

Government of Pakistan

**National Vocational and Technical Training Commission**

**Prime Minister's Hunarmand Pakistan Program**

"Skills for All"



**Course Contents/ Lesson Plan**

**Course Title: Blockchain**

**Duration: 3 Months**

<b>Trainer Name</b>	Mansoor Ahmad Rasheed
<b>Course Title</b>	<b>Blockchain</b>
<b>Objective of Course</b>	With the growing demand for Blockchain technology, the need for skilled Blockchain developers has skyrocketed. Led by expert instructors with years of experience in the industry, this Interactive Live Training covers everything from the basics of Blockchain technology to advanced concepts such as smart contracts, consensus algorithms, and decentralized applications. However, what really sets this training apart is its interactive nature. Blockchain Developer. You'll have the opportunity to talk, share, and discuss ideas with your fellow learners, as well as with your expert instructors.
<b>Learning Outcome of the Course</b>	<p><b>Knowledge Proficiency Details</b></p> <p>With the benefits and advantages that blockchain provides over other systems, this brilliant technology of distributed ledgers also has the potential to revolutionize and redefine a large number of businesses, sectors, and industries in the near future. The technology surely offers many opportunities to tech enthusiasts or any individual wanting to build their knowledge and understanding in blockchains.</p> <p><b>Skills Proficiency Details</b></p> <p>The Certified Blockchain Developer course aims to provide a deeper understanding of blockchains with greater insights into the key blockchain concepts. It is an exhaustive training and exam-based program which aims to provide proof of knowledge to the certificate holder within the blockchain space.</p> <p>Know what it means to be a Certified Blockchain Developer</p> <p>Learn about Ethereum, IPFS, Hyperledger and R3 Corda</p> <p>Explore how to deploy Ethereum Smart Contract on Hyperledger Fabric</p> <p>Gain an in-depth knowledge on R3 Corda</p>
<b>Course Execution Plan</b>	<p>Total Duration of Course: 3 Months</p> <p>Class Hours: 4 Hours per day</p> <p>Theory: 20% Practical: 80%</p>

<b>Companies Offering Jobs in the respective trade</b>	<ul style="list-style-type: none"> <li>• <b>The Digi Tech Resource Group, LLC.</b></li> <li>• <b>Lahore</b></li> <li>• <b>Brainnest Islamabad</b></li> <li>• <b>NetSole</b></li> <li>• <b>I2c</b></li> <li>• <b>Nextbridge Ltd. Lahore</b></li> <li>• <b>MS Solution Lahore</b></li> <li>• <b>Turing Pakistan</b></li> <li>• <b>Technoli Media Pvt Ltd Islamabad</b></li> <li>• <b>CoinBitSolutions Lahore</b></li> <li>• <b>PureLogics</b></li> <li>• <b>Lahore</b></li> <li>• <b>Systems</b></li> <li>• <b>DHRP</b></li> <li>• <b>Islamabad</b></li> <li>• <b>Purelogics</b></li> </ul>
<b>Job Opportunities</b>	<ul style="list-style-type: none"> <li>• <b>Blockchain Developer</b></li> </ul>

	<ul style="list-style-type: none"> <li>• Frontend Engineer (Blockchain)</li> <li>• Blockchain Expert</li> <li>• Blockchain Team Lead</li> <li>• Chief Technology Officer (Blockchain)</li> </ul>
No of Students	25
Learning Place	Classroom/Lab
Instructional Resources	<ul style="list-style-type: none"> <li>• Hash Cryptography and Algorithm <a href="https://www.tutorialspoint.com/cryptography/cryptography_hash_functions.htm">https://www.tutorialspoint.com/cryptography/cryptography_hash_functions.htm</a></li> <li>• Digital Signatures <a href="https://www.techtarget.com/searchsecurity/definition/digital-signature">https://www.techtarget.com/searchsecurity/definition/digital-signature</a></li> <li>• Distributed Ledger Technology <a href="https://www.techtarget.com/searchcio/definition/distributed-ledger">https://www.techtarget.com/searchcio/definition/distributed-ledger</a></li> <li>• Mining <a href="https://www.investopedia.com/tech/how-does-bitcoin-mining-work/">https://www.investopedia.com/tech/how-does-bitcoin-mining-work/</a></li> <li>• Byzantine Fault Tolerance <a href="https://www.geeksforgeeks.org/practical-byzantine-fault-tolerancepbft/">https://www.geeksforgeeks.org/practical-byzantine-fault-tolerancepbft/</a></li> <li>• Consensus Protocols <a href="https://www.investopedia.com/terms/c/consensus-mechanism-cryptocurrency.asp#:~:text=A%20consensus%20mechanism%20is%20any,the%20most%20prevalent%20consensus%20mechanisms.">https://www.investopedia.com/terms/c/consensus-mechanism-cryptocurrency.asp#:~:text=A%20consensus%20mechanism%20is%20any,the%20most%20prevalent%20consensus%20mechanisms.</a></li> <li>• Blockchain with implementation of solidity <a href="https://www.udemy.com/course/blockchain-practical-dapps-development-using-solidity/">https://www.udemy.com/course/blockchain-practical-dapps-development-using-solidity/</a></li> </ul>

Scheduled Week	Module Title			Learning Units	Remarks
Week 1	Introduction to Blockchain	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• Motivational Lecture</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Course Introduction</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• Success stories</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Job market</li> </ul>	
		Day 2	Hour#1	<ul style="list-style-type: none"> <li>• Course Application in Industry</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Institute/work ethics</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• Introduction to Blockchain</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Objectives / Roles</li> </ul>	
		Day 3	Hour # 1 & 2	<ul style="list-style-type: none"> <li>• Distributed Consensus</li> <li>• Concepts of Cryptography</li> <li>• Symmetric Key Algorithm</li> </ul>	
			Hour # 3 & 4	<ul style="list-style-type: none"> <li>• Permission and Permissionless Blockchain - Learning Outcomes</li> <li>• Ethereum Solidity Smart Contract and deploy it on the Remix platform- Exercises - Hello World</li> </ul>	
		Day 4	Hour # 1 & 2	<ul style="list-style-type: none"> <li>• Intro to Blockchain</li> <li>• Why blockchain was invented</li> <li>• What is the advantage of Blockchain</li> <li>• How Blockchain works?</li> </ul>	
			Hour # 3 & 4	<ul style="list-style-type: none"> <li>• View Function</li> <li>• Write Function</li> <li>• Data Types (uint, int, uint8, string, bytes32, bool, adress)</li> <li>• create and view an array</li> </ul>	

		Day 5	Hour # 1 & 2	<ul style="list-style-type: none"> <li>• What are the Existing Blockchains.</li> <li>• How the Blockchain differs from the ordinary ledger</li> </ul>	<i>Details may be seen at Annexure-I</i>
			Hour # 3 & 4	<ul style="list-style-type: none"> <li>• Hyper Ledger Fabric Model</li> <li>• Order-Execute Paradigm</li> </ul>	<b>Task 1 Trusted Crowdfunding Platform Using a Smart Contract</b>
<b>Week 2</b>	Information Gathering, Foot printing, Reconnaissance and Enumeration	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• Distributed Consensus,</li> <li>• Concepts of Cryptography</li> <li>• Symmetric Key Algorithm</li> </ul>	<b>Task 2 Exact Shipment Location Data</b> <i>Details may be seen at Annexure-I</i>
			Hour#2	<ul style="list-style-type: none"> <li>• Symmetric Key Algorithm</li> <li>• Public Key Cryptography</li> <li>• Introduction to Blockchain - Lesson Summary</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• create, view and update an array</li> <li>• create, view and update a DYNAMICarray</li> <li>• Arrays : push() method</li> </ul>	
		Day 2	Hour#1	<ul style="list-style-type: none"> <li>• How the Hash Is generated using SHA256</li> </ul>	

