



Government of Gujarat

Gujarat Technological University

(Accredited with A+ grade by NAAC)

Centre of Excellence in Blockchain Technology (A Government of Gujarat Funded Project)

LECTURE SERIES IN THE DOMAIN OF BLOCKCHAIN TECHNOLOGY

A Report on Lecture 4

Mastering Ethereum and Solidity

(Date: 25th August, 2023)

The session was organized by GTU-Graduate School of Engineering and Technology under CoE in Blockchain Technology.

The resource person for this session was **Prof. Madhav M. Ajwalia** who is Assistant Professor at Dept. of Information Technology, CHARUSAT-Changa.

Learning Objectives

- To provide understanding of different types of blockchain.
- To provide the insights of ethereum blockchain and its architecture.
- To explore the blockchain application development using solidity.

Participants

Around 36 participants including PG students, research scholars, faculty members from different institutes across the state had participated and took advantage of this session.

Content covered

1.	Blockchain evolution
2.	Types of blockchain
3.	Ethereum blockchain and its key properties
4.	Anatomy of block
5.	Accounts and wallets
6.	Consensus algorithm
7.	Smart contract
8.	Programming in solidity

GTU CoE-BT Lecture 4: Mastering Ethereum and Solidity

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Participants

Type a name

Share invite

In this meeting (24) Mute all

- CoE Blockchain Technology Organizer
- Ash Prajapati (Guest) Meeting guest
- Bhavik Prajapati (Guest) Meeting guest
- Bhavini Patel (Guest) Meeting guest
- Bimal Patel (Guest) Meeting guest
- DARSHAN SAGAR (Guest) Meeting guest
- David Ehigie (Guest) Meeting guest
- deepak upadhyay External
- Dr Ajaysinh Rath... (Guest) Meeting guest

"Mastering Ethereum and Solidity"
Presenting by Madhav Ajwalia, CHARUSAT
CoE for Blockchain Technology, GTU, Ahmedabad

Madhav Ajwalia (Guest)

GTU CoE-BT Lecture 4: Mastering Ethereum and Solidity

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Ethereum Blockchain

2015 May: Olympic - First public test network, participants are rewarded based on their contribution to testing.

2016 March: Homestead - First production release of Ethereum network.

2017 October: Metropolis Byzantium - Designed to make Ethereum lighter, faster, and more secure.

2019 February: Metropolis Constantinople - Operational level optimizations implemented.

2019 December: Istanbul - Prevention of spamming blocks and improves overall DoS attack resilience.

2020 December: Serenity Beacon chain - Manages the transition from proof of work to proof of stake consensus.

2021 August: London - Updated the transaction fee calculation logic.

2022: Serenity Docking - Merging the Mainnet with Beacon chain, and complete transition to proof of stake.

2023: Serenity Shard chains.

Presented by Madhav Ajwalia @ Center of Excellence for Blockchain Technology, Gujarat Technological University, Ahmedabad

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Merkle Tree

```

    graph BT
      Tx1[Tx 1] --> H1[Hash 1]
      Tx2[Tx 2] --> H2[Hash 2]
      Tx3[Tx 3] --> H3[Hash 3]
      Tx4[Tx 4] --> H4[Hash 4]
      Tx5[Tx 5] --> H5[Hash 5]
      Tx6[Tx 6] --> H6[Hash 6]
      Tx7[Tx 7] --> H7[Hash 7]
      Tx8[Tx 8] --> H8[Hash 8]
      H1 --> H12[Hash 12]
      H2 --> H12
      H3 --> H34[Hash 34]
      H4 --> H34
      H5 --> H56[Hash 56]
      H6 --> H56
      H7 --> H78[Hash 78]
      H8 --> H78
      H12 --> H1234[Hash 1234]
      H34 --> H1234
      H56 --> H5678[Hash 5678]
      H78 --> H5678
      H1234 --> H12345678[Hash 1234 5678]
  
```

Merkle Tree - Blockchain Academy (hs-mittweida.de)

Presented by Madhav Ajwalia @ Center of Excellence for Blockchain Technology, Gujarat Technological University, Ahmedabad

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Coordinated and Planned by Executive Committee Members

Prof. (Dr.) S. D. Panchal
Director, GTU-GSET and Coordinator CoE-BT

Prof. P. S. Pann
Asso. Prof., GTU-GSET

Prof. Mahesh Panchal
Asst. Prof. GTU-GSET

Prof. Komal D. Prajapati
Asst. Prof. GTU-GSET
