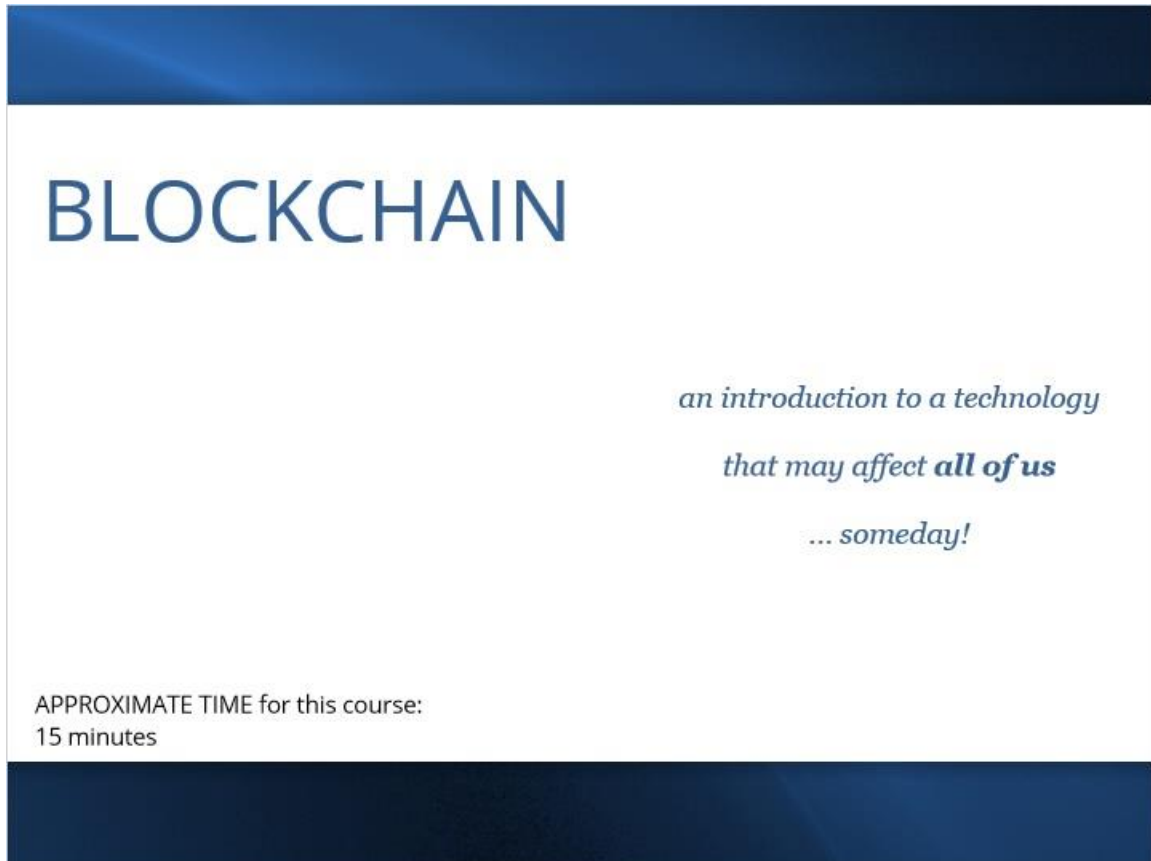


# BlockChain

## 1. Introduction

### 1.1 Title



## 1.2 Intended Audience

### BLOCKCHAIN – Intended Audience

#### Who Is This Course For?

It's for people who want a basic idea of what blockchain means ... and a general idea of how it works.

Hi, I'm Hazel. Glad you're interested in blockchains!

Let's get started!



#### UNDER THE HOOD

Implementing blockchain is a complex and highly technical undertaking. You'd need to know about peer-to-peer networks, hashing, and cryptography to do that. We are **not** getting that deep!

## 1.3 Intro

### BLOCKCHAIN – What is it? Why learn about it?

Blockchain is a *technology* used to record data. You're already familiar with other technologies to record data.