		Hour#2	<ul style="list-style-type: none"> <li>• Different type of Hashing Algorithm</li> <li>• How the Hash of the Block is generated.</li> </ul>
		Hour#3	<ul style="list-style-type: none"> <li>• Limitations of Order-Everyte Daradium</li> <li>• State Machine Replication</li> </ul>
		Hour#4	<ul style="list-style-type: none"> <li>• Arrays : bytes array</li> <li>• Functions : parameters &amp; arguments</li> </ul>
Day 3	Hour#1	<ul style="list-style-type: none"> <li>• SHA256 vs different hashing Algorithms.</li> </ul> <p>Visual representation and explaining that how the SHA256 is working</p>	
	Hour#2	<ul style="list-style-type: none"> <li>• What are the Digital Signatures</li> <li>• Asymmetric Encryption</li> <li>• Symmetric Encryption</li> </ul>	
	Hour#3	<ul style="list-style-type: none"> <li>• Array : adding with function parameters</li> <li>• Array : updating</li> <li>•</li> </ul>	
	Hour#4	<ul style="list-style-type: none"> <li>• Structs</li> <li>• Structs : functions</li> </ul>	
Day 4	Hour#1	<ul style="list-style-type: none"> <li>• How Digital Signatures Works?</li> </ul> <p>Why digital Signatures are so important</p>	
	Hour # 2-3	<ul style="list-style-type: none"> <li>• What is DTL</li> <li>• How DTL works</li> <li>• How DTL differs from ordinary ledger.</li> <li>• Distributed Peer to Peer Network</li> </ul>	

			Hour#4	<ul style="list-style-type: none"> <li>• Structs : functions 2</li> <li>• Structs and Arrays</li> <li>• Difference: Structs-Arrays-Mapping</li> </ul>	
		Day 5	Hour#1	<ul style="list-style-type: none"> <li>• What are Peer Nodes</li> <li>• How to develop Peer to Peer Network</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• How does the P2P network Works?</li> </ul> <p>What are the routes that they use to network the transaction</p>	
			Hour#3	<ul style="list-style-type: none"> <li>• store Arrays inside Mapping</li> <li>• While Loop</li> <li>• For Loops 1</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• For Loops 2</li> <li>• Arrays - delete and pop</li> </ul>	
<b>Week 3</b>	Vulnerability Assessment, Operating System (Linux) Fundamentals	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• What is Mining</li> <li>• What are Miners</li> <li>• How Mining Works</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Task 3 Peer To Peer Ridesharing</b></li> </ul> <p><u>Details may be seen at Annexure-1</u></p>
			Hour#2	<ul style="list-style-type: none"> <li>• Mining Rewards</li> <li>• Miners Reward</li> <li>• How the transaction is approved by miners</li> <li>• Bitcoin Halving effect on rewards</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• Arrays and For Loop - removeelement from array</li> <li>fixed size arrays</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• fixed size MEMORY arrays</li> </ul>	



			<ul style="list-style-type: none"> <li>• String comparison</li> <li>• Array in Array</li> </ul>
Day 2	Hour#1	<ul style="list-style-type: none"> <li>• Define the Byzantine Fault Tolerance</li> <li>• How the 75% attack differs from 51%attack</li> <li>• How the Consensus Meet in the</li> </ul>	
	Hour#2	<ul style="list-style-type: none"> <li>• 75%attack</li> </ul> <p>How we can overcome this attack</p> <ul style="list-style-type: none"> <li>•</li> </ul>	
	Hour # 3-4	<ul style="list-style-type: none"> <li>• Random Number</li> <li>• Contract Interaction: Interface andImport</li> <li>• require - assert - if – revert</li> <li>• constructors</li> <li>• Modifier</li> </ul>	
Day 3	Hour#1	<ul style="list-style-type: none"> <li>• What are the consensus Protocols?</li> <li>• Different type of protocols</li> <li>• What is Cryptographic puzzle</li> <li>•</li> </ul>	
	Hour#2	<ul style="list-style-type: none"> <li>• Why POS is better than POW</li> <li>• How rewards of mining vary in the POWand POS</li> <li>• Draw back of the POW</li> </ul>	
	Hour # 3 -4	<ul style="list-style-type: none"> <li>• For Loop Exercises</li> <li>• All Payable functions</li> <li>• All function calls</li> <li>• Enums</li> <li>• For Loop &amp; Array Exercise</li> <li>•</li> </ul>	

		Day 4	Hour # 1-2	<ul style="list-style-type: none"> <li>• Introduction is Linux Distributions</li> <li>• Installing Kali Linux and CentOS</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Reset Mapping and Array with For Loop</li> <li>• Create a Struct Mapping</li> <li>• Return the values of Mapping with ForLoop</li> <li>•</li> </ul>	
		Day 5	Hour#1	<ul style="list-style-type: none"> <li>• Application of Bitcoin Scripts</li> <li>• Bitcoin Blocks and Network</li> <li>•</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Blocks and Nodes</li> <li>• Forking</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• Time Units</li> <li>• Find and Remove any element from Array</li> <li>• Deploy a Contract from Another Contract and Save Contract inside a Variable</li> <li>•</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• practice</li> </ul>	
<b>Week 4</b>	Operating System (Linux) Fundamentals, Social Engineering Exploits	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• Success stories (For further detail please see Page No: 3&amp; 4)</li> </ul>	<p><b>Task – 4</b> <b>A Fake Product Identification System</b></p> <p><i>Details may be seen at Annexure-1</i></p> <ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> Monthly test</b></li> </ul>
			Hour#2	<ul style="list-style-type: none"> <li>• Add Block function</li> <li>• Mining Function</li> <li>• Transaction Function</li> </ul>	
			Hour # 3-4	<p>Contract</p> <ul style="list-style-type: none"> <li>• Different View Functions</li> <li>• Call External Function from Inside theContract: this, address(this)..</li> <li>• Custom Errors</li> </ul>	
		Day 2	Hour#1	<ul style="list-style-type: none"> <li>• Mining Difficulty function</li> </ul>	

				<ul style="list-style-type: none"> <li>• Miner Nodes function</li> <li>• Implementing blockchain in using Node and Python</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Task 23 to be practiced by Students</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• What are UTXOs</li> <li>• How the UTXOs work</li> <li>• Example of UTXOs</li> <li>• Accounts and UTXOS</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Task 24 to be practiced by Students</li> </ul>	
		Day 3	Hour#1	<ul style="list-style-type: none"> <li>• What are Signatures</li> <li>• Ethereum Overview</li> <li>• What are Smart Contracts?</li> <li>•</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Task 25 to be practiced by Students</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• Storage and Storage Pointer Variables</li> <li>• Data Locations 2: Memory, Calldata, Stack</li> <li>• White List Contract</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Task 26 to be practiced by Students</li> </ul>	
		Day 4	Hour # 1-2	<ul style="list-style-type: none"> <li>• FTP/SMB/DHCP/DNS/Apache/Mail Servers on Linux</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Task 27 to be practiced by Students</li> </ul>	
		Day 5	Hour # 1-2	<ul style="list-style-type: none"> <li>• How Signatures are signed?</li> <li>• Introduction to HyperLedger</li> <li>• Ethereum and Smart Contract</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Introduction to Ethereum Blockchain</li> <li>• Ethereum Insight</li> <li>• Blockchain Mechanics</li> </ul>	
<b>Week 5</b>	System Hacking & Manipulation. Sniffing	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• Motivational Lecture (For further detail please see Page No: 3&amp; 4)</li> </ul>	

