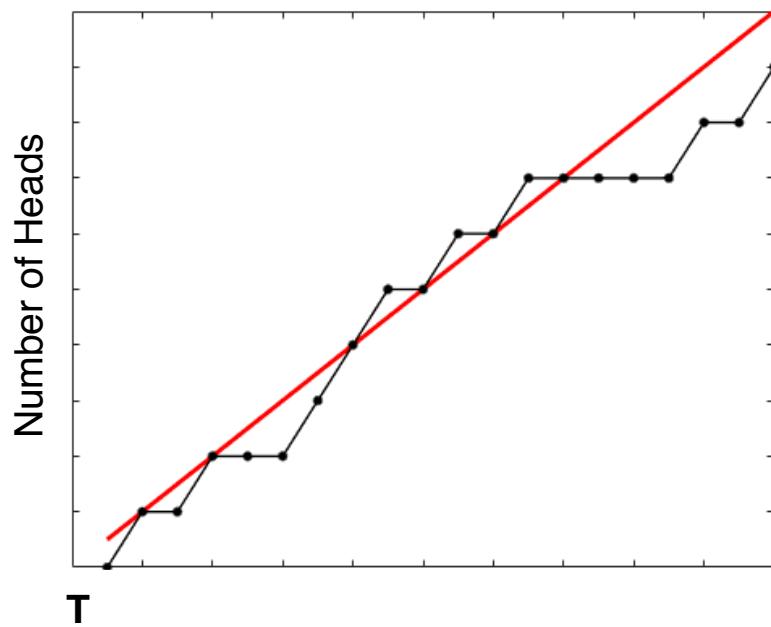
Random process:

Multiple outcomes possible and they occur randomly (modeled by a probability distribution)



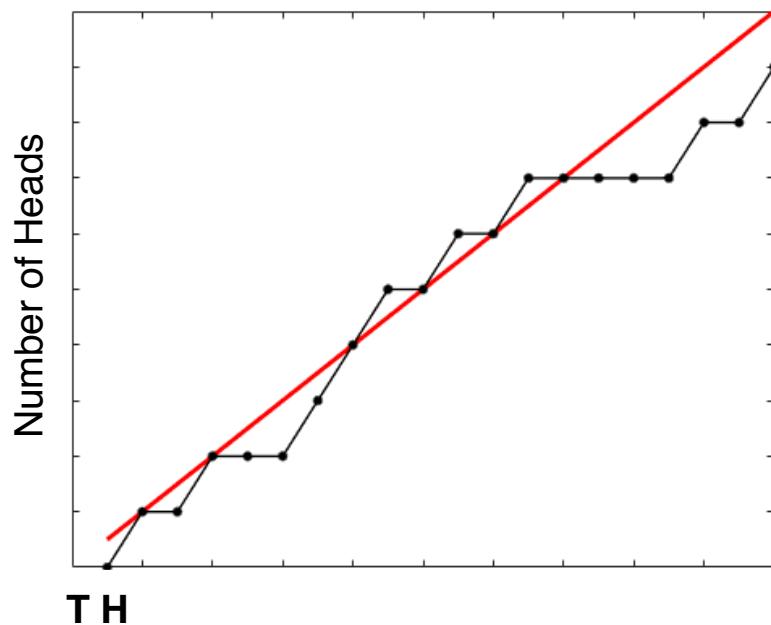
Random process:

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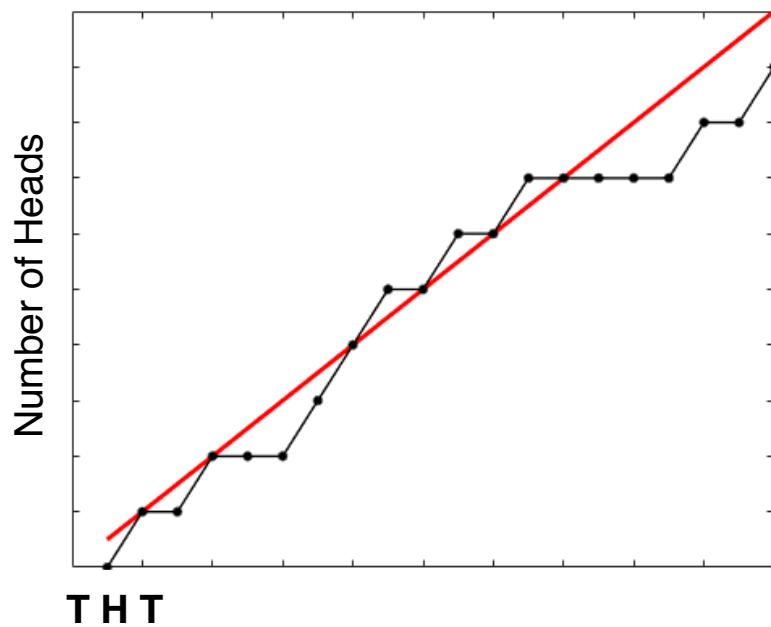
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randomly (modeled by a probability distribution)