**Today** ... blockchain is used to record **cryptocurrency** transactions.

**Tomorrow** ... who knows? Visionaries see myriad uses for this technology, including the criminal justice system.

See the Resources tab in the upper right for a link to the NCSC article on blockchain.

#### RECORDING DATA



## Cryptocurrency (Slide Layer)

### BLOCKCHAIN – What is it? Why learn about it?

Blockchain is already familiar to you. You're already familiar with data. You're already familiar with recording data.

**Today** ... blockchain is used to record **cryptocurrency** transactions.

**Tomorrow** ... who knows? Visionaries see myriad uses for this technology, including the criminal justice system.

See the Resources tab in the upper right for a link to the NCSC article on blockchain.

#### RECORDING DATA

- SQL database
- Notepad
- Excel
- Word
- Blockchain

### 1.4 What does a blockchain do?

(Multiple Choice, 10 points, 1 attempt permitted)

## What does a blockchain do?

- ☒ It records data.
- ☐ It tracks transportation manifests for the construction industry.
- ☐ It produces invoices for tax-exempt corporations.
- ☐ It doesn't do anything as it's entirely theoretical at this point.

Correct	Choice
X	It records data.
	It tracks transportation manifests for the construction industry.
	It produces invoices for tax-exempt corporations.
	It doesn't do anything as it's entirely theoretical at this point.

### Feedback when correct:

That's right! You selected the correct response.

### Feedback when incorrect:

You did not select the correct response.

## Correct (Slide Layer)

What does a blockchain do?

- ☒ It records data.
- ☐ It tracks transportation manifests for the construction industry.
- ☐ It produces
- ☐ It doesn't do

**Correct**

That's right! You selected the correct response.

Continue

## Incorrect (Slide Layer)

What does a blockchain do?

- ☒ It records data.
- ☐ It tracks transportation manifests for the construction industry.
- ☐ It produces
- ☐ It doesn't do

**Incorrect**

You did not select the correct response.

Continue

## 2. Why Blockchain?

### 2.1 Purpose

#### BLOCKCHAIN – What Purpose Does It Serve?

Before we get into how blockchain works, let's talk about *why* blockchain evolved:

## BITCOIN

Bitcoin is a digital currency that is intentionally not governed by any central bank. But there is always a need to somehow manage things of value.

With paper currency, once Jack hands a \$20 bill to Jane, he can't spend that \$20 again.

But with a digital asset (like cryptocurrency) Jack theoretically can *copy* his \$20, hand a copy to Jane, a copy to Bill, and *keep* a copy.

So the problem was to ensure accuracy ... in a way that **everybody** could trust.

Notes:



## 2.2 Trust

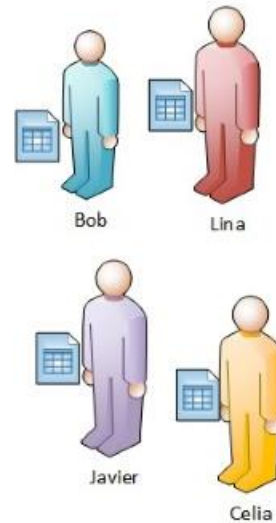
### BLOCKCHAIN – What Purpose Does It Serve?

So, how do you ensure accuracy and get everybody to trust that accuracy?

Give everybody *every* transaction.

When there are thousands of copies of the transactions, it's very hard to hack all of them.

So, a blockchain is almost like a **distributed database**. In fact, sometimes it's called a *distributed ledger*.



#### Technical Detail

Some blockchains have thousands of computers (called nodes) running the network.

Notes:

## Distributed Ledger (Slide Layer)

### BLOCKCHAIN – What Purpose Does It Serve?

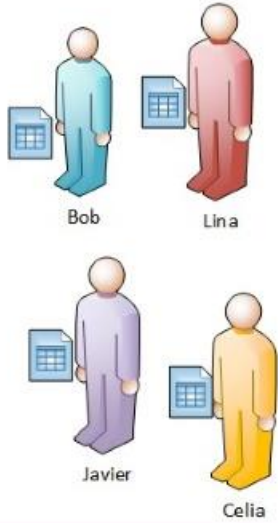
So, how do you ensure accuracy and get accurate data?