	Techniques & Attacks		Hour#2	<ul style="list-style-type: none"> <li>• practice</li> </ul>	<b>Task 5 Blockchain- Based Voting System</b>
			Hour#3	<ul style="list-style-type: none"> <li>• Lab</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Task 30 to be practiced by Students</li> </ul>	
			Day 2	Hour#1	
			Hour#2	<ul style="list-style-type: none"> <li>• Task 31 to be practiced by Students</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• Smart Contracts</li> <li>• Ethereum Networks</li> <li>• Ethereum Design Principles</li> <li>•</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• practice</li> </ul>	
		Day 3	Hour#1	Implementation of blockchain using solidity	
			Hour#2		
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Accounts and UTXOS</li> <li>• Storing Blocks on The Blockchain</li> <li>• Creating Contracts</li> <li>•</li> </ul>	
		Day 4			
			Hour#1 ,2,3,4	<ul style="list-style-type: none"> <li>• Task 34 to be practiced by Students</li> </ul>	
				<ul style="list-style-type: none"> <li>• Ethereum Overview</li> <li>• Collection of On Chain Smart Contracts</li> <li>• Contract Creation Analysis</li> </ul>	
				<ul style="list-style-type: none"> <li>• practice</li> </ul>	
		Day 5	Hour#1	Implementation of blockchain using solidity	
			Hour#2	<ul style="list-style-type: none"> <li>• Task 36 to be practiced by Students</li> </ul>	
	Hour#3	<ul style="list-style-type: none"> <li>•</li> </ul>			
	Hour#4	practice			
<b>Week 6</b>	Denial of Service, Session Hijacking, Hacking Web Applications	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• Motivational Lecture (For further detail please see Page No: 3&amp; 4)</li> </ul>	<b>Task 6 Transparent and Genuine Charity Application</b>
		Hour#2	<ul style="list-style-type: none"> <li>• Security of Ethereum</li> <li>•</li> </ul>		
		Hour#3	<ul style="list-style-type: none"> <li>• Security of Ethereum</li> <li>• Ethereum Blockchain-Lesson Summary</li> </ul>		
		Hour#4	<ul style="list-style-type: none"> <li>• practice</li> </ul>		

		Day 2	Hour#1	<ul style="list-style-type: none"> <li>• Security of Ethereum</li> <li>•</li> </ul>
			Hour # 2-3	<ul style="list-style-type: none"> <li>• Task 40, Task 41 and Task 42 to be practiced by Students</li> </ul>
			Hour#4	<ul style="list-style-type: none"> <li>• Job Market Searching</li> <li>• Self-employment</li> <li>• Freelancing sites</li> </ul>
		Day 3	Hour#1	<ul style="list-style-type: none"> <li>• Why is Blockchain a Distributed, P2P Network?</li> <li>•</li> </ul>
			Hour#2	<ul style="list-style-type: none"> <li>• Implementation of blockchain using solidity</li> </ul>
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Why is Blockchain a Distributed, P2P Network?</li> <li>• Blockchain Vs Cryptocurrency</li> <li>• Types of Blockchain</li> </ul>
		Day 4	Hour#1	<ul style="list-style-type: none"> <li>• Implementation of blockchain using solidity</li> </ul>
			Hour#2	<ul style="list-style-type: none"> <li>• Implementation of blockchain using solidity</li> </ul>
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Merkle Tree and</li> <li>• Hashing</li> <li>• Blocks, Wallets and Addresses</li> <li>• Public and Private Key</li> </ul>
		Day 5	Hour#1	<ul style="list-style-type: none"> <li>• Cryptography and Cryptographic Algorithms</li> </ul>
			Hour#2	<ul style="list-style-type: none"> <li>• Implementation of blockchain using solidity</li> </ul>

			Hour # 3-4	<ul style="list-style-type: none"> <li>• Cryptography and Cryptographic Algorithms</li> <li>• What is Blockchain Mining?</li> <li>• Types of Mining</li> </ul>	
	Build Your CV			<ul style="list-style-type: none"> <li>• Download professional CV template from any good site (<a href="https://www.coolfreecv.com">https://www.coolfreecv.com</a> or relevant)</li> <li>• Add Personal Information</li> <li>• Add Educational details</li> <li>• Add Experience/Portfolio</li> <li>• Add contact details/profile links</li> </ul>	
<b>Week 7</b>	Employable Project/Assignment 6 weeks (i.e 8-13) in addition to regular classes.			<ul style="list-style-type: none"> <li>• <b>Midterm Project / Exam</b></li> <li>• Guidelines to the Trainees for selection of student's employable project like final year project (FYP)</li> <li>• Assign Independent project to each Trainee</li> <li>• A project based on trainee's aptitude and acquired skills.</li> <li>• Designed by keeping in view the emerging trends in global and local markets</li> <li>• The project idea may be based on Entrepreneur.</li> <li>• Leading to the successful employment.</li> <li>• The duration of the project will be 2 weeks</li> <li>• Ideas may be generated via different sites such as: <ul style="list-style-type: none"> <li>• <a href="https://1000projects.org/">https://1000projects.org/</a></li> <li>• <a href="https://nevonprojects.com/">https://nevonprojects.com/</a></li> <li>• <a href="https://www.freestudentprojects.com/">https://www.freestudentprojects.com/</a></li> <li>• <a href="https://technofizi.net/best-computer-science-and-engineering-cse-project-topics-ideas-for-students/">https://technofizi.net/best-computer-science-and-engineering-cse-project-topics-ideas-for-students/</a></li> </ul> </li> <li>• Final viva/assessment will be conducted on project.</li> </ul>	<b>Task 7</b> A Decentralized Web Hosting System
<b>Week 8</b>	SQL Injections, Hacking Wireless Networks, Hacking Web Servers	Day 1	Hour#1	• Motivational Lecture (For further detail please see Page No: 3& 4)	• <b>Task 8</b> <b>Disk Space Renting System</b>
			Hour#2	• Implementation of blockchain using solidity	
			Hour#3	• practiced by Students	
			Hour#4	• practice	

		Day 2	Hour#1	<ul style="list-style-type: none"> <li>• What is Ethereum</li> <li>• Bitcoin Vs Ethereum</li> </ul>	<i>Details may be seen at Annexure-I</i>
			Hour#2	<ul style="list-style-type: none"> <li>• Task 47 to be practiced by Students</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• What is Ethereum</li> <li>• Bitcoin Vs Ethereum</li> <li>• Proof-of-Work Vs Proof-of-Stake</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Task 48 to be practiced by Students</li> </ul>	
		Day 3	Hour#1	<ul style="list-style-type: none"> <li>• Implementation of blockchain using solidity</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Task 49 to be practiced by Students</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Ethereum Virtual Machine (EVM)</li> <li>• What is Ether?</li> <li>• Wei Vs Ether</li> </ul>	
		Day 4	Hour # 1-2	<ul style="list-style-type: none"> <li>• Wi-Fi Encryption Cracking</li> <li>• WEP/WPA/WPA2 Cracking Tools</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Mining in EthereumSmart Contract</li> <li>• Transaction, Gas &amp; Fees</li> <li>• Guide to ERCs &amp; EIPs</li> <li>• Task 50 to be practiced by Students</li> </ul>	
		Day 5	Hour # 1-2	<ul style="list-style-type: none"> <li>• ERC-20 Standard</li> <li>• Trading ERC-20 Tokens</li> <li>• ERC-721 Standard</li> <li>• Trading ERC-721 Tokens</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Task 51 and Task 51a to be practiced by Students</li> </ul>	
		<b>Week 9</b>	Cloud Computing & Security	Day 1	
Hour#2	<ul style="list-style-type: none"> <li>• ERC-1155 Tokens</li> </ul>				

