



# CRYPTOGRAPHIC HASHING

By Justin Reyes

# OUTLINE

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## Preface

Quick summary of cryptocurrency

01



04

## Project Overview

My thoughts on hashing and how I use my project to understand it better

## Blockchain Technology

Brief description of blockchain technology which leads to the main topic of hashes

02



05

## My Own Hashing Function

Shows and explains how my project works

## Hashing In Blockchain

Explanation of how hashes are used in blockchain technology and why they are used

03



06

## Conclusion

End of the presentation



**BITCOIN**

## **CRYPTOCURRENCY**

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A type of virtual currency that is secured by cryptographic technology



# BLOCKCHAIN

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A method of data storage that is distributed across a network of computers



## SECURE

Individual encryption of blocks using a complex cryptographic hashing algorithm



## CONCRETE RECORD

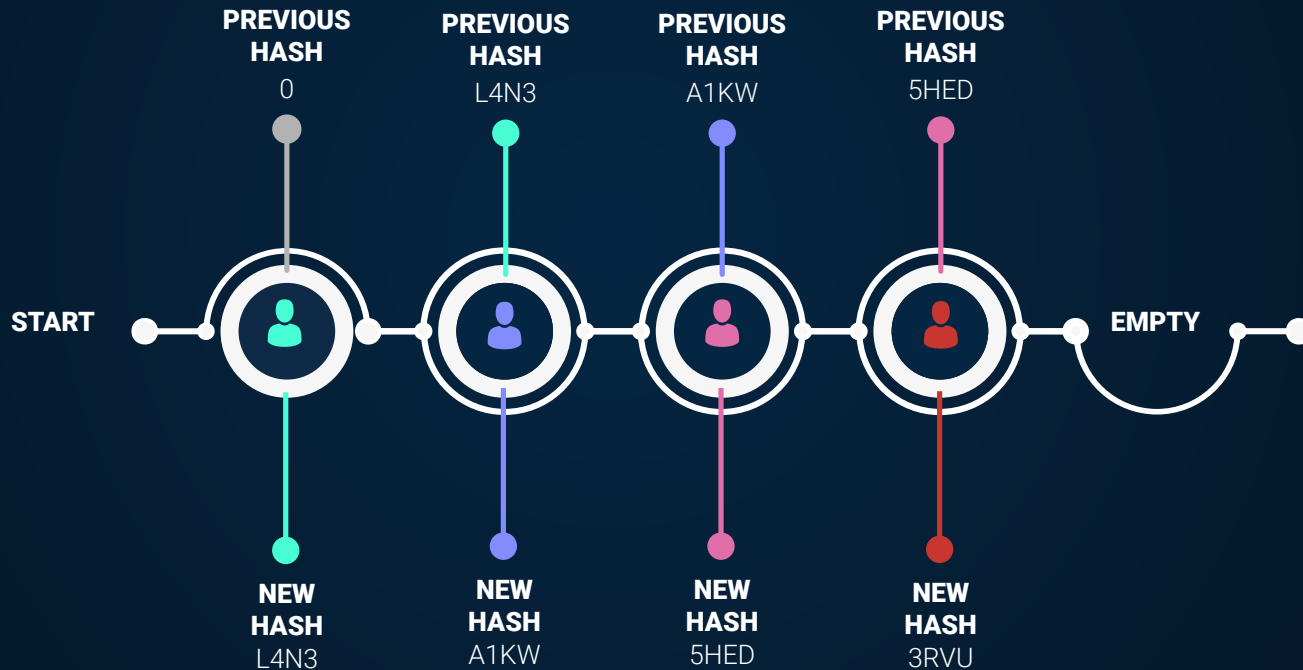
All previous transactions are public and can be reviewed

