

## CONTENTS

<b>Approval Page</b>	<b>i</b>
<b>Declare Page</b>	<b>ii</b>
<b>Acknowledgment</b>	<b>iii</b>
<b>CONTENTS</b>	<b>iv</b>
<b>LIST OF TABLE</b>	<b>vi</b>
<b>LIST OF FIGURES</b>	<b>vii</b>
<b>INTISARI</b>	<b>viii</b>
<b>ABSTRACT</b>	<b>ix</b>
<b>I INTRODUCTION</b>	<b>1</b>
1.1 Background	1
1.2 Research Problem	5
1.3 Research Scope	5
1.4 Research Objective	6
1.5 Research Benefits	6
1.6 Research Methodology	7
1.7 Thesis Organization	8
<b>II LITERATURE REVIEW</b>	<b>10</b>
2.1 Blockchain	10
2.1.1 Consensus Algorithm	11
2.1.2 Smart Contract	12
2.1.3 Hashing in Blockchain	13
2.2 InterPlanetary File System	13
<b>III THEORETICAL FRAMEWORK</b>	<b>17</b>
3.1 Blockchain in Used Car Market	17

3.2	System using Blockchain and InterPlanetary File System (IPFS) Technologies	20
3.3	Blockchain in auction	21
<b>IV</b>	<b>ANALYSIS AND DESIGN SYSTEM</b>	<b>24</b>
4.1	Assumptions	24
4.2	System Architecture	25
4.3	Process Flow of Proposed System	26
4.3.1	Process of Input Data by Car Owner	29
4.3.2	Process of Query by Car Dealer and Car Owner	31
4.3.3	Auction Process	32
<b>V</b>	<b>SYSTEM IMPLEMENTATION</b>	<b>34</b>
5.1	System Environment	34
5.1.1	Quorum Network	35
5.1.2	DApps (Javascript, Web3.js and Metamask)	36
5.1.3	InterPlanetary File System (IPFS)	37
5.2	Smart Contract Implementation	38
5.2.1	Create user registration	39
5.2.2	Car Registration	39
5.2.3	Car query	40
5.2.4	Auction Car registration	41
5.2.5	Bidding	42
5.2.6	Closed Bidding	45
5.3	The InterPlanetary File System (IPFS) Implementation	46
5.4	Application Interface implementation	48
5.4.1	Metamask User Registration	48
5.4.2	Application Interface	49
<b>VI</b>	<b>SYSTEM ANALYSIS</b>	<b>56</b>
6.1	Performance Analysis	56
6.2	Security Analysis	58
<b>VII</b>	<b>CONCLUSION</b>	<b>62</b>
7.1	Conclusion	62
7.2	Future Work	63