				<ul style="list-style-type: none"> <li>Remix IDE Walk-through With example</li> </ul>	<b>System</b>               <u>Details may be seen at Annexure-I</u>
		Hour#3	<ul style="list-style-type: none"> <li>ERC-1155 Tokens</li> <li>Remix IDE Walk-through</li> <li>Setting up the MetaMask in your Browser</li> <li>MetaMask in your Browser</li> <li></li> </ul>		
		Hour#4	<ul style="list-style-type: none"> <li>practice</li> </ul>		
Day 2	Hour#1	<ul style="list-style-type: none"> <li>Installing Development Environment</li> <li>Writing our First Smart Contract</li> </ul>			
	Hour#2	<ul style="list-style-type: none"> <li>Task 52 to be practiced by Students</li> </ul>			
	Hour#3	<ul style="list-style-type: none"> <li>Deploying Smart Contract with Truffle</li> <li>Understanding AimWriting Smart Contract for Depositing and withdrawing Money (Back-End)</li> </ul>			
	Hour#4	<ul style="list-style-type: none"> <li>practiced by Students</li> </ul>			
Day 3	Hour#1	<ul style="list-style-type: none"> <li>Deploying it on Remix with Metamask</li> <li>Front End Development</li> </ul>			
	Hour # 2-3	<ul style="list-style-type: none"> <li>Interacting Smart Contract with Front End</li> <li>Introductions Setting up the project</li> </ul>			
	Hour#4	<ul style="list-style-type: none"> <li>practice</li> </ul>			
Day 4	Hour#1	<ul style="list-style-type: none"> <li>practice</li> </ul>			
	Hour#2	<ul style="list-style-type: none"> <li>Task 55 to be practiced by Students</li> </ul>			
	Hour#3	<ul style="list-style-type: none"> <li>ERC-20 Tokens</li> <li>Dapp Smart contract</li> </ul>			



				<ul style="list-style-type: none"> <li>• Deployment Script</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Task 56 to be practiced by Students</li> </ul>	
		Day 5	Hour # 1-2	<ul style="list-style-type: none"> <li>• Implementation of blockchain</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• Task 57 to be practiced by Students</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Implementation of blockchain</li> </ul>	
<b>Week 10</b>	Motivational Lecture	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• Motivational Lecture (For further detail please see Page No: 3&amp; 4)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Task 10</b></li> </ul>
			Hour # 2-3	<ul style="list-style-type: none"> <li>• Deployment on the local development network (Ganache)</li> <li>• Connecting Front-end with smart contracts</li> </ul>	<p><b>Trackback Your Food to its Source</b></p> <p><i><u>Details may be seen at Annexure-I</u></i></p>
			Hour#4	<ul style="list-style-type: none"> <li>• practiced by Students</li> </ul>	
		Day 2	Hour#1	<ul style="list-style-type: none"> <li>• Setting up custom rpc and ganache account</li> <li>• Front End of Dapp</li> <li>• Issue Rewards and</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Task 59 to be practiced by Students</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• wrapping up the project</li> <li>• Objective of the Project</li> <li>• Writing the Smart Contract</li> <li>•</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• practiced by Students</li> </ul>	
		Day 3	Hour#1	<ul style="list-style-type: none"> <li>• Deploying the Smart Contract</li> <li>• Adding more functionalities to the Smart Contract</li> </ul>	

			Hour#2	<ul style="list-style-type: none"> <li>• Task 61 to be practiced by Students</li> </ul>
			Hour#3	<ul style="list-style-type: none"> <li>• IPFS – Overview</li> <li>• Overview of HTTP</li> <li>• How IPFS address</li> <li>• the HTTP problems</li> </ul>
			Hour#4	<ul style="list-style-type: none"> <li>• practiced by Students</li> </ul>
		Day 4	Hour#1	<ul style="list-style-type: none"> <li>• IPFS Components</li> <li>• IPFS Protocols</li> <li>• How IPFS does work?</li> </ul>
			Hour#2	<ul style="list-style-type: none"> <li>• Task 63 to be practiced by Students</li> </ul>
			Hour#3	<ul style="list-style-type: none"> <li>• Installing IPFS CLI</li> <li>• Installing IPFS Desktop</li> <li>• Running IPFS in CLI</li> <li>•</li> </ul>
			Hour#4	<ul style="list-style-type: none"> <li>• practiced by Students</li> </ul>
		Day 5	Hour#1	<ul style="list-style-type: none"> <li>• Opening IPFS WEBUI</li> <li>• IPFS Desktop view</li> <li>• Uploading files in IPFS</li> </ul>
			Hour#2	<ul style="list-style-type: none"> <li>• Task 65 to be practiced by Students</li> </ul>
			Hour#3	<ul style="list-style-type: none"> <li>• Pinning files in IPFS</li> <li>• Viewing IPFS files in chrome</li> </ul>
			Hour#4	<ul style="list-style-type: none"> <li>• practiced by Students</li> </ul>

<b>Week 11</b>	Next Generation Firewall (USG 6000v), Data Center Advanced Architecture and implementation of Web Security.	Day 1	Hour#1	<ul style="list-style-type: none"> <li>Motivational Lecture (For further detail please see Page No: 3&amp; 4)</li> </ul>	<b>Task 11 Evidence Protection System Using Blockchain Technology</b>	
			Hour#2	<p style="text-align: center;"><b><u>Hyperledger</u></b></p> <ul style="list-style-type: none"> <li>Understanding</li> <li>Hyperledger Fabric</li> <li>Getting Started with</li> </ul>		
			Hour#3	<p>Hyperledger Architecture</p> <p>Setting-up the Prerequisites</p> <ul style="list-style-type: none"> <li></li> </ul>		<i><u>Details may be seen at Annexure-I</u></i>
			Hour#4	<ul style="list-style-type: none"> <li>practiced by Students</li> </ul>		
		Day 2	Hour#1	<ul style="list-style-type: none"> <li>Git Repository- Source Code- Download</li> <li>Create Basic Hyperledger Fabric Network</li> <li>Add New Org in Existing Network</li> </ul>		
			Hour#2	<ul style="list-style-type: none"> <li>Task 68 to be practiced by Students</li> </ul>		
			Hour#3	<p>Add New Org in Consortium (System Channel)</p> <p>Add New RAFT Orderer in Existing Network</p> <p><b><u>Module 7: Solidity Smart Contract on Hyperledger Fabric</u></b> 30 hours</p> <p>Why Enterprise Blockchain?</p> <ul style="list-style-type: none"> <li></li> </ul>		
			Hour#4	<ul style="list-style-type: none"> <li>practiced by Students</li> </ul>		
		Day 3	Hour#1	<ul style="list-style-type: none"> <li>Hyperledger Fabric – A key Enterprise Blockchain</li> <li>Pros &amp; Cons of Hyperledger Fabric</li> </ul>		
			Hour#2	<ul style="list-style-type: none"> <li>Task 70 to be practiced by Students</li> </ul>		
			Hour#3	<ul style="list-style-type: none"> <li>The Popularity of Hyperledger Fabric</li> </ul>		

				<ul style="list-style-type: none"> <li>• Setup and prerequisite for deployment</li> <li>•</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• practiced by Students</li> </ul>	
		Day 4	Hour#1	<ul style="list-style-type: none"> <li>• Installing and instantiating the chain code</li> <li>• Deploying a solidity smart contract on fabric</li> <li>•</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Task 72 to be practiced by Students</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>• What is Corda?</li> <li>• Data Structure of Corda</li> <li>• Corda Key Concepts</li> <li>• Corda Architecture</li> <li>• Setting up the Environment</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• practiced by Students</li> </ul>	
		Day 5	Hour#1	<ul style="list-style-type: none"> <li>• Project 1 – Tesla CordApp</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>• Proj 1</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Task 74 to be practiced by Students</li> </ul>	
<b>Week 12</b>	)	Day 1	Hour#1	<ul style="list-style-type: none"> <li>• Motivational Lecture (For further detail please see Page No: 3&amp; 4)</li> </ul>	<b>Task 12 Footprinting using Search Engines</b>
			Hour # 2-3	<ul style="list-style-type: none"> <li>• Implementation of lab tasks</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>• Task 75 to be practiced by Students</li> </ul>	
		Day 2	Hour # 1-2	<ul style="list-style-type: none"> <li>• Project 2 – Building another CordApp</li> <li>•</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>• Project working</li> </ul>	<i>Details may be</i>