Give everyone a copy of the data.

When there are many copies of the transactions, it's very hard to hack all of them.

So, a blockchain is almost like a **distributed database**. In fact, sometimes it's called a *distributed ledger*.

Our Attorney application is a form of a distributed database... but to be like a blockchain, EVERY bit of data would be sent to ALL Attorney databases.



Bob Lina

Javier Celia

**Technical Detail**  
Some blockchains have thousands of computers (called nodes) running the network.

### 2.3 Question

(True/False, 10 points, 1 attempt permitted)

Blockchain establishes trust that a set of transactions is accurate.

☒ True

☐ False

Correct	Choice
X	True
	False

**Feedback when correct:**

That's right! You selected the correct response.

**Feedback when incorrect:**

You did not select the correct response.

**Correct (Slide Layer)**

Blockchain establishes trust that a set of transactions is accurate.

- ☒ True
- ☐ False

**Correct**

That's right! You selected the correct response.

Continue

### Incorrect (Slide Layer)

Blockchain establishes trust that a set of transactions is accurate.

- ☒ True
- ☐ False

#### Incorrect

You did not select the correct response.

Continue

## 2.4 RECAP

### BLOCKCHAIN – What Purpose Does It Serve?



Are we good on all these points?

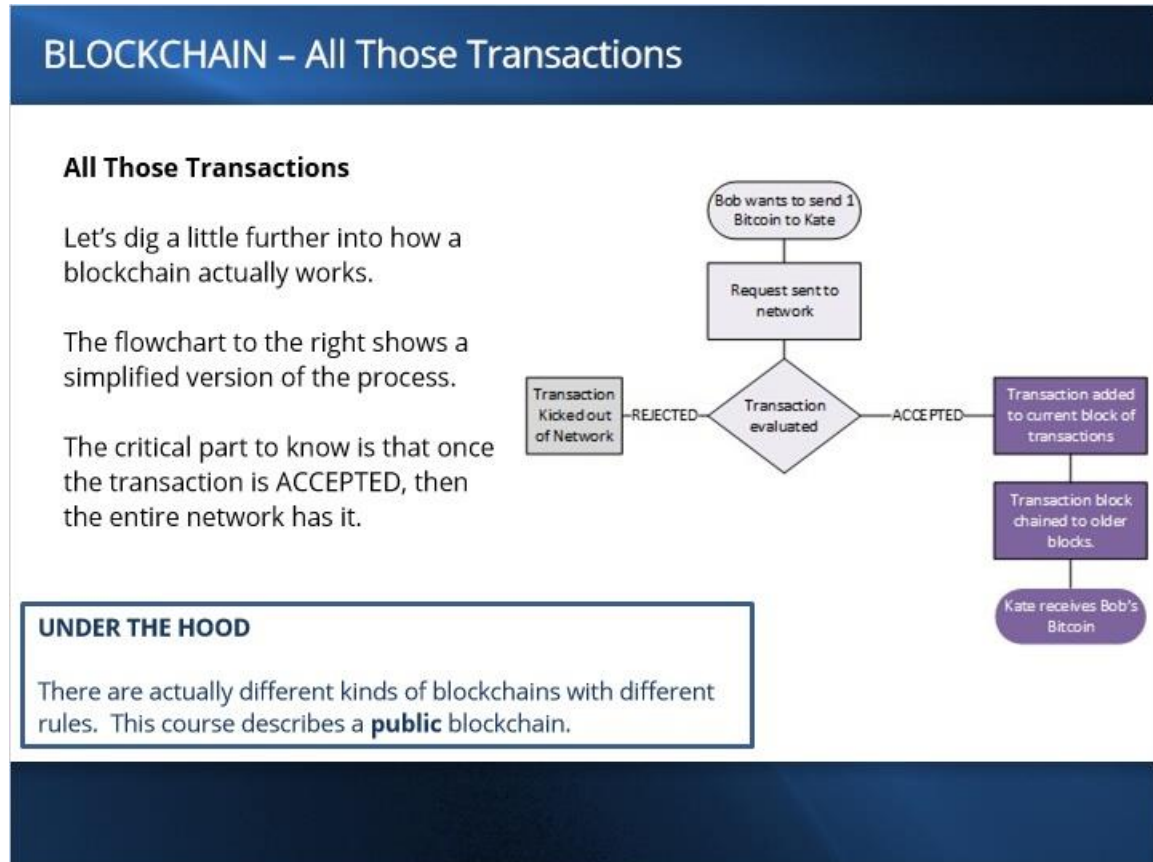
Then let's move on!