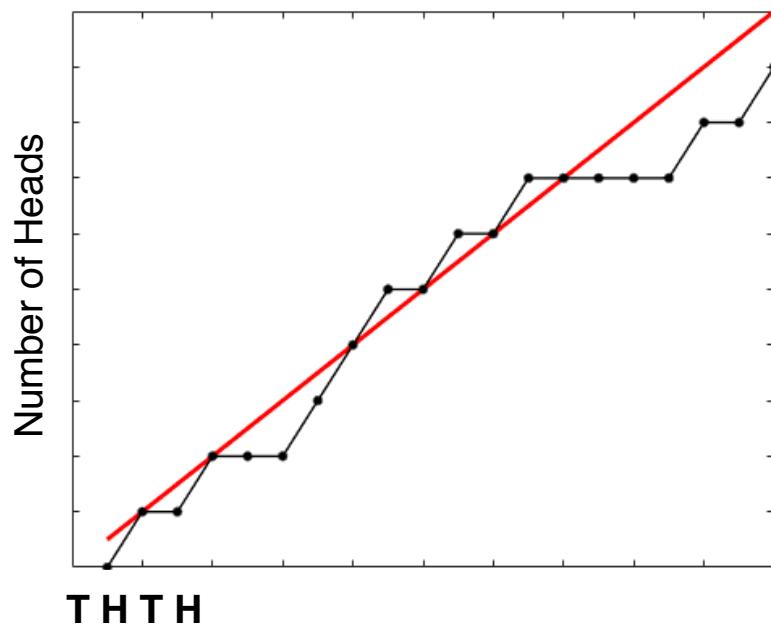
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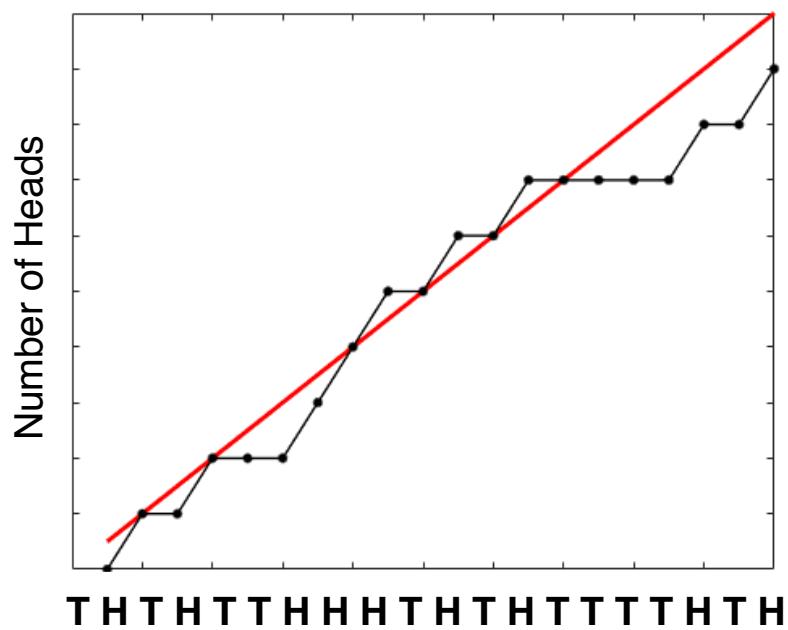
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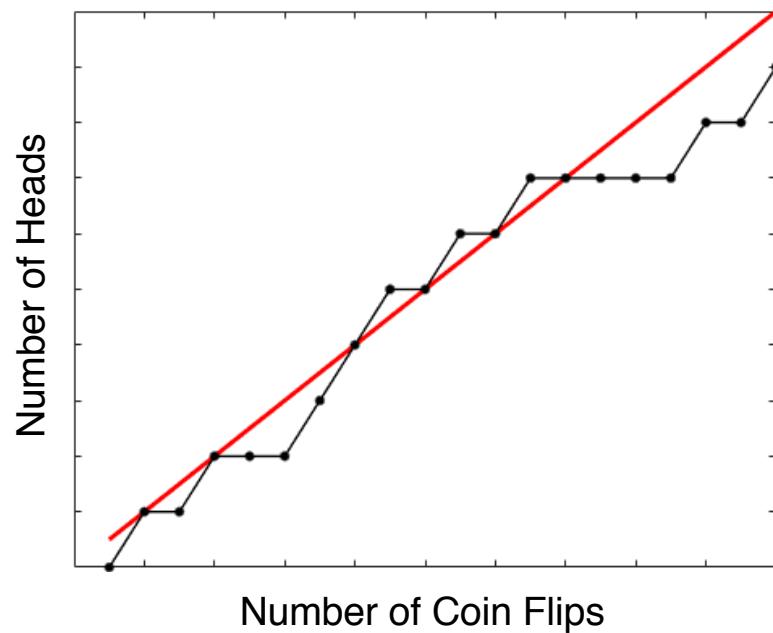