		Day 3	Hour # 1-2	<ul style="list-style-type: none"> <li>Project 2 – Building another CordApp</li> <li></li> </ul>	<i>seen at Annexure-I</i>
			Hour # 3-4	<ul style="list-style-type: none"> <li>Task 77 to be practiced by Students</li> </ul>	
		Day 4	Hour # 1-2	<ul style="list-style-type: none"> <li>practice</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>Task 78 to be practiced by Students</li> </ul>	
		Day 5	Hour # 1-2	<ul style="list-style-type: none"> <li>Project 1 – Tesla CordApp, Project 2 – Building another CordApp</li> <li></li> <li>implemebtation</li> </ul>	
			Hour # 3-4	<ul style="list-style-type: none"> <li>Project working</li> </ul>	
<b>Week 13</b>	Entrepreneurship, Job Hunting Tips, Final Assessment	Day 1	Hour#1	<ul style="list-style-type: none"> <li>Motivational Lecture (For further detail please see Page No: 3&amp; 4)</li> </ul>	<b>Task 13</b> <b>Blockchain Shipment Management Tracking System</b>  <i>seen at Annexure-I</i>
			Hour#2	<ul style="list-style-type: none"> <li>Job Market Searching</li> <li>Self-employment</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>Exploring Freelancing Sites</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>Fundamentals of Business Development</li> </ul>	
		Day 2	Hour#1	<ul style="list-style-type: none"> <li>Entrepreneurship</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>Startup Funding</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>Business Incubation and Acceleration</li> <li>Business Value Statement</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>Business Model Canvas</li> </ul>	
		Day 3	Hour#1	<ul style="list-style-type: none"> <li>Sales and Marketing Strategies</li> </ul>	
			Hour#2	<ul style="list-style-type: none"> <li>Stakeholders Power Grid</li> </ul>	
			Hour#3	<ul style="list-style-type: none"> <li>RACI Model, SWOT Analysis, PEST Analysis</li> </ul>	
			Hour#4	<ul style="list-style-type: none"> <li>Project working</li> </ul>	
		Day 4	Hour#1	<ul style="list-style-type: none"> <li>How to search and apply for jobs in at least two labor marketplace countries (KSA, UAE, etc.)</li> </ul>	
			Hour # 2-4	<ul style="list-style-type: none"> <li>Browse the following website and create an account on each website</li> <li>Bayt.com – The Middle East Leading Job Site</li> <li>Monster Gulf – The International Job Portal</li> <li>Gulf Talent – Jobs in Dubai and the Middle East</li> <li>Find the handy ‘search’ option at the top of your homepage to search for the jobs that</li> </ul>	

				<p>best suit your skills.</p> <ul style="list-style-type: none"> <li>• Select the job type from the first 'Job Type' drop-down menu, next, select the location from the second drop- down menu.</li> <li>• Enter any keywords you want to use to find suitable job vacancies.</li> <li>• On the results page you can search for part-time jobs only, full-time jobs only, employers only, or agencies only. Tick the boxes as appropriate to your search.</li> <li>• Search for jobs by: <ul style="list-style-type: none"> <li>• Company</li> <li>• Category</li> <li>• Location</li> <li>• All jobs</li> <li>• Agency</li> <li>• Industry</li> </ul> </li> </ul>	
		Day 5	Hour # 1-4	<ul style="list-style-type: none"> <li>• Final Assessment / Closing Address</li> </ul>	

<b>Project</b>	Employable Project/Assignment (2 weeks i.e. 7-13) in addition of regular classes. OR On job training ( 2 weeks)	<ul style="list-style-type: none"> <li>● Motivational Lecture( For further detail please see Page No: 3&amp; 4)</li> <li>● Guidelines to the Trainees for selection of students employable project like final year project (FYP)</li> <li>● Assign Independent project to each Trainee</li> <li>● A project based on trainee’s aptitude and acquired skills.</li> <li>● Designed by keeping in view the emerging trends in the local market as well as across the globe.</li> <li>● The project idea may be based on Entrepreneur.</li> <li>● Leading to the successful employment.</li> <li>● The duration of the project will be 2 weeks</li> <li>● Ideas may be generated via different sites such as: <a href="https://1000projects.org/">https://1000projects.org/</a> <a href="https://nevonprojects.com/">https://nevonprojects.com/</a> <a href="https://www.freestudentprojects.com/">https://www.freestudentprojects.com/</a> <a href="https://technofizi.net/best-computer-science-and-engineering-cse-project-topics-ideas-for-students/">https://technofizi.net/best-computer-science-and-engineering-cse-project-topics-ideas-for-students/</a></li> <li>• Final viva/assessment will be conducted on project assignments.</li> <li>• At the end of session the project will be presented in skills competition</li> <li>• The skill competition will be conducted on zonal, regional and National level.</li> <li>• The project will be presented in front of Industrialists for commercialization</li> <li>• The best business idea will be placed in NAVTTC business incubation center for commercialization.</li> </ul> <p>OR</p> <p>On job training for 2 weeks:</p> <ul style="list-style-type: none"> <li>• Aims to provide 2 weeks industrial training to the Trainees as part of overall training program</li> <li>• Ideal for the manufacturing trades</li> <li>• As an alternate to the projects that involve expensive equipment</li> <li>• Focuses on increasing Trainee’s motivation, productivity, efficiency and quick learning approach.</li> </ul>	
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# Tasks For Block Chain Development

## Annexure-I

Task No.	Task/Weeks	Description	Remarks
<b>Block Chain</b>			
1	<p><b>Trusted Crowdfunding Platform Using a Smart Contract</b></p> <p style="text-align: center;"><b>Week 1</b></p>	<p>As per trusted reports, 85% of startups delay the delivery, and 14% don't deliver at all what was promised to the angel investors. As of today, crowdfunding platforms have accountability and trust problems. In many cases, money from investors has gone into wrong campaigns and has been misused.</p> <p>Implementing a blockchain-based platform can bring in a change. With blockchain technology, investors can know to whom the money is going and how they are spending it. A smart contract helps to block the funds within blockchain until the project or startup founder makes progress in the project.</p> <p>As per trusted reports, 85% of startups delay the delivery, and 14% don't deliver at all what was promised to the angel investors. As of today, crowdfunding platforms have accountability and trust problems. In many cases, money from investors has gone into wrong campaigns and has been misused.</p> <p>Implementing a blockchain-based platform can bring in a change. With blockchain technology, investors can know to whom the money is going and how they are spending it. A smart contract helps to block the funds within blockchain until the project or startup founder makes progress in the project.</p> <p>As per trusted reports, 85% of startups delay the delivery, and 14% don't deliver at all what was promised to the angel investors. As of today, crowdfunding platforms have accountability and trust problems. In many cases, money from investors has gone into wrong campaigns and has been misused.</p> <p>Implementing a blockchain-based platform can bring in a change. With blockchain technology, investors can know to whom the money is going and how they are spending it. A smart contract helps to block the funds within blockchain until the project or startup founder makes progress in the project.</p>	
	<p><b>Exact Shipment Location Data</b></p>	<p>Most logistics companies today offer only the location details of main locations like collection centre, city hubs and sorting facilities. The exact live location details are never known, and if the system fails, the entire data is lost.</p>	



