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THE NATIONAL COLLEGE
Autonomous
Jayanagar, Bangalore-560070

Project Report on
Ethereum Blockchain based

E-Voting for Aircraft Design Approval Application

BY

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20NCJB431

Under the guidance of
Prof VARADARAJ R

E-Voting for Aircraft project report submitted in partial fulfilment of the
requirements of

VI Semester BCA, THE NATIONAL COLLEGE JAYANAGAR, Bangalore.

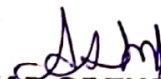


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CERTIFICATE

This is to certify the project report titled "eVoting for Aircraft Design Approval Application" is a work done by **Varun K** of THE NATIONAL COLLEGE, Jayanagar, Bengaluru, in partial fulfilment of the requirements of VI Semester BCA during the year 2022-2023.


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PROJECT GUIDE

Examination Centre

National College, Jayanagar

Date of Examination:

22/08/2023

ACKNOWLEDGEMENT

eVoting for Aircraft Design Approval Application is the project of many hands from the team. Our tribute for the successful completion of the project goes to all those who helped through their constant guidance and encouragement. The satisfaction that accompanies the success would be incomplete without thanking person who made it.

We are thankful to our beloved Principal **Dr B SURESHA**, who encourages us to come with new and innovative ideas and for providing the environment with all facilities for completing the project.

We are also grateful to our Head of the Department **Prof ASHA T S** and project guide **Prof VARADARAJ R** lecturer Department of computer science for her/his valuable guidance and constant support during our project development.

We are also grateful to **MUTHURAM GOVINDARASU** CEO and Founder of Indigeneous Tech Private Limited, Bangalore-32 with 10 years of experience in Blockchain for his valuable guidance and technical support for our project.

We extend our thanks to all our teaching staffs of department of computer science. Finally, we thank one and all who helped us directly and indirectly for the completion of our project.

ABSTRACT

- Download and install "METAMASK" wallet as the extension of chrome browser.
- Download and install the latest version of "GANACHE ETHEREUM TEST BLOCKCHAIN"
- Link the "METAMASK" to the "first account" of the "GANACHE TEST ETHEREUM BLOCKCHAIN" and verify the quantity of ether available in Metamask's account
- Download and install NodeJS for Windows Platform20
- Verify the successful installation of "NodeJS" and "npm" through Windows terminal (using "cmd" command)
- Install Truffle through Windows terminal and verify its version after installation.
- Download and Install "Visual Studio code" editor and verify
- After setting Up the Environment Compile, Migrate and Test METAMASK, GANACHE, NODEJS, TRUFFLE, VISUAL STUDIO CODE in windows platform and Run the Project
- Display the front-end on the default Browser of the Voting application for company Board Resolution.
- Create a voting for company board resolution.
- Metamask should be able to calculate the transaction fees for creating a voting campaign and registration of voters.

- Ganache should record the registered voters' transaction and it should be verifiable.
- Using one Ganache Ethereum Account voter once voted should not be able to Vote again.
- Using different Ganache Ethereum accounts, the account holder should be able to vote for their candidate and verify the related transactions in Ganache.

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I) Project Goal (Problem Statement)

To design, develop and verify the “eVoting for Aircraft Design Approval Application” having the following features:

- a) Display the front-end of the Application on the default Browser.
- b) Setup the “Admin” related info and start the eVoting process.
- c) Add 3 Designs for eVoting.
- d) Register 4 Voters.
- e) As an “Admin” approve all the 4 Voters.
- f) Perform eVoting for Aircraft using 4 Voters account.
- g) As an “Admin” close the eVoting Process.
- h) Verify the result of eVoting.

II) Solution Proposed

We will design, develop, implement and verify the Ethereum Blockchain based solution namely “eVoting for Aircraft Application” which will be executed in a Windows System. The proposed Solution will meet all the features specified in the Problem statement.

II) Input Data

SLNO	Design Names	Voting Symbol
1.	Deccan Aviation	Aircraft Design 01
2.	Matrix Aviation	Aircraft Design 02
3.	Blue Sky Aviation	Aircraft Design 03