#### RECAP

- Blockchain is a way to record data (often cryptocurrency transactions).
- It evolved to support Bitcoin.
- Although cryptocurrencies do not have central banks or governing bodies, it's still critical that people trust the accuracy of the recordkeeping.
- So, blockchain distributes a full set of transactions to numerous locations.

### 3. Blockchain in Action

#### 3.1 All Those Transactions



Notes:

### 3.2 Explain the Video

#### BLOCKCHAIN – Video Coming



If the previous slide was a little confusing, there's a video coming up that might help!

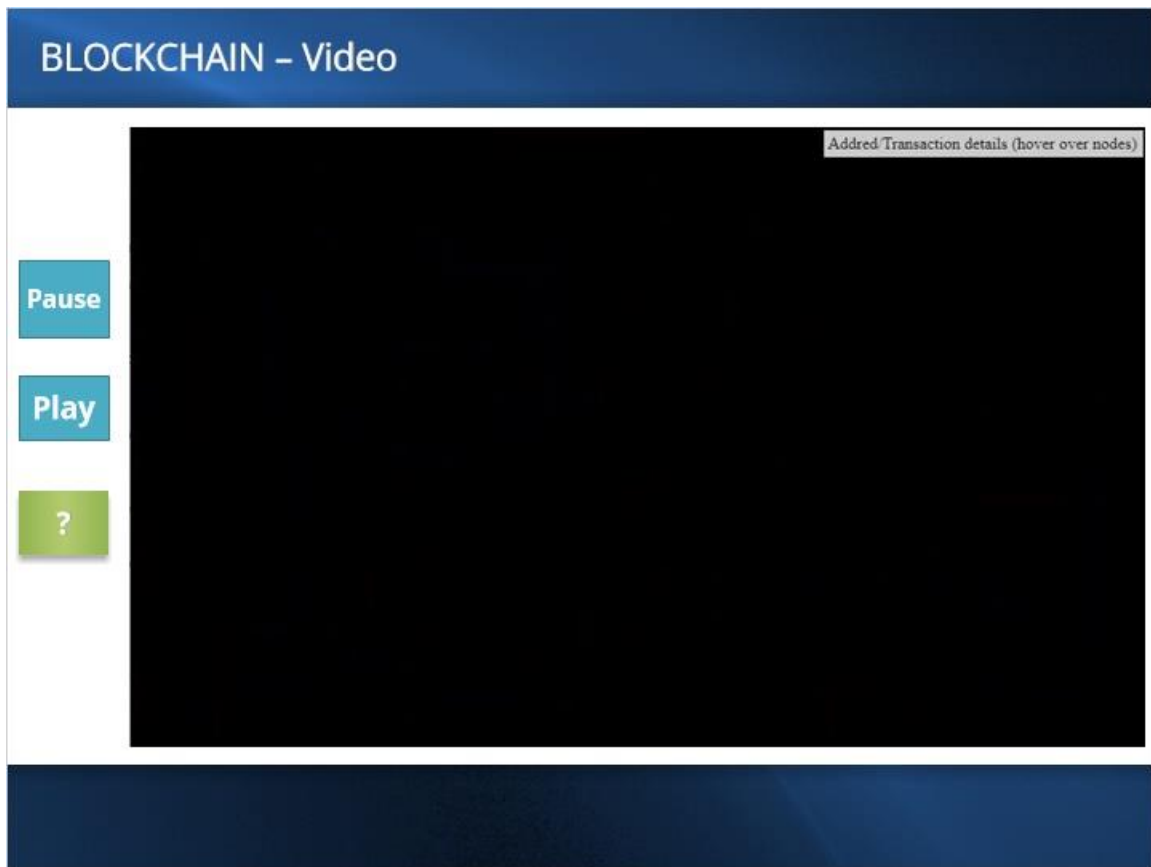
The next slide has video showing the Bitcoin blockchain *visualized*.