2	<p><b>Week 2</b></p>	<p>Using blockchain, you can implement a system that collects location data from many interconnected systems and deliver exact location details to the customers. The application of this project can be extended to other areas like airlines to find lost baggage, car rentals for tracking rented car etc.</p> <p>Most logistics companies today offer only the location details of main locations like collection centre, city hubs and sorting facilities. The exact live location details are never known, and if the system fails, the entire data is lost.</p> <p>Using blockchain, you can implement a system that collects location data from many interconnected systems and deliver exact location details to the customers. The application of this project can be extended to other areas like airlines to find lost baggage, car rentals for tracking rented car etc.</p>
3	<p><b>Peer To Peer Ridesharing</b></p> <p><b>Week 3</b></p>	<p>Most carpooling systems and radio cab facilities come with a middle man, the agency itself. So what if the agency like Uber decides to shut down business in the city? If ride-sharing and car hire are moved to the blockchain, without an intermediary, both riders and drivers can get connected directly. If the project is completed successfully, it can build a network that will provide safe, reliable transportation.</p> <p>Presently, a single agency controls most carpooling systems. You can develop a smart contract that directly connects the driver and the rider without the interference of any third party like Ola or Uber. The agencies like Ola and Uber have all data of riders and drivers. This can create privacy issues. Moving car hire and ride-sharing to Blockchain can help you to build a reliable and secure carpooling system.</p> <p>The drivers and riders can directly connect without any intermediary. It is one of those <b>blockchain projects</b> that provide secure and collective transport.</p>

4	<p><b>A Fake Product Identification System</b></p> <p><b>Week 4</b></p>	<p>Every popular brand has fake manufacturers selling a counterfeited item at cheaper rates. Even the company experts may not be able to distinguish between fake ones and real ones. What if the original manufacturer has embedded a 2D barcode on the product which is tied to a blockchain system.</p> <p>You can scan the 2D barcode using your smartphone, and your smartphone will tell you whether the product is fake or not. This is an outstanding project idea and if successfully implement big brands are going to knock at your doorstep, and you know why...</p> <p>Many popular brands have fake manufacturers that sell the same products at cheaper rates but with a compromise in quality. Even the original company's experts can't differentiate between real and fake products. You can use blockchain technology to sense original products and include a QR code to them during manufacturing. The product's QR code will be linked to a Blockchain. Moreover, you can store the product's generated QR code and product details as blocks in the database.</p> <p>People can now scan the QR code through their smartphones. Their smartphones will inform whether the product is real or fake. It would compare the scanned QR code with entries in the Blockchain database. It notifies the customer that the product is original if the code matches. Otherwise, it notifies that the product is fake. It is one of the most useful and interesting projects on blockchain. Your chances of getting hired by big brands increase if you successfully implement such types of projects on blockchain.</p>	

5	<b>Blockchain-Based Voting System</b>  <b>Week 5</b>	<p>Electronic voting systems have replaced paper-based systems, but even now, people doubt the voting system's ability to secure the data and defend against any attacks. The blockchain-based system can ensure transparent and publicly verifiable elections in the country. If implemented successfully, voting can be done using a mobile application that is attached to a blockchain system.</p> <p>This project helps you to conduct voting at the national and organizational levels. You must ascertain certain things to let this project work. Firstly, the users' details must be hidden in your application because of privacy issues. You have to use an Ethereum address that works as the user's identifier. Secondly, an individual must be able to submit only one vote, and only when they are eligible. The voting process must be transparent and all voting rules must be followed. The next step is to accurately count and record the votes. No mistakes or fraud occurrences are accepted in such types of projects on blockchain.</p> <p>Blockchain-based systems can tackle the corruption observed in the voting process. This is because they provide a more transparent and straightforward platform for casting a vote. Mobile voting applications are also allowed to cast a vote. This system blockchain project provides decentralized nodes for digitally casting votes without any security pitfalls. This is because it features robust end-to-end verification.</p> <p>Electronic voting systems have replaced paper-based systems, but even now, people doubt the voting system's ability to secure the data and defend against any attacks. The blockchain-based system can ensure transparent and publicly verifiable elections in the country. If implemented successfully, voting can be done using a mobile application that is attached to a blockchain system.</p>	
6	<b>Transparent and Genuine Charity Application</b>  <b>Week 6</b>	<p>Many fake charity organizations pose as genuine and loot money from innocent people in the name of charity. Most people want to donate money to a good cause of charity, but they are unsure if the money is going to reach the right hands of the destitute. The blockchain system can bring transparency to online charity trusts. Contributors can see the journey of the donation in realtime and confirm if it's reaching the deserving hands or not.</p> <p>This blockchain project helps you to make a reliable and transparent charity application. It ensures that your donated money reaches needy people. Let's understand how it works.</p>	
7	<b>A Decentralized Web Hosting System</b>	<p>The way web hosting works today is by hosting all the web content including textual content, code and media content on a centralized location which</p>	

	<p><b>Week 7</b></p>	<p>can then be accessed over the world wide web. But did you know? Your site is going to be down when there is server maintenance or if a load of the server gets high.</p> <p>What if with blockchain, your website doesn't require a central server? With blockchain, you can split your website content into granules and distribute it all over the internet and then link them together using a blockchain registry.</p> <p>Web hosting can store all types of content. You can access the stored content anytime, anywhere. Your website will be inaccessible if the server crashes or fails. But you can take the help of <b>blockchain technology projects</b> to solve this issue.</p> <p>Blockchain technology can save effort, time, and money by allowing web designers to develop websites without depending on a centralized server. The blockchain vault helps you to reassemble all content you need. The non-dependence on a central server means that there will be no occurrences of the server failing or crashing.</p>
<p><b>8</b></p>	<p><b>Disk Space Renting System</b></p> <p><b>Week 8</b></p>	<p>The idea here is to allow everybody on the planet to rent out their unused disk space which can be attached to a blockchain registry to create a massive worldwide cloud. The idea is similar to the peer-to-peer network, but with blockchain, it's going to be completely decentralized.</p> <p>This idea can be implemented as a small project, but if applied globally, it can change the face of today's cloud storage. This concept can also be extended to your compute power and memory provided you have an ultra-high-speed internet connection.</p> <p>In this project, Blockchain data structures strengthen network security by decreasing single-point-of-failure risk. So, it makes a database breach harder. Moreover, it avoids unauthorized access because every user in the Blockchain possesses their key.</p>

<p style="text-align: center;"><b>9</b></p>	<p><b>Loyalty Points Exchange System</b></p> <p style="text-align: center;"><b>Week 9</b></p>	<p>With payback.in being an exception, most other brands and companies reward customers with their own loyalty points. This drawback in today's system is a very unacceptable downside as the deserving customer cannot use his loyalty points with other companies or brands. Customers also cannot exchange or trade loyalty points with friends or family. With blockchain, you can implement a project that allows consumers to combine and transparently trade loyalty rewards.</p> <p>The loyalty points' data is maintained using blockchain. Hence, it improves security. The blocks can be checked to ascertain that no tampering has occurred. Blockchain system allows other brands to use the Loyalty exchange points. Hence, they can make their pitch attractive to bring more consumers.</p> <p>Customers can pay and redeem points in a system blockchain project. These points can be transferred to any other user or bank. The entire transaction history can be tracked. No transaction can be eliminated by any method because the blockchain can't tamper with it. The missed data in transaction data, if any, can be detected and shown to the customers.</p>	
<p style="text-align: center;"><b>10</b></p>	<p><b>Trackback Your Food to its Source</b></p> <p style="text-align: center;"><b>Week 10</b></p>	<p>You want to eat organic. You can buy organic, but do you really know if it's organic? You know that there is an outbreak of bird-flu in few poultry farms, but do you know if the chicken leg in your plate came from one of those infected farms?</p> <p>Using blockchain technology, you can implement a system that can help consumers trace back the journey of fresh produce or meat to its source. Thereby, consumers can buy the product with a lot more trust.</p>	
<p style="text-align: center;"><b>11</b></p>	<p><b>Evidence Protection System Using Blockchain Technology</b></p>	<p>In the pursuit of a criminal case, evidence is the foundation upon which both sides build their respective arguments. During the investigation into a crime, great care must be taken to collect, preserve, and record evidence that could be critical in establishing the facts surrounding a criminal case.</p>	

**Week 11**

However, the importance of the evidence doesn't end after the trial. As any good criminal defence lawyer knows, the evidence collected during a criminal case must be preserved for posterity to ensure that the due process rights of the accused are observed fully.

