School of Computer Information and Mathematical Sciences

Department of Computer Science and Engineering

ONE WEEK FACULTY DEVELOPMENT PROGRAMME (FDP)

On

Unblocking BlockChain Technology- Hands-on

In association with

ICT Academy

Date: 28thFebruary 2022 to 4thMarch 2022

Session – Report

ProgrammeCo-ordinators
Dr.S.Revathi, Professor, CSE
Dr.N.Sabiyath Fatima,Asso. Pro.,CSE
Dr.V.Muthu Priya, Asst.Prof(SI.Gr),CSE

Conveners
Dr. Venkatesan Selvam, Dean, SCIMS
Dr. E. Syed Mohamed, Prof.&Head, CSE

PREAMBLE

From the 28th of February to the 4th of March 2022, the department of Computer Science and Engineering at B.S.Abdur Rahman Crescent Institute of Science and Technology in Chennai hosted a one-week Faculty Development Program on Unblocking BlockChain Technology Hands-on –collaboration with ICT Academy. This programme was effectively implemented and coordinated using an online portal and specialized sessions. With 54 participants from various AICTE-approved institutions/colleges connected with various universities across India, the FDP programme received an extraordinary response. This FDP lasts a long time a week and includes technical sessions as well as hands-on learning in a variety of BlockChain concepts. Everyday Two sessions were held to ensure that the attendees got the most out of the training. For the foreseeable future, those who develop the ability to continually gain new and better types of information that they can use to their profession and lives will be the movers and shakers in our society.

Day-1 (28.02.2022)

Inauguration Session:

FDP was inaugurated at 9.30 am on 28th February 2022 Quirath Recitation Moulavi Abdul Hai Hasni Nadwi, Assistant Professor, School of Arabic & Islamic Studies, Welcome Address given by Dr.E.Syed Mohamed Professor & HOD, CSE Department, BSACIST,Objective of the FDP was delivered by Dr.S.Revathi, Professor CSE Department, BSACISt, Dr.Muthupriya,Asst. Professor (SL.GR)CSE Department, BSACIST delivered introduction about the Speaker. Dr. Maheshwari, Professor, VIT (Chennai) gave an introduction to BlockChain technology with various technical information   and how it could be applied in real time applications along with case studies like Bit coin, Mining, etc.

On Session 2:

Topic:**Module 1 & 2: BitCoin and BlockChain Technology , Blocks to Blockchain –Hands on**
Resource Person:Dr. Maheshwari
Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

The event was opened by Dr. Revathi, Professor, BSACIST, Chennai, who welcomed the resource person. Following that, Dr. Maheshwari, the session's resource person, educated the participants about the goal,

importance, and numerous sources of BlockChain literature. He gave a brief overview of BlockChain and clearly discussed the notion of real-time applications in Bit coins, as well as the history of Bit coins and how they work in transactions. He exuded a good comprehension of BlockChain's relevance and algorithms. She addressed the fundamental ideas in technology, tying them to the most appropriate real-life situations that are necessary for comprehending technology. She conducted a hands-on workshop using blocks and the Secure Hash Algorithm (SHA).

Day-2 (01.03.2022)

On Session 1:

Topic : **Module 3: Consensus Algorithms**

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

Dr. Maheshwari, the Session's Speaker, discussed the second module, Consensus Algorithms. She projected a clear knowledge of the importance of Blocks, how to develop them, and how to communicate with them. In the year 2021, the presenter plainly demonstrated how crypto currency have trounced all other assets in the world. She also covered crypto trading, explaining how to register on the FRED site and create the code to retrieve the results.

On Session 2:

Topic : **Module 4: Inter-Operability and Hyper ledger**– hands on

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

Dr. Maheshwari, the session's speaker, discussed the second module's interoperability and hyper ledger hands-on training. clearly described about Node Red and debugging, including how to inject nodes and connect them, as well as how to write code and debug it. The presenter went over the material with the faculty in a very participatory manner, and she also cleared all of the problems in the users' systems. During the session, she interacted with the audience by asking questions. She also highlighted that Binance is the world's largest crypto trading platform, allowing users to trade a variety of crypto currencies.

