LFS170x - Blockchain: Understanding Its Uses and Implications

Course Overview

Blockchain technology is changing how business is executed. It's important to understand why blockchain is different and how it works in comparison with technologies of the past.

The first segment covers all the main concepts of what blockchain is. It discusses how it began as a triple ledger system first introduced for the administration of the cryptocurrency Bitcoin, and how it is now applied to all aspects of business including government, banking, supply chains, and a host of other industries.

It also analyzes the concept of transparent ledgers, both public and permissioned, and focuses on using cryptography to achieve consensus, immutability, and governance of transactions. This is all part of blockchain's ability to provide "trusted data from untrusted sources", disrupting traditional accounting methodologies and international trade.

The course then dives into the various methods of blockchain governance that currently exist in the marketplace as well as how consensus fits into governance. It explores how to reach consensus through proof-of-work or proof-of-stake.

Other aspects of the course include examining the very specific features of blockchain that solve problems that have been difficult to overcome in the past with more centralized architectures.

The final part of the course takes a deep dive into the various use cases of blockchain, complete with analyzing real examples of how different industries are executing the technology and improving their business. Examining a problem, and then depicting a blockchain use case that solves the problem, will help gain an understanding of how blockchain is applied to real world situations.

Course Instructors

Rosa Santos is the Director of Education at Blockchain Training Alliance. She serves as a primary resource on all Blockchain training and education for the company. Rosa manages and integrates the educational team's efforts to provide high quality education standards. This is essentially done by implementing, developing and maintaining the full cycle of all training and education materials and learning platforms. Rosa also has a 10-year background in Journalism.

Kris Bennett is a Senior Instructor at Blockchain Training Alliance. He has delivered Blockchain training worldwide, bringing this emerging technology to different markets. Kris has developed high quality course content ensuring the instructional material is comprehensive and relatable to real-world solutions. His skills include developing an Architecture training course and contributing his expertise to a certification exam. Kris also has a 20-year background in custom software design, delivery, and consulting.

Ernesto Lee is CTO of Blockchain Training Alliance. He has extensive knowledge in developing content and providing training in Blockchain. His skills include building Hyperledger Chaincode for developer courses and building Solidity-based Smart Contracts for Ethereum networks. Ernesto also has 20 years of extensive experience with various aspects of computer

programming, analysis, development, implementation, testing, maintenance, and support. Extensive experience with client/server architectures, data communication, GUI applications design and development in Java on WebLogic Server, WebCenter Portal, Apache Spark, Apache Hive and Apache HBase.

Elliott Callender founded Nodeunlock after becoming besotted by the potential for blockchain technology to change lives immeasurably. He has spent over a decade in the financial services world, simplifying investing with large financial institutions, consulting for Wealth Management & FinTech firms and running accelerated learning programmes. Elliott is now on a mission to make understanding blockchain as simple, hands-on, fun and engaging as possible.

Dylan Davis is a man of few words, but many questions. He works within the space of innovation and strategy for large financial institutions, with the goal of making them a little faster/interesting. Overtime Dylan has embedded himself into the blockchain community as a thought leader, speaker, facilitator, moderator, and all around entertainer.

Audience

"*LFS170x - Blockchain: Understanding Its Uses and Implications*" is designed for developers, product owners, managers and executives.

Prerequisites

No previous experience required for this course.

Course Length

15-20 hours

Course Learning Objectives

By the end of this course, you should be able to:

- Understand what blockchain is.
- Understand blockchain's impact and potential for change around the world.
- Understand how blockchain is applied to all aspects of business.
- Demonstrate some of the immediate blockchain use cases in technology, business, and enterprise products and institutions.

Course Outline

Welcome!

- Welcome!