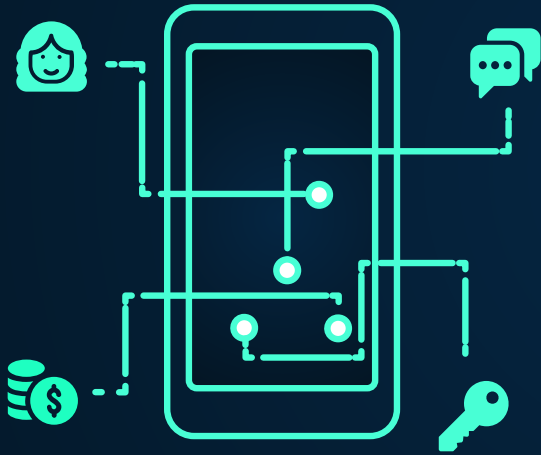


## DECENTRALIZED

Everyone has a copy of the blockchain, and attacking one block requires attacking the succeeding blocks

# HASHES IN THE CHAIN





# WHAT IS “IN” THE HASH

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In a block, there is a collection of different types of data all fed through a cryptographic hashing function to obtain a line of binary bits

# CHARACTERISTICS OF HASH FUNCTIONS

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**SEEMINGLY RANDOM**



**IRREVERSIBLE**



**SLIGHT MESSAGE CHANGE  
LEADS TO HUGE HASH CHANGE**



**HASH LENGTH IS ALWAYS THE SAME  
NO MATTER THE MESSAGE LENGTH**

This slide represents the program part of the presentation



# ANOTHER USE FOR HASHES

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Password: 12345 → Hash: a9c173cacfc5

## Actual Passwords

user1 = ???????  
user2 = ???????  
user3 = ???????  
user4 = ???????  
user5 = ???????  
user6 = ???????

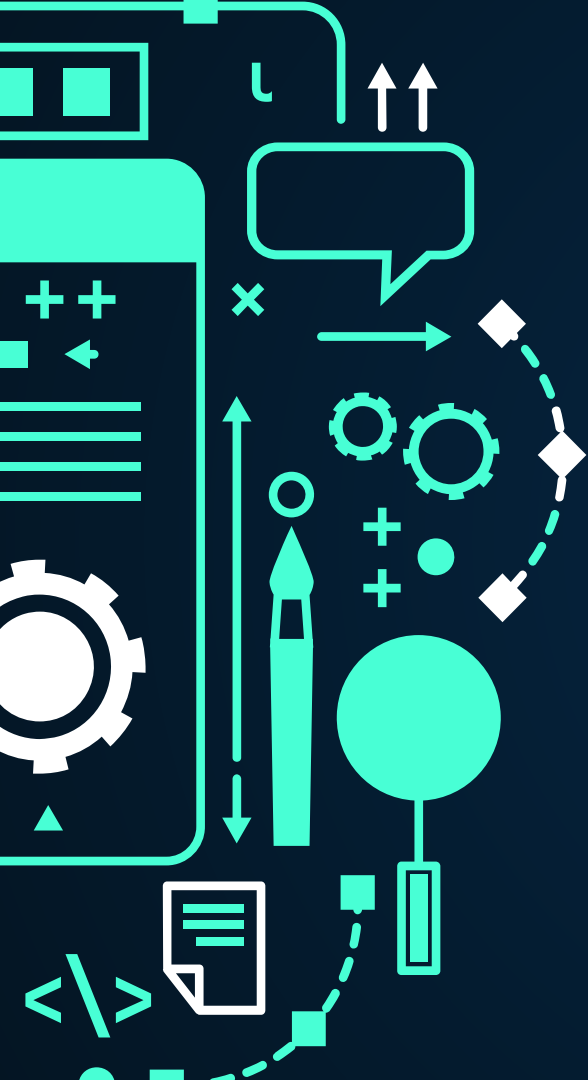
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## Password Hashes

user1 = a9c173cacfc5  
user2 = 169c0a33b0d4  
user3 = fbde19ccd62b  
user4 = ee9088f7ace2  
user5 = bac7f90d758b  
user6 = 62c7a34ad153

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# THANK YOU FOR WATCHING

Student Name: Justiri Reyes  
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Github:  
[https://github.com/ShaggyBox/CS131\\_2021\\_WEST/blob/main/MyHashFunction.cpp](https://github.com/ShaggyBox/CS131_2021_WEST/blob/main/MyHashFunction.cpp)