Blocks will float on the screen and get chained together with thin blue lines.

Watch long enough, and you'll see them get grouped into even larger blocks.



### 3.3 See it in Action



## Explanation (Slide Layer)

### BLOCKCHAIN – Video

Paused/Transaction details (hover over nodes)

Pause

Play

?

Each block is a transaction that has been accepted to the blockchain network. (The colors represent various states.)

All blocks are transmitted to ALL nodes (the computers that make up the blockchain network), so just imagine how much work is going on!

The thin blue lines represent transactions that have been bundled together.

### 3.4 More on the Video

## BLOCKCHAIN – Video Recap



Now you've seen a  
public blockchain in  
action!

Yes, the colors in the video had  
meaning ...

There is a lot of work going on under  
the hood to make sure things are  
accurate, pass all the validations,  
and are transmitted to all nodes in  
the network.

Those things are far more technical  
in nature and out of scope for this  
course.

[See Video Again](#)

### 3.5 RECAP

## BLOCKCHAIN – RECAP



Are we good on all these points?


Then let's move on!

### RECAP

- A request to move a Bitcoin is called a transaction.
- Accepted transactions are visible to the entire network.
- There is a lot of work going on under the hood to make all this work, but diving that deep isn't needed for a high level understanding.

### 3.6 Decision

## BLOCKCHAIN – Next Up



You can take the quiz now ... or get into a few more details. It's up to you!


[Take Quiz](#)

[More Info](#)

## 4. Quiz

### 4.1 Now, the Quiz!

Now, the Quiz!



This quiz is intended to demonstrate the types of questions that can be used.

Now that you've learned some high level information about blockchains, take this short quiz to see where you may want to focus your future learning efforts.

### 4.2 A blockchain is a technology to record \_\_\_\_\_.

*(Fill-in-the-Blank, 10 points, 1 attempt permitted)*

A blockchain is a technology to record \_\_\_\_\_.

type your text here

Choice
data
information
transactions

**Feedback when correct:**

That's right! You selected the correct response.

**Feedback when incorrect:**

You did not select the correct response.

### Correct (Slide Layer)

A blockchain is a technology to record \_\_\_\_\_.

type your text here

**Correct**

That's right! You selected the correct response.

Continue



### Incorrect (Slide Layer)

A blockchain is a technology to record \_\_\_\_\_.

type your text here

**Incorrect**

You did not select the correct response.

Continue

### ***4.3 Which of the following industries are interested in blockchain technology?***

*(Multiple Response, 10 points, 1 attempt permitted)*

## Which of the following industries are interested in blockchain technology?

Select the correct answer or answers.

- ☐ Emergency Medicine
- ☒ Finance
- ☒ Criminal Justice
- ☐ Gold Mining

Correct	Choice
	Emergency Medicine
X	Finance
X	Criminal Justice
	Gold Mining

### Feedback when correct:

That's right! You selected the correct response.

### Feedback when incorrect:

You did not select the correct response.

**Correct (Slide Layer)**

Which of the following industries are interested in blockchain technology?

Select the correct answer or answers.