Chapter 1. Introduction to Blockchain

- Learning Objectives
- Introduction to Blockchain
- Basis of Blockchain
- Distributed Ledgers
- Cryptography
- Transparency
- Immutability
- Smart Contracts
- Blockchain Security
- Public and Permissioned Blockchains
- Blockchain Flow
- Consensus and Fault Tolerance
- Governance and Blockchain
- Identity and Anonymity on Blockchain
- Trust and Trustless
- Knowledge Check
- Summary

Chapter 2. Governance and Consensus

- Learning Objectives

- Standard vs. Blockchain Governance
- Consensus
- Governance with Autonomy
- Governance for Enterprise
- Knowledge Check
- Summary

Chapter 3. Blockchain Problem Solving

- Learning Objectives
- Immutability
- Transparency
- Autonomy
- Multi-Party Transactions
- Double Spend
- Knowledge Check
- Summary

Chapter 4. Blockchain Use Cases

- Learning Objectives
- Blockchain Use Cases
- Healthcare
- Voting
- Identity Management
- Land Records and Government
- Blockchain with Supply Chain
- Internet of Things (IoT)
- Energy
- Future of Blockchain
- Knowledge Check
- Summary

Final Exam

edX Platform

If you are using edX for the first time, we strongly encourage you to start by taking a free 'how to use edX' course that the team at edX has made available. In this course, you will learn how to navigate the edX platform, how to connect with other edX learners, how to answer problems on the edX platform, how grades work in edX courses, and how to complete your first course.

Click here to register for "*DemoX*" and you will be on your way. You will find the edX platform simple and intuitive.

Getting Help

For any **technical issues** with the edX platform (including login problems and issues with the Verified Certificate), please use the **Help** icon located on the upper right side of your screen.

One great way to interact with peers taking this course and resolving any **content-related issues** is via the **Discussion Forums**. These forums can be used in the following ways:

- To discuss concepts, tools, and technologies presented in this course, or related to the topics discussed in the course material.
- To ask questions about course content.
- To share resources and ideas related to blockchain.

We strongly encourage you not only to ask questions, but to share with your peers opinions about the course content, as well as valuable related resources. The Discussion Forums will be reviewed periodically by The Linux Foundation staff, but it is primarily a community resource, not an 'ask the instructor' service.

To learn more tips on how to use them, read the following article: "*Getting the Most Out of the edX Discussion Forums*".

Course Timing

This course is entirely self-paced; there is no fixed schedule for going through the material. You can go through the course at your own pace, and you will always be returned to exactly where you left off when you come back to start a new session. However, we still suggest you avoid long breaks in between periods of work, as learning will be faster and content retention improved.

The chapters in the course have been designed to build on one another. It is probably best to work through them in sequence; if you skip or only skim some chapters quickly, you may find there are topics being discussed you have not been exposed to yet. But this is all self-paced and you can always go back, so you can thread your own path through the material.

Learning Aids

Besides simple exposition through text and figures, this course uses several additional methods to present the learning material, including videos, use cases, labs, and knowledge check questions.

Grading

At the end of each chapter, you will have a set of graded **knowledge check questions**, that are meant to further check your understanding of the material presented. The grades obtained by answering these knowledge check questions will represent **20%** of your final grade.

The remaining **80%** of your final grade is represented by the score obtained in the **final exam**. The final exam is located at the end of the course and it consists of 20 questions.

You will have a maximum of two attempts to answer each knowledge check and final exam question (other than True/False questions, in which case, you have only one attempt). You are free to reference your notes, screens from the course, etc., and there is no time limit on how long you can spend on a question. You can always skip a question and come back to it later.

In order to complete this course with a passing grade, you must obtain a passing score (knowledge check and final exam) of minimum 70%.

Course Progress and Completion

Once you complete the course (including knowledge check questions and final exam), you will want to know if you have passed. You will be able to see your completion status using the **Progress** tab at the top of your screen, which will clearly indicate whether or not you have achieved a passing score.

Audit and Verified Tracks

You can enroll into an audit or a verified track. In an audit track, you will have access to the course readings, videos, and learning aids, but no certificates are awarded when auditing.