We have designed an Evidence Protection System Using Blockchain Technology to tackle the problem of evidence protection. This system has been proposed to achieve optimization by creating a chain of limited users responsible for the investigation. They are given their respective access to achieve transparency and immutability.

Blockchain is an assortment of connected squares that contain and track generally what occurs on a conveyed framework. Blockchain innovation is used in various evidence of idea executions, models and application frameworks. This a DotNet system where the Frontend involves Html, CSS, and JavaScript and the Backend involves ASP.net. The database used is MSSQL and IDE is Visual Studio.

The admin can manage users and assign them roles like Forensic, Evidence Room and Police. They can view the details of different evidence by searching the evidence IDs. They can view the log. If at any place the evidence details don't match, for e.g. At the Evidence Room Level or Movement Level, the admin will get to know the status of exactly where the link is broken using blockchain technology.

The Forensic staff can access the system by logging in. They can add, update, delete or view evidence along with the details, date, time and type. They can also add the name and ID of Investigating Officer and Forensic Officer.

The staff at the Evidence Room can access the system by logging in. They can search for any evidence through evidence ID. They can add an entry and exit log along with item count, size, details, etc. They have to add the name or ID of the Officer who is taking or storing the evidence and of the Evidence Room Officer. They can also view the log by searching Evidence ID or date.

The Police can access the system by logging in using their credentials. They can search for any evidence through evidence ID. They can add logs of movement along with item

		<p>count, size, details, etc. They also have to add the source, destination, date and time. They will also need to add the assigned Police Officer's name and ID.</p> <p>Advantages</p> <ul style="list-style-type: none"> <li>• The system is easy to maintain.</li> <li>• It is user-friendly.</li> <li>• It can help to protect forensic evidence from getting tampered with.</li> <li>• It can help in various investigations by involving only limited departments.</li> </ul>
12	<p><b>Footprinting using Search Engines</b></p> <p style="text-align: center;"><b>Week 12</b></p>	<p>Search engines can provide a wealth of information about the target organizations. You can simply type the name of the organization in the search field. The search results can provide information, such as physical location of organization's offices, contact information, email addresses and employee names. An attacker can use all this information to initiate an attack. For example, an attacker can initiate a social engineering attack using contact information, telephone, or mobile numbers.</p>
13	<p><b>Blockchain Shipment Management Tracking System</b></p> <p style="text-align: center;"><b>Week 13</b></p>	<p>Today's supply chains are global networks that generally include manufacturers, suppliers, logistics companies, and retailers that work together to deliver products to consumers. As modern supply chains continue to expand, they also are becoming more complex and disparate. Typically, traditional supply chains use paper-based and disjointed data systems that lead to information silos and make tracking products a time-consuming task. Lack of traceability and transparency is an industry-wide challenge that leads to delays, errors, and increased costs.</p> <p>Our Blockchain-Based Shipment Management Tracking System is designed by keeping the above-mentioned problem in mind. The objective is to track all changes in the shipment and inform the related parties about the changes. A blockchain technology-based system can be used to track movements in the supply chain and validate the same on a</p>

real-time basis. This will improve tracking, and also result in quicker, real-time transactions.

This is a Dotnet-Based system that consists of two modules, including Admin and User. The admin can log in using their credentials. They will have the access to add, update, view and delete various users, including Shippers, Consignees, Freight Forwarders, Shipping Lines, etc. They can view the courier details and transactions by searching the tracking ID. They can also check for any manipulation in the data.

The users can log in using their credentials. Only the shipper will have the access to add, update, view and delete couriers. All the users can check the shipment details and view the list of transactions of each courier through the tracking ID. They can add a new transaction as well along with the sender, receiver, product dimensions, size, quality, etc.

This a DotNet system where Frontend involves Html, CSS, and JavaScript and the Backend involves ASP.net. The database used is MSSQL and IDE is Visual Studio.

#### Advantages

- The system is easy to maintain.
- It is user-friendly.
- The system helps to improve communication and transparency.
- It can amplify security.
- It offers quality assurance.

## Annexure-II

### **SUGGESTIVE FORMAT AND SEQUENCE ORDER OF MOTIVATIONAL LECTURE.**

#### **Mentor**

Mentors are provided an observation checklist form to evaluate and share their Block Chain Developer



observational feedback on how students within each team engage and collaborate in a learning environment. The checklist is provided at two different points: Once towards the end of the course. The checklists are an opportunity for mentors to share their unique perspective on group dynamics based on various team activities, gameplay sessions, pitch preparation, and other sessions, giving insights on the nature of communication and teamwork taking place and how both learning outcomes and the student experience can be improved in the future.

### Session- 1 (Communication):

Please find below an overview of the activities taking place Session plan that will support your delivery and an overview of this session's activity.

<b>Session- 1 OVERVIEW</b>
<b>Aims and Objectives:</b>
<ul style="list-style-type: none"> <li>To introduce the communication skills and how it will work</li> </ul>
<ul style="list-style-type: none"> <li>Get to know mentor and team - build rapport and develop a strong sense of a team</li> <li>Provide an introduction to communication skills</li> <li>Team to collaborate on an activity sheet developing their communication, teamwork, and problem-solving</li> <li>Gain an understanding of participants' own communication skills rating at the start of the program</li> </ul>

<b>Activity:</b>	<b>Participant Time</b>	<b>Teacher Time</b>	<b>Mentor Time</b>
Intro Attend and contribute to the scheduled.			
Understand good communication skills and how it works.			
Understand what good communication skills mean			
Understand what skills are important for good communication skills			
<b>Key learning outcomes:</b>	<b>Resources:</b>		<b>Enterprise skills developed:</b>
<ul style="list-style-type: none"> <li>Understand the communication</li> </ul>	<ul style="list-style-type: none"> <li>Podium</li> <li>Projector</li> </ul>		<ul style="list-style-type: none"> <li>Communication</li> <li>Self Confidence</li> </ul>

<p>skills and how it works.</p> <ul style="list-style-type: none"> <li>• Understand what communication skills mean</li> <li>• Understand what skills are important for communication skills</li> </ul>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Flip Chart</li> <li>• Marker</li> </ul>	<ul style="list-style-type: none"> <li>• Teamwork</li> </ul>
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Schedule	Mentor Should do
<p><b>Welcome:</b> 5 min</p>	<p>Short welcome and ask the <b>Mentor</b> to introduce him/herself. Provide a brief welcome to the qualification for the class.</p>
	<p>Note for Instructor: Throughout this session, please monitor the session to ensure nothing inappropriate is being happened.</p>
<p><b>Icebreaker:</b> 10 min</p>	<p>Start your session by delivering an icebreaker, this will enable you and your team to start to build rapport and create a team presentation for the tasks ahead. The icebreaker below should work well at introductions and encouraging communication, but feel free to use others if you think they are more appropriate. It is important to encourage young people to get to know each other and build strong team links during the first hour; this will help to increase their motivation and communication throughout the sessions.</p>
<p><b>Introduction &amp; Onboarding:</b> 20mins</p>	<p>Provide a brief introduction of the qualification to the class and play the “Onboarding Video or Presentation”. In your introduction cover the following:</p> <ol style="list-style-type: none"> <li>1. Explanation of the program and structure. (Kamyab jawan Program)</li> <li>2. How you will use your communication skills in your professional life.</li> <li>3. Key contacts and key information – e.g. role of teacher, mentor, and SEED. Policies and procedures (user agreements and “contact us” section). Everyone to go to the Group Rules tab at the top of their screen, read out the rules, and ask everyone to verbally agree. Ensure that the consequences are clear for using the platform outside of hours. (9am-8pm)</li> <li>4. What is up next for the next 2 weeks ahead so young people know what to expect (see pages 5-7 for an overview of the challenge). Allow young people to ask any questions about the session topic.</li> </ol>

**Team Activity Planning:  
30 minutes**

MENTOR: Explain to the whole team that you will now be planning how to collaborate for the first and second collaborative Team Activities that will take place outside of the session. There will not be another session until the next session so this step is required because communicating and making decisions outside of a session requires a different strategy that must be agreed upon so that everyone knows what they are doing for this activity and how.