☐ Emergency Medicine

☒ Finance

☒ Criminal Justice

☐ Gold Mining

**Correct**

That's right! You selected the correct response.

Continue

### Incorrect (Slide Layer)

Which of the following industries are interested in blockchain technology?

Select the correct answer or answers.

- ☐ Emergency Medicine
- ☒ Finance
- ☒ Criminal Justice
- ☐ Gold Mining

**Incorrect**

You did not select the correct response.

Continue

**4.4 Blockchain is a \_\_\_\_\_ project to implement.**

*(Word Bank, 10 points, 1 attempt permitted)*

Blockchain is a \_\_\_\_\_ project to implement.

Drag the correct response to the oval above.

highly technical

moderately technical

low-tech

no-tech

Correct	Choice
X	highly technical
	moderately technical
	low-tech
	no-tech

**Feedback when correct:**

That's right! You selected the correct response.

**Feedback when incorrect:**

You did not select the correct response.

**Correct (Slide Layer)**

Blockchain is a \_\_\_\_\_ project to implement.

Drag the correct response to the oval above.

highly technical

moderately technical

low-tech

no-tech

**Correct**

That's right! You selected the correct response.

Continue

### Incorrect (Slide Layer)

Blockchain is a \_\_\_\_\_ project to implement.

Drag the correct response to the oval above.

highly technical

moderately technical

low-tech

no-tech

**Incorrect**

You did not select the correct response.

Continue

### ***4.5 Drag the steps in a blockchain transaction to the correct order.***

*(Sequence Drag-and-Drop, 10 points, 1 attempt permitted)*

Drag the steps in a blockchain transaction to the correct order.

1. Request to transfer bitcoin is entered and submitted to the blockchain network.
2. The blockchain network validates the transaction. (And assume the transaction is accepted.)
3. The blockchain network adds the transaction to the current set.
4. The blockchain network adds the transaction set to older transactions.

Correct Order

Request to transfer bitcoin is entered and submitted to the blockchain network.

The blockchain network validates the transaction. (And assume the transaction is accepted.)

The blockchain network adds the transaction to the current set.

The blockchain network adds the transaction set to older transactions.

**Feedback when correct:**

That's right! You selected the correct response.

**Feedback when incorrect:**

You did not select the correct response.



### Correct (Slide Layer)

Drag the steps in a blockchain transaction to the correct order.

1. Request to transfer bitcoin is entered and submitted to the blockchain network.
2. The blockchain network validates the transaction. (And assume the transaction is accepted.)
3. The block is added to the blockchain.
4. The block is broadcast to the network.

**Correct**

That's right! You selected the correct response.

Continue

### Incorrect (Slide Layer)

Drag the steps in a blockchain transaction to the correct order.

1. Request to transfer bitcoin is entered and submitted to the blockchain network.
2. The blockchain network validates the transaction. (And assume the transaction is accepted.)
3. The block is added to the blockchain.
4. The block is broadcast to the network.

**Incorrect**

You did not select the correct response.

Continue

### 4.6 Results Slide

*(Results Slide, 0 points, 1 attempt permitted)*

Results

Your Score:

%Results.ScorePercent%% (%Results.ScorePoints% points)

Passing Score:

%Results.PassPercent%% (%Results.PassPoints% points)

Result:

Review Quiz

Results for
1.4 What does a blockchain do?
2.3 Question
4.2 A blockchain is a technology to record _____.
4.3 Which of the following industries are interested in blockchain technology?
4.4 Blockchain is a _____ project to implement.
4.5 Drag the steps in a blockchain transaction to the correct order.

Result slide properties

Passing

80%

Score

Notes:

### Success (Slide Layer)

## Results


Your Score:

%Results.ScorePercent%% (%Results.ScorePoints% points)

Passing Score:

%Results.PassPercent%% (%Results.PassPoints% points)

Result:

 Congratulations, you passed.