Random process:

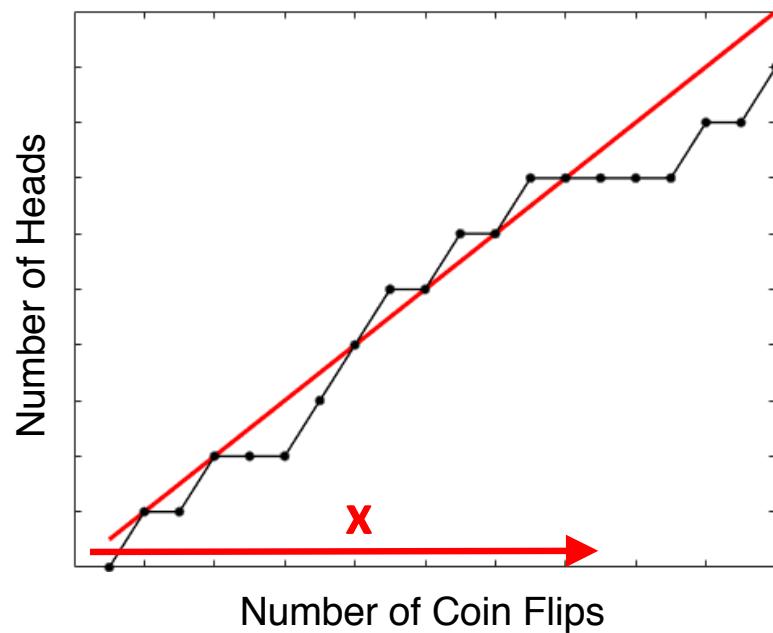
Multiple outcomes possible and they occur  
randomly (modeled by a probability distribution)



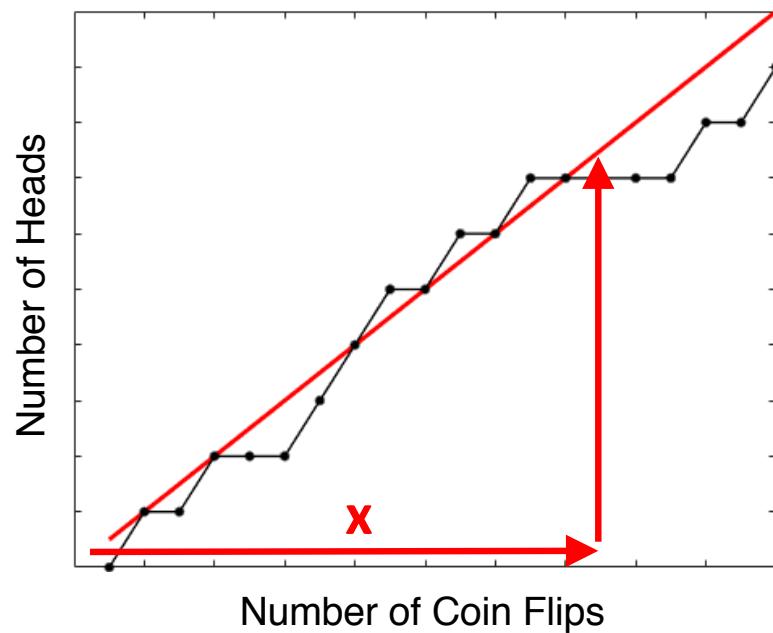
Random process and  
Deterministic process