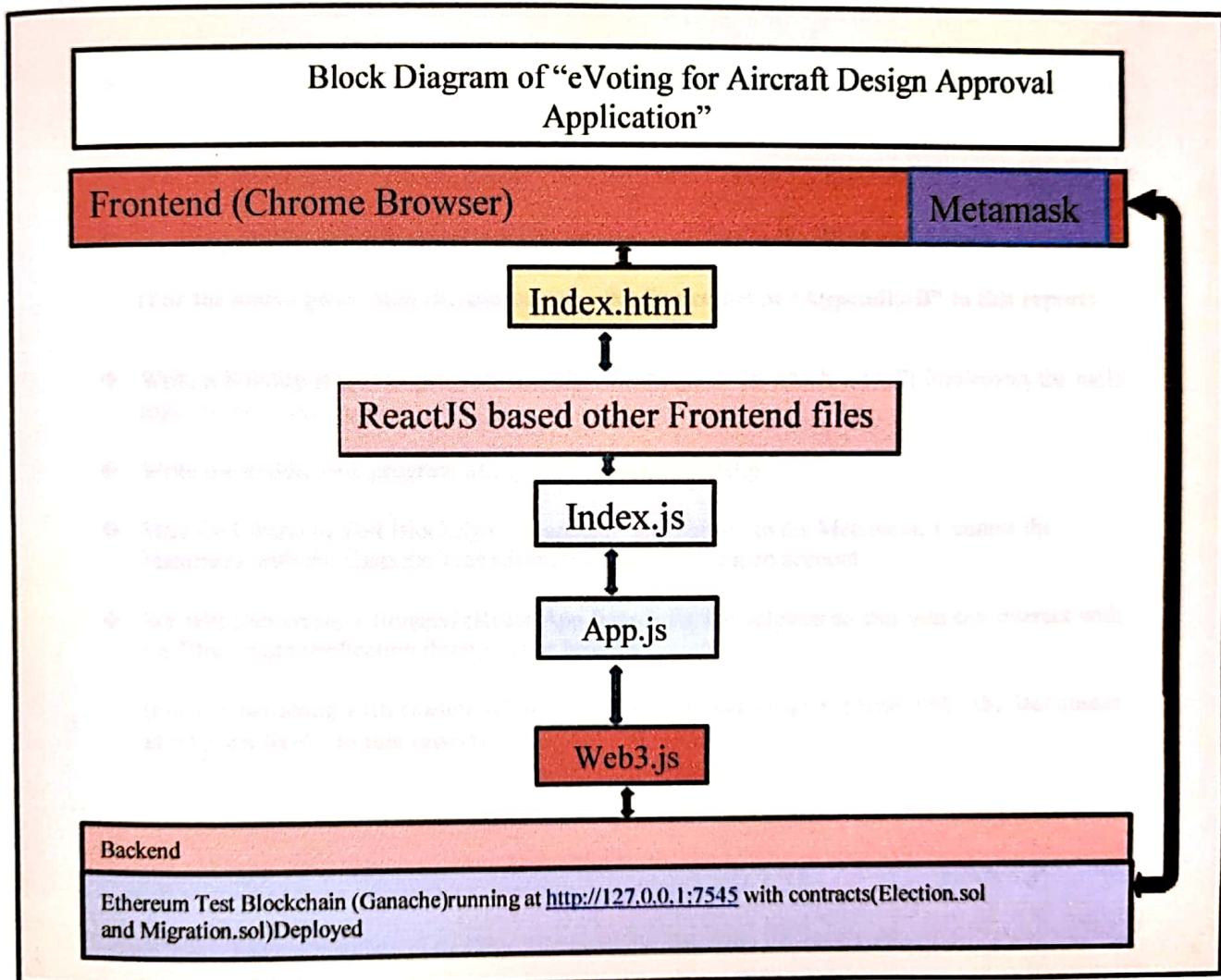
III) Project Team Members:

- Rohit V (20NCJB421)
- Varun K (20NCJB431)
- Vivek Kumar A (20NCJB452)

IV) Referenced Documents:

- 1) **Appendix-A:** 02-Appendix-A-Install-and-Setup-Metmask-Ganache-Nodejs-Truffle-VisualStudioCode-in-Windows-Platform-21-Jun-2023.docx.
- 2) **Appendix-B:** 03-Appendix-B-Ethereum-Project-eVoting-for-Election-Setup-21-Jun-2023.docx.
- 3) **Appendix-C:** 04-Appendix-C-Programs-and-Files-Used-in-eVoting-for-Election-Application-21-Jun-2023.docx.

V) Project/ Solution (eVoting for Aircraft Application) Design



High Level:

Create / provide the following in the Windows System:

- Create and set the Ethereum Blockchain environment in the Windows system.
- Create the Project folders and files using "Truffle" in the Windows System.
- Write the Solidity program "Election.sol" capturing the main logic of the solution.
- Write the required frontend, middleware and other required files for the solution.