[Review Quiz](#)

## Failure (Slide Layer)

### Results

Your Score:


%Results.ScorePercent%% (%Results.ScorePoints% points)

Passing Score:

%Results.PassPercent%% (%Results.PassPoints% points)

---

Result:

 You did not pass.

Review Quiz

#### **4.7 Thank you!**

Thank you!

Thanks for taking the time to go through this course!




**Notes:**

## 5. More Info

### 5.1 Going Further

BLOCKCHAIN – More Details!

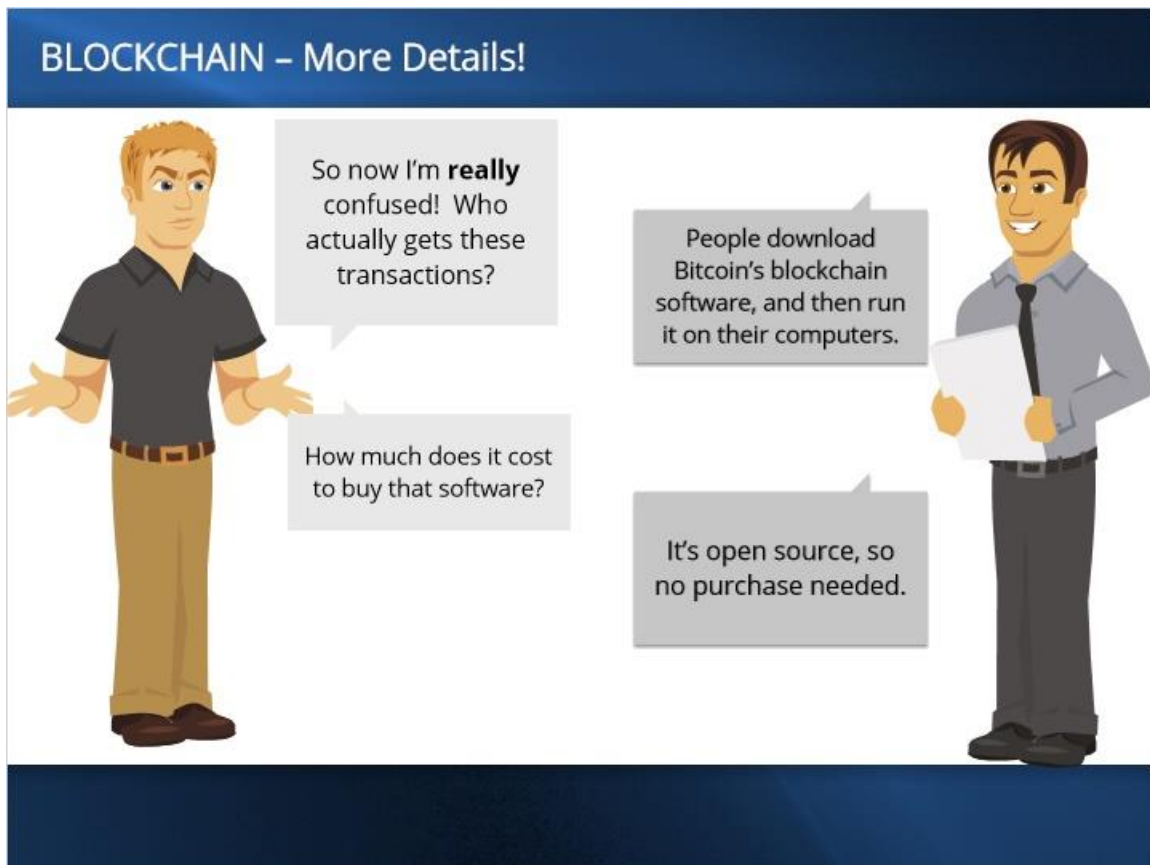


So you want to know a little more? Great!

Let's drop in as Walt asks questions of Bob.