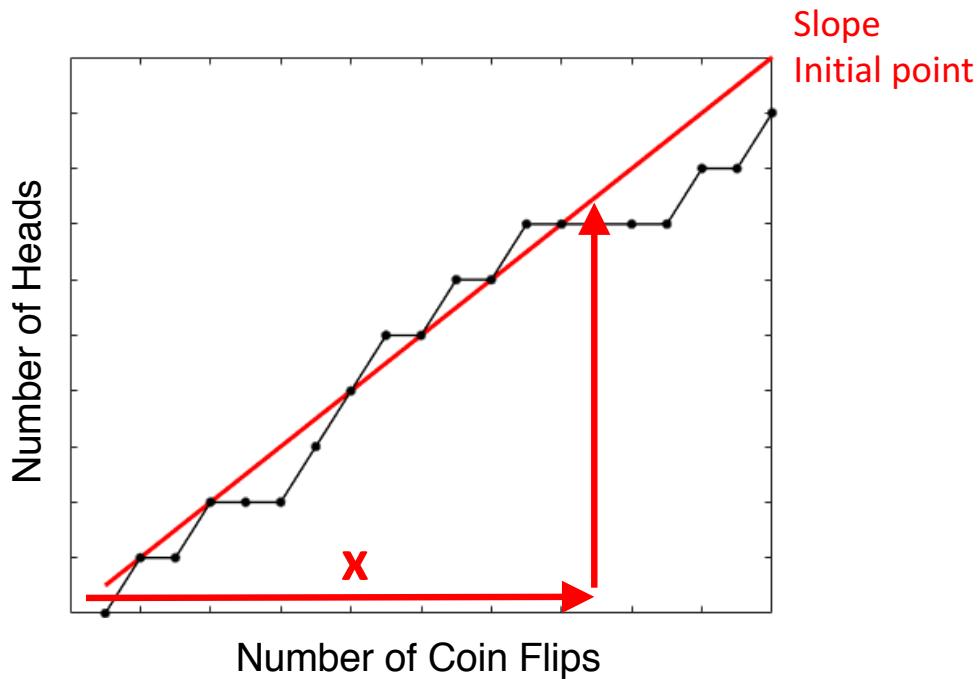
Random process and  
Deterministic process



