



FINAL YEAR PROJECT REPORT

BLOCKCHAIN FOR PSL VOTING

In fulfillment of the requirement

For degree of

BS (COMPUTER SCIENCES)

By

TALHA AMIN

59929 (BSCS)

SAQLAIN RAZA

59981 (BSCS)

HASAAN AHMED ZAIDI

59943 (BSCS)

SUPERVISED

BY

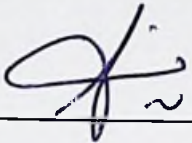
MR JAWAD BHUTTA

BAHRIA UNIVERSITY (KARACHI CAMPUS)

FALL-2022

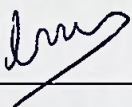
DECLARATION

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Bahria University or other institutions.

Signature :  _____

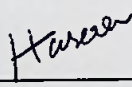
Name : TALHA AMIN

Reg No. : 59929

Signature :  _____

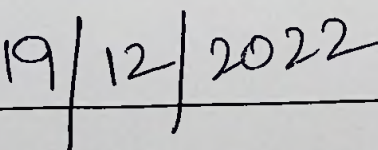
Name : SAQLAIN RAZA

Reg No. : 59981

Signature :  _____

Name : HASAAN AHMED ZAIDI

Reg No. : 59943

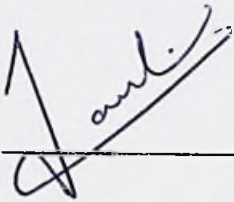
Date :  _____

APPROVAL FOR SUBMISSION

We certify that this project report entitled **“BLOCKCHAIN FOR PSL VOTING”** was prepared by **Talha Amin, Saqlain Jamali & Hasaan Ahmed Zaidi** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of **Computer Sciences** at Bahria University.

Approved by,

Signature :



Supervisor : Mr Jawad Bhutta

Date :

_____ 20/12/2022 _____

The copyright of this report belongs to Bahria University according to the Intellectual Property Policy of Bahria University BUORIC-P15 amended on April 2019. Due acknowledgement shall always be made of the use of any material contained in, or derived from, this report.

© 2019 Bahria University. All right reserved.

BLOCKCHAIN FOR PSL VOTING

ABSTRACT

E-Voting has come a long way in various different forms since the late 90's with fundamental benefits above many traditional systems which include increased efficiency and reduction of errors. However, certain threats in achieving widespread adoption still remain of such frameworks, particularly for working on their versatility against likely blames. Blockchain, a current-era technology, and promises to improve the overall resilience of electronic voting systems. In this report, we propose a PSL voting Dapp that protects voter identity and further develops availability while keeping the democratic framework straightforward and secure. The PSL Voting System implements a community-based ballot casting structure that leverages Avalanche's blockchain to achieve voter management and verifiable voting ledger.

The project was deployed on the Avalanche testnet to show convenience, versatility, and proficiency. The blockchain voting project consists of three modules to integrate and collaborate the whole project. One will be the election administration, which will be responsible for creating voting instances, then candidates running for the election added as part of the smart contracts. The opposite end will be the citizen module, where every individual can make a choice for each instance and the vote will be registered on the blockchain to make it tamper-proof. The third module consist of voting instances being created by any user which utilizes the concept of DAO further explained in the report.

TABLE OF CONTENTS

DECLARATION		i
APPROVAL FOR SUBMISSION		ii
ABSTRACT		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		vi
LIST OF FIGURES		vii
CHAPTER		
1	INTRODUCTION	1
	1.1 Background	1
	1.2 Problem Statements	3
	1.3 Aims and Objectives	3
	1.4 Scope of Project	4
2	LITERATURE REVIEW	5
	2.1 Background	5
	2.1.1 Voting with a smart contract	6
	2.1.2 Voting with a custom block chain	7
	2.1.3 Voting with cryptographic signatures	8
	2.1.4 Replay Attacks	10
	2.2 Related Work	11
	2.2.1 Follow My Vote	12
	2.2.2 Voatz	12
	2.2.3 Luxoft	12
	2.2.4 Ploys	13
	2.2.5 Agora	13
	2.3 Chapter Summary	13

3	DESIGN AND METHODOLOGY	16
3.1	Proposed Methodology	16
3.1.1	Architectural View	17
3.1.2	Application Flow	18
3.2	Process Model	19
4	IMPLEMENTATION	20
4.1	Proposed Methodology	20
4.1.A	React JS	20
4.1.B	Web3JS	20
4.1.C	Truffle	20
4.1.D	Solidity	20
4.1.E	Metamask	20
4.1.F	JMeter	21
4.2	Module Discussion	21
4.2.A	Login	21
4.2.B	Admin	22
4.2.C	User	22
4.2.D	Start/End	23
4.2.E	Cast Vote	23
4.2.F	Show Results	25
4.2.G	Winner	25
5	RESULTS AND DISCUSSIONS	26
5.1	Prevention of Replay Attack	26
5.2	Performance / Load Testing	30
6	CONCLUSION AND RECOMMENDATIONS	38
6.1	Conclusion	38
6.2	Further Implementation	39
	REFERENCES	40