Day-3 (02.03.2022)

On Session 1:

Topic : **Module 5: Smart Contract**

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

The speaker provided an overview of the various smart contracts employed in BlockChain technology, as well as their applications. It refers to programmes that are stored on a BlockChain and run when certain criteria are met. She demonstrated how to import and export Jason code in a functional context, as well as how to troubleshoot the programmes. She has provided smart contract examples. In the hands-on session, she explained how crypto tokens and stable coins are used.

On Session 2:

Topic : **Module 6: Solidity - Hands on**

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai

The speaker started the session with an explanation of the Ethereum solidity based on the previous session and a continuation of the solidity. To build a work space in Solidity and write code in the workspace. She demonstrated how to build and execute the code after she had written it. The Ethereum Virtual Machine (EVM) was created by the developer to operate the contract. She explained Remix, Solidity, Storage Factory, and Brownie Storage in detail, as well as how they are interconnected.

Day-4 (03.03.2022)

On Session 1:

Topic : **Module 7: Remix- Ethereum IDE- hands on**

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

The session's speaker, Dr. Maheshwari, discussed the seventh module's Ethereum IDE hands-on training, which covered hyperledger and confidential transactions. With the use of examples, she has supplied a peer introduction and an anchor peer. She explained how the phrases chain transactor, chain member, chain validator, chain auditor, and channel are all linked together and a description of how to contact a peer

On Session 2:

Topic : **Module 8: Applications of the BlockChain technology**

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

Digital IDs, supply chain monitoring, digital voting, unchangeable data backup, and a variety of other real-time applications of BlockChain have been extensively explained by the presenter.

The use of BlockChain technology to back up data is excellent. Despite the fact that cloud storage solutions are designed to be a go-to source for data storage, they are vulnerable to hackers and infrastructure issues. This problem could be solved by using BlockChain as a backup source for cloud data centers or any data.

BlockChain allows users to vote digitally, and it is transparent enough for regulators to detect if anything on the network has been changed. To make the vote truly count, it combines the convenience of digital voting with the immutability (i.e., unchangeable nature) of BlockChain.

Day-5 (04.03.2022)

On Session 1:

Topic : **Module 9: Demo / Hands on BlockChain Connectivity using Python**

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

The speaker gave a quick overview of the classification techniques that are employed in diverse applications. He gave a few examples to help the participants understand how the BlockChain can be connected using Python software. In an application-oriented way, she explained the following methods: new block(), new transaction(), and hash(). The presenter illustrated how to connect with python, whatever packages need to be installed in python, how to debug python code and run it in visual studio code, and how to do a networking transaction.

On Session 2:

Topic : **Module 10: Case studies of BlockChain technology, Opportunities and Future Direction**

Resource Person: Dr. Maheshwari

Professor, Computer Science and Engineering, Vellore Institute of technology, Chennai.

The facilitator started the discussion by giving a summary of the prior sessions. It was quite beneficial to the students. She demonstrated peer-to-peer networking and how different miners in the block validate the

blocks. She discussed real-time block chain applications such as hospitals, financial transfers, and SMART agriculture, among others.