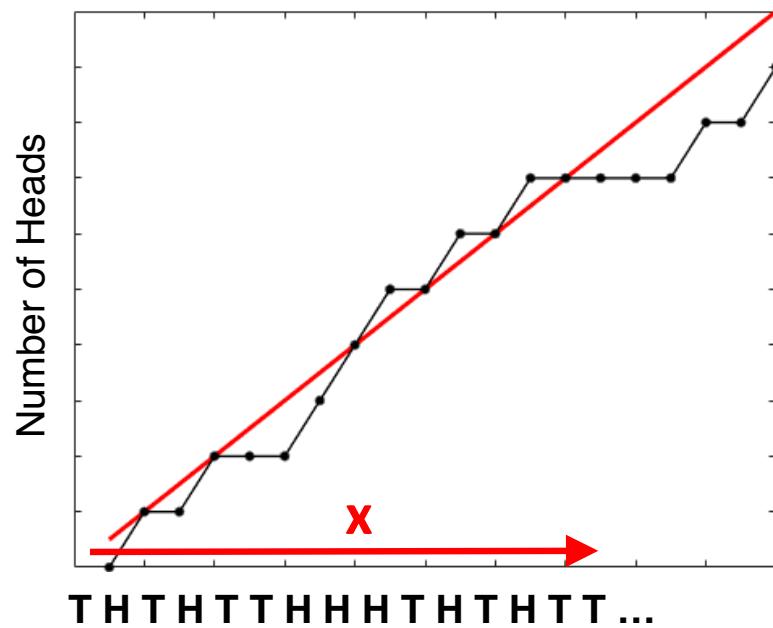
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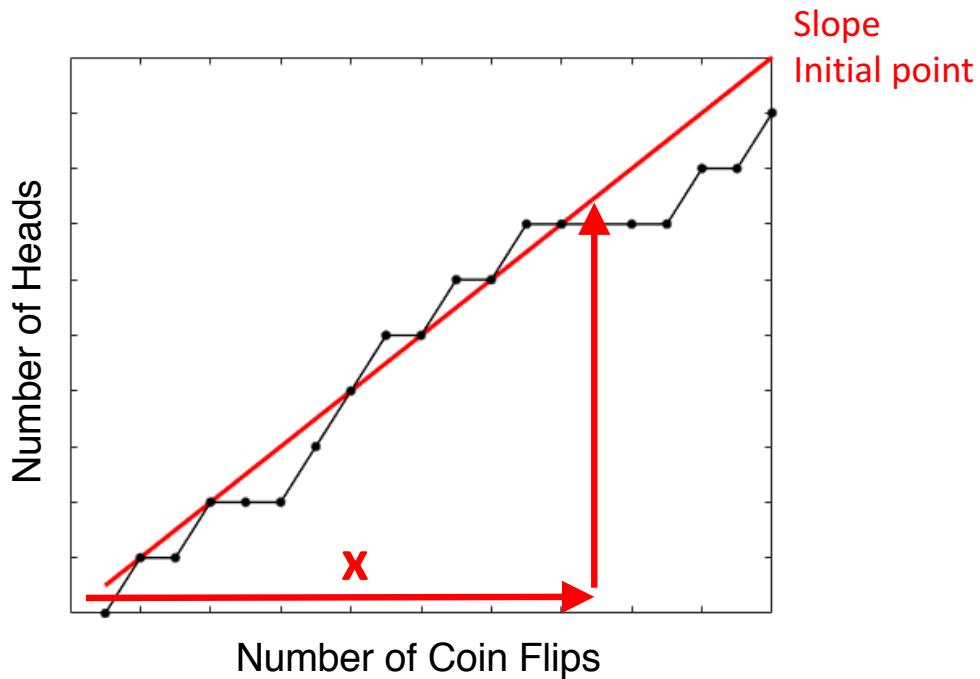
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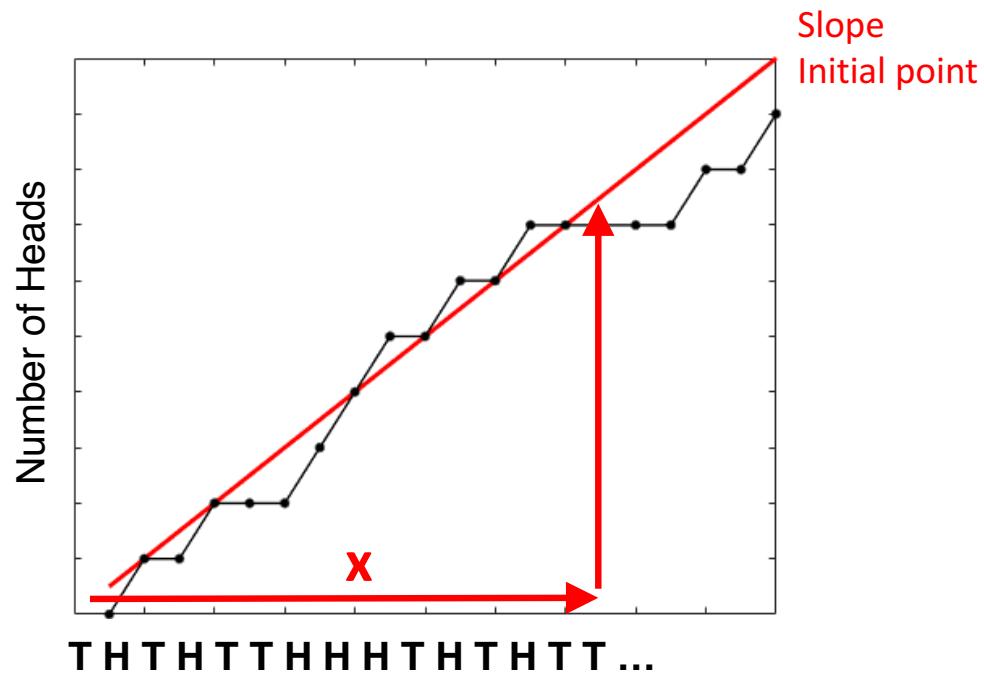
Random process and  
Deterministic process



Random process and  
Deterministic process



Random process and  
Deterministic process





100011000110001100011000110...

100011000110001100011000110...

100011000110001100011000110...

010101101011110100100100010...