**Note:**  
There's no audio in this section.

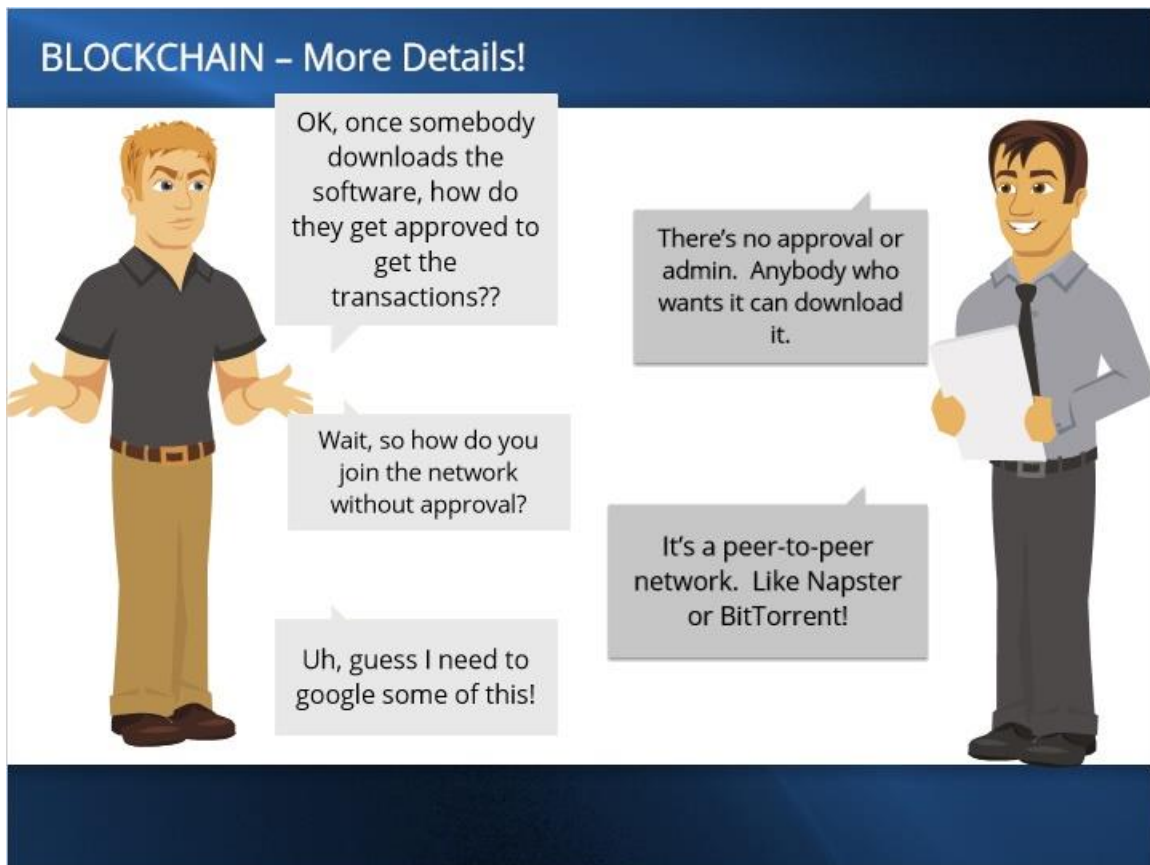
## 5.2 Going Further 2



Notes:



### 5.3 Going Further 3



## 5.4 Going Further 4

### BLOCKCHAIN – More Details!

The image shows a dialogue between two characters. On the left, a man with orange hair and a dark polo shirt asks questions. On the right, a man with dark hair, wearing a light blue shirt and tie, holds a white document and provides answers. The dialogue is presented in speech bubbles and text boxes.

Wait, so if there's no admin how do data changes get done?

Oh, so is that how it can't be hacked?

So, 2501 of the 5,000 computers for Bitcoin?

Data is pretty much set in stone once it's accepted. Part of blockchain's charm!

It's not easy to hack a blockchain. You'd need to control at least 51% of all the computers running the blockchain.

Yep!

## 5.5 Going Further 5