The key aspect of blockchain technology is the recording of information and data using a logbook approach with the following essential features: orderly, increasing, sound, and digital. Other elements of the blockchain, such as sharing and distribution, are not technically features of the blockchain, but are due to the addition of certain features such as these.
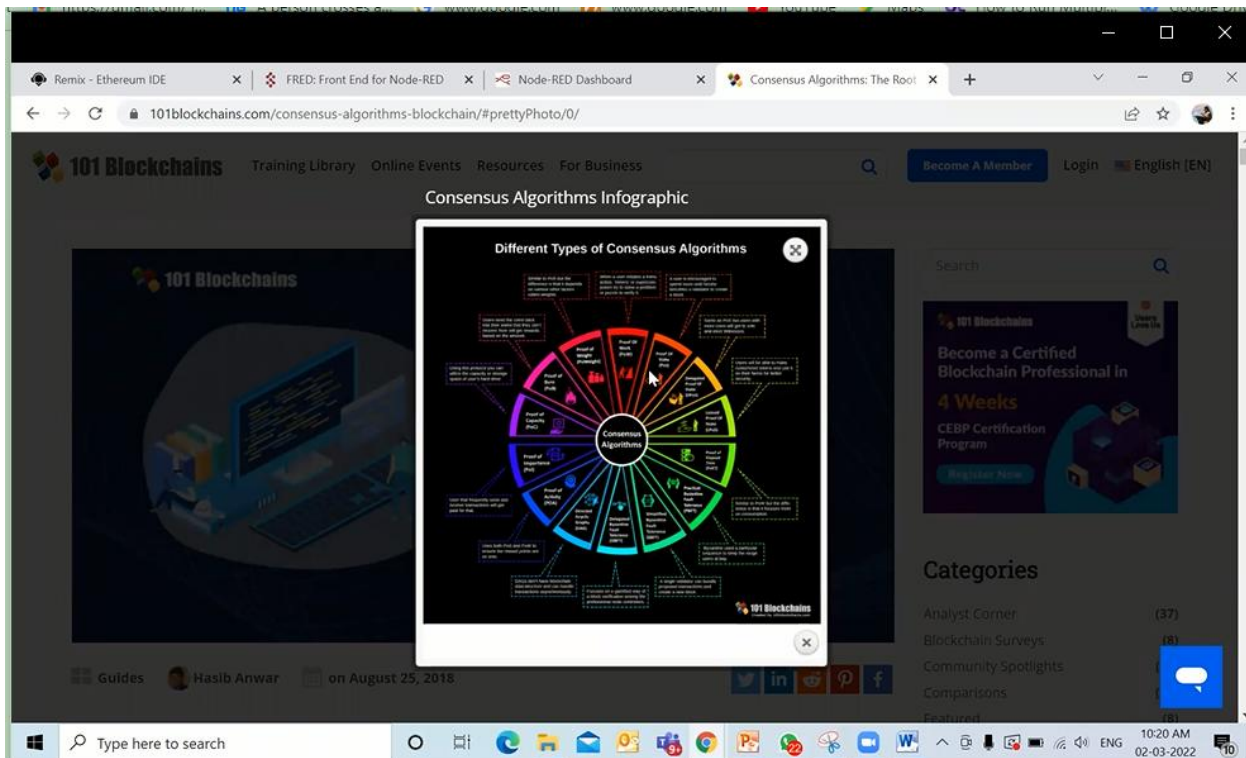
Screenshots of the entire FDP
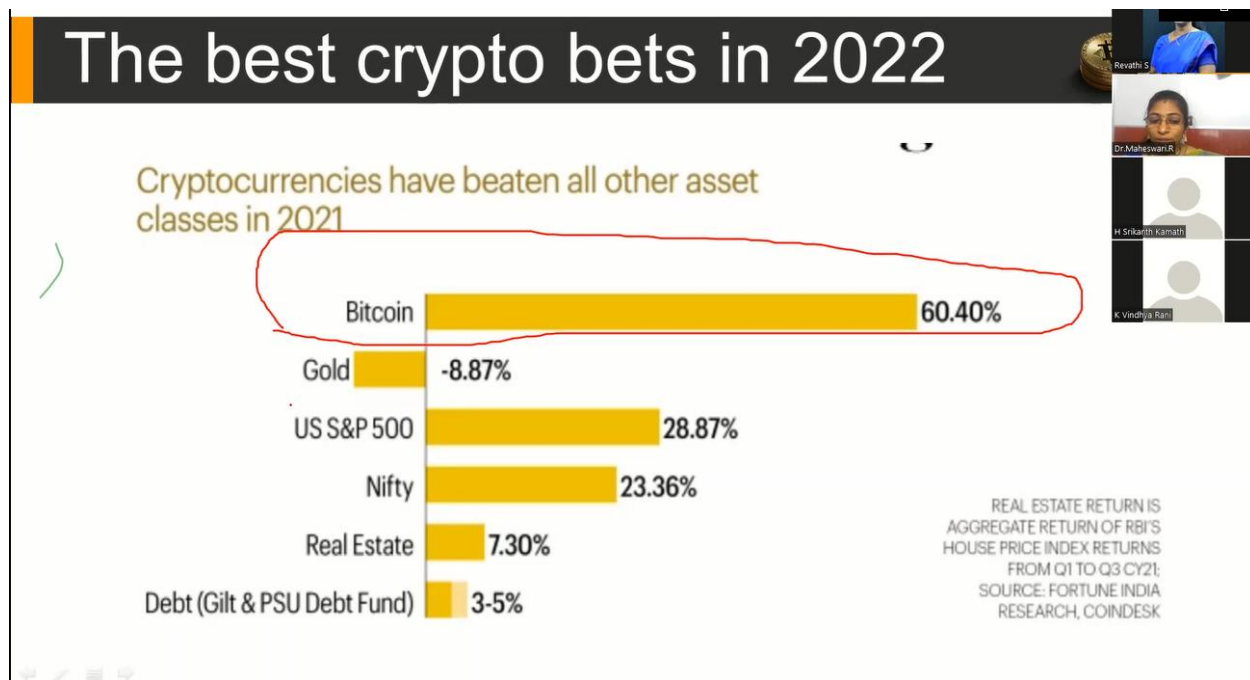
Crypto currencies have beaten all other asset classes in 2021. So in the year 2022 it will be play major role in trading , purchasing and investments.
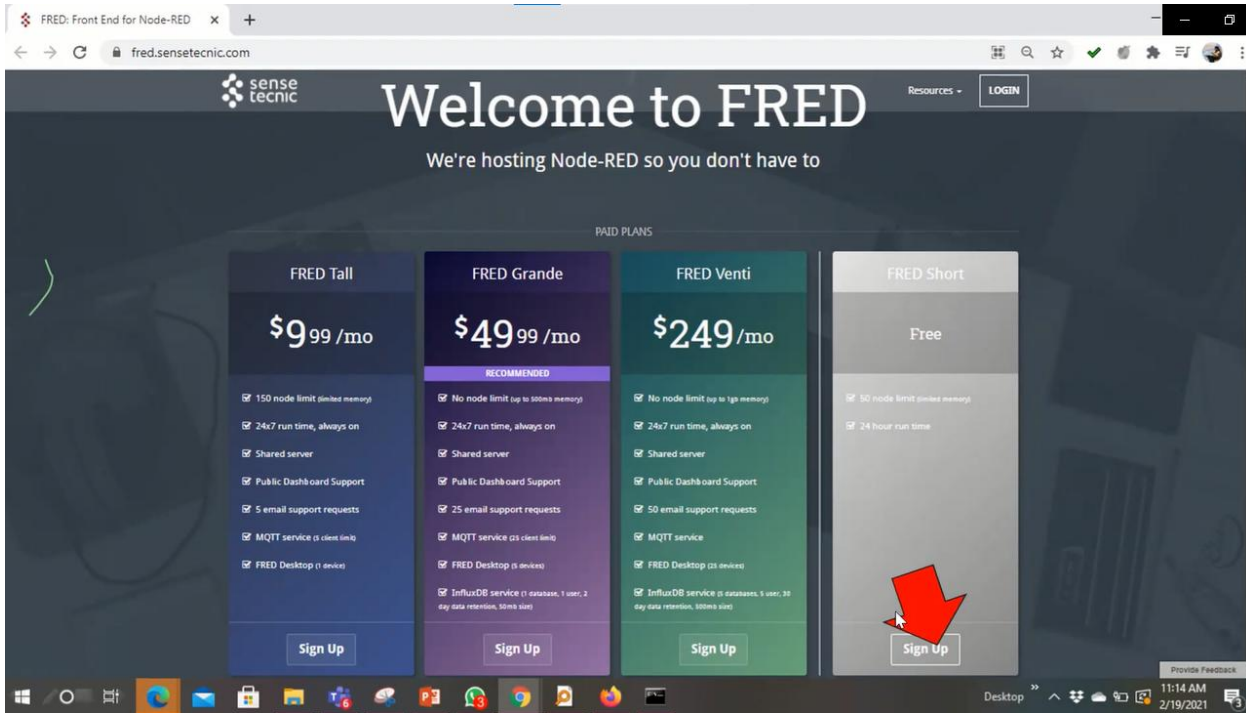
This is how to use the free Node-RED in chrome