- “IDENTIFY ENTREPRENEURS” TEAM ACTIVITY
- “BRAINSTORMING SOCIAL PROBLEMS” TEAM ACTIVITY”

*As a team, collaborate on a creative brainstorm on social problems in your community. Vote on the areas*

	<p><i>you feel most passionate about as a team, then write down what change you would like to see happen.</i></p> <p>Make sure the teams have the opportunity to talk about how they want to work as a team through the activities e.g. when they want to complete the activities, how to communicate, the role of the project manager, etc.</p> <p>Make sure you allocate each young person a specific week that they are the project manager for the weekly activities and make a note of this.</p> <p>Type up notes for their strategy if this is helpful - it can be included underneath the Team Contract.</p>
<p><b>Session Close:</b> <b>5 minutes</b></p>	<p><b>MENTOR:</b> Close the session with the opportunity for anyone to ask any remaining questions.</p> <p><b>Instructor:</b> Facilitate the wrap-up of the session. A quick reminder of what is coming up next and when the next session will be.</p>

## MOTIVATIONAL LECTURES LINKS.

<u>TOPIC</u>	<u>SPEAKER</u>	<u>LINK</u>
How to Face Problems In Life	Qasim Ali Shah	<a href="https://www.youtube.com/watch?v=OrQte08MI90">https://www.youtube.com/watch?v=OrQte08MI90</a>
Just Control Your Emotions	Qasim Ali Shah	<a href="https://www.youtube.com/watch?v=JzFs_vJt-w">https://www.youtube.com/watch?v=JzFs_vJt-w</a>
How to Communicate Effectively	Qasim Ali Shah	<a href="https://www.youtube.com/watch?v=PhHAQEGehKc">https://www.youtube.com/watch?v=PhHAQEGehKc</a>
Your ATTITUDE is Everything	Tony Robbins Les Brown David Goggins Jocko Willink Wayne Dyer Eckart Tolle	<a href="https://www.youtube.com/watch?v=5fS3rj6eIFg">https://www.youtube.com/watch?v=5fS3rj6eIFg</a>
Control Your EMOTIONS	Jim Rohn Les Brown TD Jakes Tony Robbins	<a href="https://www.youtube.com/watch?v=chn86sH0O5U">https://www.youtube.com/watch?v=chn86sH0O5U</a>
Defeat Fear, Build Confidence	Shaykh Atif Ahmed	<a href="https://www.youtube.com/watch?v=s10dzfbozd4">https://www.youtube.com/watch?v=s10dzfbozd4</a>
Wisdom of the Eagle	Learn Kurooji	<a href="https://www.youtube.com/watch?v=bEU7V5rJTtw">https://www.youtube.com/watch?v=bEU7V5rJTtw</a>
The Power of ATTITUDE	Titan Man	<a href="https://www.youtube.com/watch?v=r8LJ5X2ejqU">https://www.youtube.com/watch?v=r8LJ5X2ejqU</a>
STOP WASTING TIME	Arnold Schwarzenegger	<a href="https://www.youtube.com/watch?v=kzSBrJmXqdg">https://www.youtube.com/watch?v=kzSBrJmXqdg</a>
Risk of Success	Denzel Washington	<a href="https://www.youtube.com/watch?v=tbnzAVRZ9Xc">https://www.youtube.com/watch?v=tbnzAVRZ9Xc</a>

**SUCCESS STORY**

S. No	Key Information	Detail/Description
1.	<b>Self &amp; Family background</b>	<p>Under their company Surety, their document certificate hashes have been published in The New York Times every week since 1995. The first decentralized blockchain was conceptualized by a person (or group of people) known as Satoshi Nakamoto in 2008. Blockchain.com is a cryptocurrency financial services company. The company began as the first Bitcoin blockchain explorer in 2011 and later created a cryptocurrency wallet that accounted for 28% of bitcoin transactions between 2012 and 2020</p>
3.	<b>IBM Success Stories</b>	<p><a href="https://www.ibm.com/blockchain/use-cases/success-stories/#supply-chain">https://www.ibm.com/blockchain/use-cases/success-stories/#supply-chain</a></p> <p>Bolster your supply chain with multi-tier visibility and workflow automation. This matters more today, as consumers demand product authenticity and sustainability, and businesses demand data integrity and faster reconciliation between their partners. Learn more about how Home Depot, Renault, and Atea are putting blockchain to work.</p> <p>Provide verifiable credentials such as personal health and education records in a privacy-preserving way, allowing an individual to manage their information through an encrypted digital wallet on their personal device and maintain control of what they share, with whom and for what purpose. Read below to see the benefits of the Ethos Veterinary Health, New York State, and True Tickets.</p> <p>Creation of a unique digital representation of an asset goes beyond traditional financial instruments and enables you to trade all kinds of assets with more liquidity and speed at lower cost. Tokenize and manage the full lifecycle of your digital assets on a secure, scalable platform with risk and compliance programs specific to digital assets. Read on to learn more about IPwe, Hex Trust, and Banque de France.</p> <p>Empower a resilient, sustainable future for your business. Innovative companies and industry leaders are embracing sustainability to drive new value for their businesses. Harness</p>

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		the power of blockchain to enhance social good and enable businesses to help solve global problems. Discover how TenneT/Equigy, RCS Global, and Newlight are leading the movement.
4.	<b>Message to others (under training)</b>	Take the training opportunity seriously Impose self-discipline and ensure regularity Make Hard work pays in the end so be always ready for the same.

**Note:** Success story is a source of motivation for the trainees and can be presented in several ways/forms in a NAVTTC skill development course as under: -

1. To call a passed out successful trainee of the institute. He will narrate his success story to the trainees in his own words and meet trainees as well.
2. To see and listen to a recorded video/clip (5 to 7 minutes) showing a successful trainee Audio-video recording that has to cover the above-mentioned points.\*
3. The teacher displays the picture of a successful trainee (name, trade, institute, organization, job, earning, etc) and narrates his/her story in the teacher's own motivational words.

\* *The online success stories of renowned professional can also be obtained from **Annex-II***

### Workplace/Institute Ethics Guide

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Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue, or value to strengthen character and individual abilities. It is a set of values-centered on the importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for student success:

1. **Attendance:**

Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. **Character:**

Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. **Team Work:**

The ability to get along with others including those you don't necessarily like. The ability to carry your weight and help others who are struggling. Recognize when to speak up with an idea and when to compromise by blend ideas together.

4. **Appearance:**

Dress for success set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a lifetime

5. **Attitude:**

Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems, and procedures in light of changing responsibilities.

6. **Productivity:**

Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know-how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

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**7. Organizational Skills:**

Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Take an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

**8. Communication:**

Written communication, being able to correctly write reports and memos. Verbal communications, being able to communicate one on one or to a group.

**9. Cooperation:**

Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing work situations and the application of new or different skills.

**10. Respect:**

Work hard, work to the best of your ability. Carry out orders, do what's asked the first time. Show respect, accept, and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions, and suggestions.