In order to receive a certificate, you will need to obtain a passing grade (please refer to the "Grading" section above), verify your identity with edX, and pay a fee. Once all edX requirements have been met, you can download your certificate from the Progress tab.

To learn more about audit and verified tracks, visit edX Help Center > Certificates.

Professional Certificate Program

Professional Certificate programs are series of courses designed by industry leaders and top universities to build and enhance critical professional skills needed to succeed in today's most in-demand fields.

"*LFS170x - Blockchain: Understanding Its Uses and Implications*" and "*LFS171x - Blockchain for Business: An Introduction to Hyperledger Technologies*" are part of the **Blockchain for**

Business Professional Certificate. In order to earn the Blockchain for Business Professional Certificate, you have to obtain **verified certificates from the two above-mentioned courses**.

To learn more about our Professional Certificate, click here.

About The Linux Foundation

The Linux Foundation partners with the world's leading developers and companies to solve the hardest technology problems and accelerate open technology development and commercial adoption. The Linux Foundation makes it its mission to provide experience and expertise to any initiative working to solve complex problems through open source collaboration, providing the tools to scale open source projects: security best practices, governance, operations and ecosystem development, training and certification, licensing, and promotion.

Linux is the world's largest and most pervasive open source software project in history. The Linux Foundation is home to Linux creator Linus Torvalds and lead maintainer Greg Kroah-Hartman, and provides a neutral home where Linux kernel development can be protected and accelerated for years to come. The success of Linux has catalyzed growth in the open source community, demonstrating the commercial efficacy of open source and inspiring countless new projects across all industries and levels of the technology stack.

The Linux Foundation's work today extends far beyond Linux, fostering innovation at every layer of the software stack. The Linux Foundation is the umbrella organization for many critical open source projects that power corporations today, spanning all industry sectors:

- Big data and analytics (ODPi, R Consortium)
- Networking (OpenDaylight, ONAP, OPNFV)
- Embedded (Dronecode, Zephyr)
- Web tools (JS Foundation, Node.js)
- Cloud computing (Cloud Foundry, Cloud Native Computing Foundation, Open Container Initiative)
- Automotive (Automotive Grade Linux)
- Security (The Core Infrastructure Initiative)
- Blockchain (Hyperledger)
- And many more.

To learn more about The Linux Foundation, click here.

The Linux Foundation Events

The Linux Foundation hosts an increasing number of events each year, including:

- Open Source Summit North America, Europe, Japan, China
- Open Networking Summit North America, Europe

- Open Source Leadership Summit
- KubeCon/CloudNativeCon North America, Europe, China
- And many more.

To learn more about The Linux Foundation events and to register, click here.

The Linux Foundation Training

The Linux Foundation offers several types of training:

- Classroom
- Online
- On-site
- Events-based.

To get more information about specific courses offered by The Linux Foundation, click here.

The Linux Foundation Certifications

The Linux Foundation certifications give you a way to differentiate yourself in a job market that's hungry for your skills. We've taken a new, innovative approach to open source certification that allows you to showcase your skills in a way that other peers will respect and employers will trust:

- You can take your certification from any computer, anywhere, at any time
- The certification exams are performance-based
- The exams are distribution-flexible
- The exams are up-to-date, testing knowledge and skills that actually matter in today's IT environment.

The Linux Foundation and its collaborative projects currently offer the following certifications:

- Linux Foundation Certified System Administrator (LFCS)
- Linux Foundation Certified Engineer (LFCE)
- Certified Kubernetes Administrator (CKA)
- Certified Kubernetes Application Developer (CKAD)
- Cloud Foundry Certified Developer (CFCD).

Open Source Guides for the Enterprise

The Linux Foundation in partnership with the TODO Group developed a set of guides leveraging best practices for:

- Running an open source program office, or
- Managing an open source project in your organization.

To learn more, you can visit the following webpage: "*Open Source Guides for the Enterprise*".

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