Different phase of the Consensus Algorithm infograph

Creation and working on the Smart contract

Deploy and run the transaction code in the workspace

Gas- Ethereum

A gas unit is the smallest type of work that is processed on the Ethereum network.

Gas measures the amount of work miners need to do in order to include transactions in a block.

1 Gas Limit

2 Gas Price

The Total Transaction Cost, also known as the "Tx Fee" can be calculated by the equation:

tx fee = gas limit * gas price

Denominations of Ether		
Unit Name	Wei Value	Number of Wei
Wei (wei)	1 wei	1
Kwei (babbage)	1e3 wei	1,000
Mwei (lovelace)	1e6 wei	1,000,000
Gwei (shannon)	1e9 wei	1,000,000,000
Twei (szabo)	1e12 wei	1,000,000,000,000
Pwei (finney)	1e15 wei	1,000,000,000,000,000
Ether (buterin)	1e18 wei	1,000,000,000,000,000,000

02:01:21   00:10:04
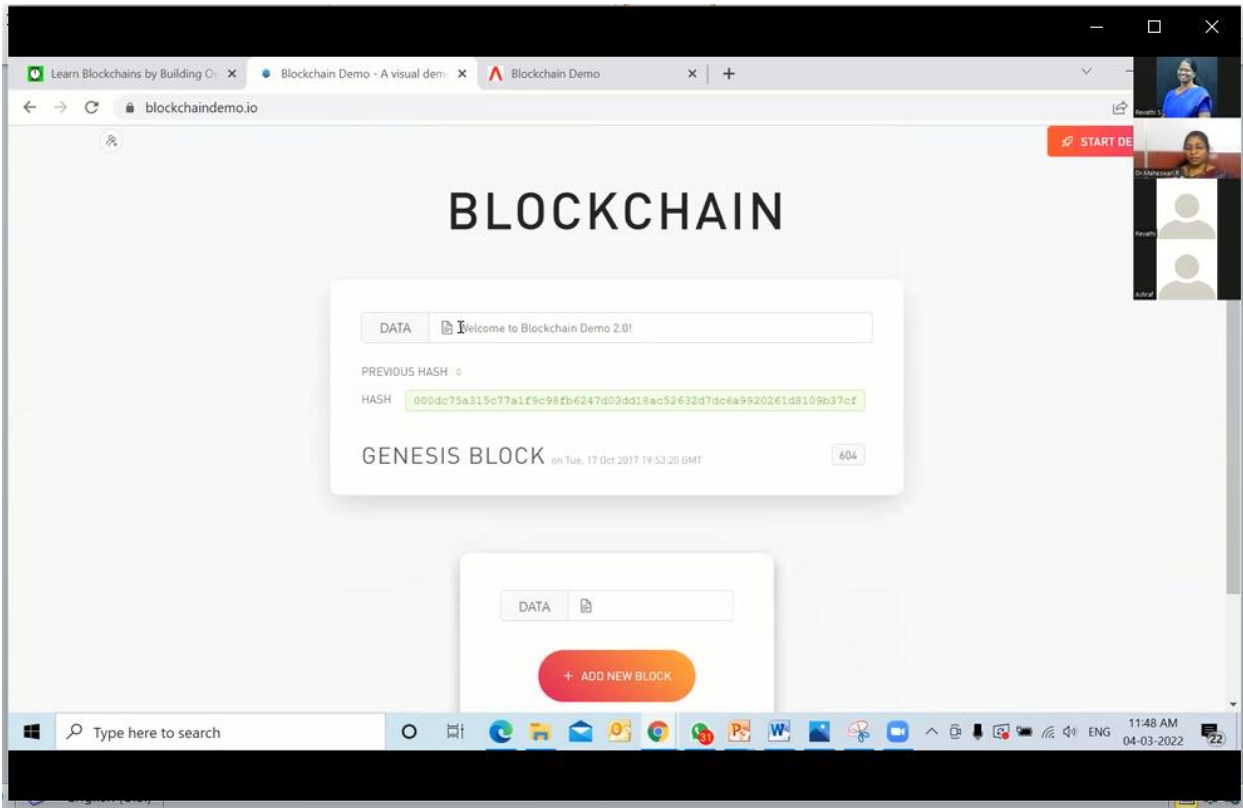
GAS Ethereum – Gas is processed on the Ethereum network

