



Vivekanand Education Society's Institute of Technology

An Autonomous Institute Affiliated to University of Mumbai

Department of Computer Engineering

Academic Year: 2024-25

Lab Code: HBCSBL701	Year/ Semester : Sem VII (Honors)
Name of the Lab: Blockchain Setup Lab	Class : All Branches
Lab Teacher : Mrs. Lifna C. S.	Subject Teacher : Mrs. Lifna C. S.

Program Outcomes (POs)

1. **Basic Engineering knowledge:** An ability to apply the fundamental knowledge in mathematics, science, and engineering to solve problems in Computer engineering.
2. **Problem Analysis:** Identify, formulate, research literature, and analyze computer engineering problems reaching substantiated conclusions using the first principles of mathematics, natural sciences, and computer engineering and sciences.
3. **Design/ Development of Solutions:** Design solutions for complex computer engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
4. **Conduct investigations of complex engineering problems** using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.
5. **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern computer engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to computer engineering practice.
7. **Environment and Sustainability:** Understand the impact of professional computer engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of computer engineering practice.
9. **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.



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11. **Project Management and Finance:** Demonstrate knowledge and understanding of computer engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Lifelong Learning:** Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

Program Specific Outcomes (PSO) :

1. **Professional Skills** - The ability to develop programs for computer-based systems of varying complexity and domains using standard practices.
2. **Successful Career** - The ability to adopt skills, languages, environment, and platforms for creating innovative career paths, being successful entrepreneurs or pursuing higher studies.

Lab Objectives :

1. To build and test a Blockchain using Ethereum in a private setup.
2. To learn the concept of the genesis block and Account in the Blockchain.
3. To get familiar with the mining blocks to create an ether.
4. To understand and apply the concepts of keys, and wallets.
5. To acquire knowledge of gateway and desktop applications.
6. To analyze the applications & case studies of Blockchain.

Lab Outcomes (LO)

LOs	Description
LO 1	To understand how blockchain systems (mainly Ethereum) work.
LO 2	To understand the fields in a Genesis Block and Account in the Blockchain
LO 3	To create mining blocks, check the account and PoW
LO 4	To use cryptocurrency exchanges and wallets safely.
LO5	To create Gateway to Blockchain Apps.
LO6	To use Blockchain on Mobile App and on Cloud.

LO Mapping for BC Setup Lab (Indirect Assessment):

Sr. No.	Rubrics	LO1	LO2	LO3	LO4	LO5	LO6
1	Certification	3	3	3	3	3	3



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LO/PO Mapping

(LO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
LO1	2	2	3	1	3	1	1	2	3	1	1	1	2	2
LO2	2	2	3	2	3	2	1	2	3	1	1	1	2	2
LO3	2	2	3	2	3	2	1	2	3	1	1	1	2	2
LO4	2	2	2	1	3	1	1	1	3	1	1	1	2	2
LO5	2	2	3	2	3	2	1	2	3	1	1	1	2	2
LO6	2	2	2	1	3	1	1	1	3	1	1	1	2	2

Evaluation

- Experiments are evaluated based on mock viva taken on experiments.
- Journals are evaluated based on soft skills and presentations.
- Evaluation is based on the following table:-

Range	Grade
80 and above	Outstanding (O)
75.00 – 79.99	Excellent (A)
70.00 – 74.99	Very Good (B)
60.00 – 69.99	Good (C)
50.00 – 59.99	Fair (D)
45.00 – 49.99	Average (E)
40.00 – 44.99	Pass (P)
Less than 40.00	Fail (F)

Program Execution	3
Documentation	3
Timely Checked	2
Viva	2
Total	10
Mini project Execution	3
Documentation	3
Timely Checked	2
Viva	2
Total	10



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List of Experiments:

No	Title of Experiment	LOs	Grade
1	Create a private Ethereum blockchain using Geth	LO1, LO2	/ 20
2*	Create a Blockchain using Python	LO1, LO3	/ 20
3*	Study on Solidity Programming for Creating Smart Contracts	LO1	/ 20
4	Create a Smart contract in Remix IDE deployed in Ganache	LO1	/ 20
5	To develop a web-based gateway that serves as an entry point for users to access and interact with various blockchain applications.	LO5	/ 20
6.	To develop a blockchain-powered web application using Solidity programming language on Remix IDE.	LO4	/ 20
7	To develop a simple crypto exchange and wallet system	LO4	/ 20
8	To develop a web application through DApp development.	LO6	/ 20
9	To deploy and configure a private blockchain network on a cloud platform (AWS or Azure) for testing and development purposes.	LO6	/ 20
10	Hyperledger Fabric: Demo	LO4	/ 20
Indirect Assessment			
11*	Hyperledger Certification from KBA	LO1, LO2, LO3,LO4, LO5, LO6	/ 10
Continuous Assessment			
a	MCQ	LO1, LO2, LO3,LO4	/ 50
b	MiniProject		/ 10
c	Hackathon Participation		/ 10
d	Other Rubrics mentioned in Syllabus (enlist them) - - - -		

Note: * indicates newly added experiments this year.

Signature of the Lab Teacher