Details:

- ❖ Set-up the Ethereum Blockchain environment in the Windows System by installing NodeJS, NPM, Truffle, Ganache and Metamask

(For the above given Step (a), please refer the Document at "Appendix-A" to this report)

- ❖ By using Truffle, setup the project folder and required files in the Windows System.

(For the above given Step (b), please refer the Document at "Appendix-B" to this report)

- ❖ Write a Solidity language program namely "Evoting.sol" in which we will implement the main logic of the Solution.
- ❖ Write the middleware program using JavaScript and Web3.js
- ❖ Start the Ethereum Test Blockchain "Ganache" and sign-in to the Metamask. Connect the Metamask with the Ganache Test Blockchain by importing an account
- ❖ We will also create a frontend (React App based) for the solution so that you can interact with the Blockchain application through your browser.

(For the list along with content of programs used in the project, please refer the Document at "Appendix-C" to this report)

VI) Tools/ Technologies Used

a) List of Tools and Technologies

- O/S: Windows 10
- Browser: Chrome Browser
- Nodejs and NPM
- Truffle
- Ganache (Ethereum Test Blockchain)
- Metamask
- HTML
- CSS
- JavaScript
- Web3.js
- Front-end Tools:
- HTML, CSS
- ReactJS

b) Backend:

- Ethereum based Test Blockchain linked with Metamask

c) Middleware:

- JavaScript with Web3.js

VII) Install the Tools required for the Ethereum Based Blockchain Project in Windows System

(For the detailed instructions, please refer "Appendix-A" document of this Project Report)

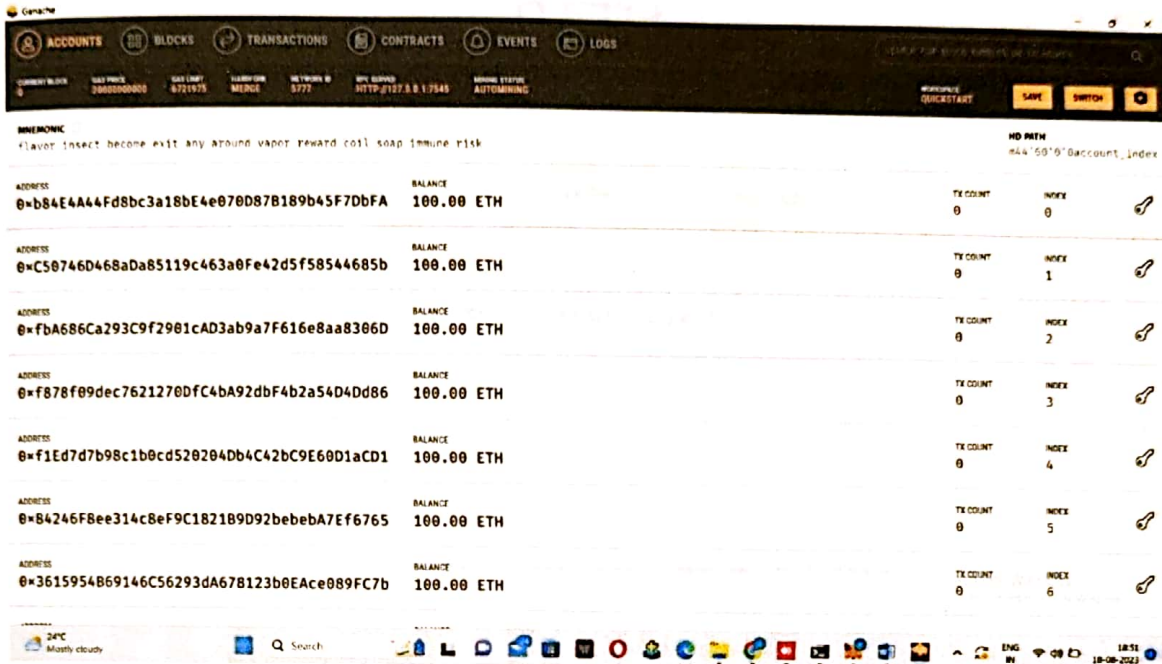
VIII) Setup the Ethereum Blockchain based Project "eVoting for Aircraft Design Approval Application" in the Windows System

(For the detailed instructions, please refer "Appendix-B" document of this Project Report)

(For the list of programs and files used in this project, please refer "Appendix-C" document of this Project Report)

IX) Project Execution

1) Start the Desktop version of Ganache (Test Ethereum Blockchain).



2) Sign-in to the Metamask, select the network “Ganache Desktop Network7545”, import the first account of the Ganache Blockchain and make sure that the account is in “connected” state. Rename the account as “Admin-Acct”.