BLOCKCHAIN

B.S.Abdur Rahman Crescent Institute of Science and Technology
04rd March 2022

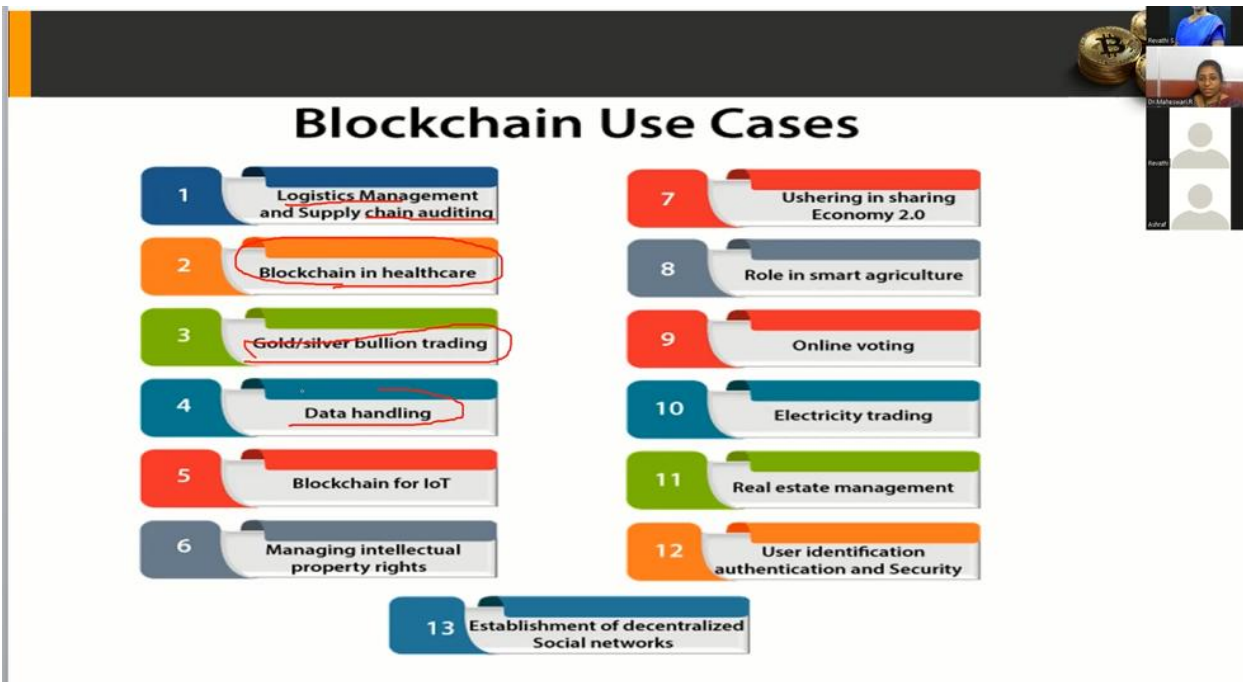"Hands on:
Unblocking BlockChain"
Day 5

Dr. Maheswari.R
VIT Chennai

Demo of the BlockChain in the chrome view

Different use cases of the BlockChain technology.

Valedictory Session:

The Valedictory Session of a week-long Faculty Development Program FDP on Unblocking BlockChain Technology, which received an overwhelming response from participants, came to a close. Dr. S. Revathi, Professor CSE Department, BSACIST, presented the FDP Program's results and introduced Mr.Ashok Solomon, Founder and CEO Director, Splendio Technologies, Chennai, as the valedictory session's major guest. He gave a talk about BlockChain and how it may be used. He described how BlockChain works in the banking industry, as well as the mining process and how BlockChain blocks are validated. He listed a few BlockChain uses, such as banking, data transmission, networking, voting, financial exchanges, and insurance, among others.

This unique user-friendly programme combines real-world bitcoin, practical hands-on sessions, and knowledgeable faculty and researchers. The institution was able to update the curriculum according to the disciplines of subjects thanks to the technological update on this topic.

Dr. Sabiyath Fatima, Associate Professor Department of Computer Science and Engineering, BSACIST, gave vote of thanks in which he expressed her gratitude to all the dignitaries who took the time to share their knowledge with the participants. Nonetheless, she expressed gratitude to ICT academy for their ongoing support and ensuring the success of this Faculty Development Program.

Feedback from the Participants:

The audience's spoken feedback was recorded, and an internet link was created to collect the participants' observations and input, which will help to improve the quality of future sessions. The organisers received really favourable and motivating responses from the attendees. The Hands-on FDP on Blockchain Technology was well received by the attendees. They've learned a lot about Blockchain Technology, both theoretically and in the lab. They stated that this programme was really beneficial to them in their research and in assisting students through projects. The sessions led by our Resource Person were well received by all of the participants, as were the accommodations provided by the organizers. They were pleased with the quality of video and audio streaming on the internet.