

UNIVERSITI TEKNOLOGI MARA

**THE COMPARISON OF ARCGIS AND QGIS
SOFTWARE USING GEOCODING METHOD FOR
POSTAL CODE ENHANCEMENT IN MAILING
DELIVERY**

SYED IZZAD SYAMIL BIN SYED MAHDI

Thesis submitted in fulfillment
of the requirements for the degree of
Bachelor of Surveying, Science and Geomatics (Hons)

Faculty of Architecture, Planning and Surveying


July 2017

AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student : Syed Izzad Syamil Bin Syed Mahdi
Student I.D. No. : 2014989697
Programme : Bachelor of Science Surveying and Geomatics -
Faculty : AP220
Faculty : Architecture, Planning & Surveying
Thesis/Dissertation Title : The Comparison of ArcGIS and QGIS Software Using
Geocoding Method For Postal Code Enhancement In
Mailing Delivery

Signature of Student : 

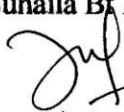
Date : July 2017

Approved by:

I certify that I have examined the student's work and found that they are in accordance with the rules and regulations of the Department and University and fulfils the requirement for the award of the degree of Bachelor of Surveying Science and Geomatics (Honours).

Name of Supervisor: Suhaila Bt Hashim

Signature and date:


11/8/2017

ABSTRACT

Geocoding is the process of assigning location, basically in the form of x and y values (coordinates), to an address by comparing the descriptive location elements in the address to those present in the reference materials. Besides, the geocoding process is involving steps in translating an address entry. Postal code enhancement is not new in this world. Many countries for example United States, United Kingdom and France are always updating their postal code from time to time. Regardless until now, there is non-upgrading research being made to Malaysia's postcode system. The objectives of this study are to review the capabilities of geocoding in ArcGIS and QGIS and to compare both software in terms of completeness and positional accuracy. In geocoding process using ArcGIS reference data is needed. Data of road and proposed postcode are used as the reference data in this research. The geocoding analysis is done using a proposed postal code made for pilot study area, Kangar Perlis, which this postal code is generated by using a specific coding model that made for Malaysia. The result of each geocoding method using by each software is determines and compared based on their match rates and accuracy. The result shows both software has equally capabilities in geocoding..

TABLE OF CONTENTS

CONFIRMATION BY PANEL OF EXAMINERS	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	v
ACKNOWLEDGEMENT	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS / NOMENCLATURE	xii
CHAPTER ONE	
Introduction	1
1.1 Research Background	1
1.2 Reserch Gap	3
1.3 Problem Statement	5
1.4 Aim & Objectives	5
1.5 Research Question	6
1.6 General Methodology	7
1.7 Significant Of Study	8
1.8 Summary	8
CHAPTER TWO	
Literature Review	9
2.1 Mailing Delivery System	9
2.2 Postal Code In Other Countries	10
2.2.1 Royal Mail Group	11
2.2.2 United State Postal Services (USPS)	12
2.2.3 La Poste	13
2.3 Malaysian Mailing Delivery System	14
2.4 Relation Of Addressing System And Geocoding	15

2.4.1	Geocoding Component	15
2.4.2	Preprocessing	16
2.4.3	Address Matching	17
2.4.4	Geocoding Quality	18
2.2.5	Type Of Geocoding Methods	19
2.5	Variations Of Geocoding	20
2.6	Overview Of Application Design	21
2.6.1	Arcgis	21
2.4.2	Quantum Gis	21
2.7	Application Of Geocoding	22
2.7.1	Location –Based Services	22
2.7.2	Business Application	23
2.7.3	Wireless Emergency Services	23
2.7.4	Public Health	24
2.7.5	Crime Mapping And Analysis	24

CHAPTER THREE

Methodology	25
3.1 Introduction	25
3.2 Methodology	26
3.2.1 General Methodology Using Arcgis	28
3.3 Study Area	29
3.4 Data Acquisition	30
3.5 Data Processing	31
3.5.1 Data Management Using Excel And Arcgis	31
3.5.2 Network Analysis	33
3.5.2 Geocoding Using Arcgis	34
3.5.3 Geocoding Using Quantum Gis	36
3.5.3 Virtual Map Using Arcgis Online	39
3.6 Summary	40

CHAPTER FOUR

Results And Analysis	41
4.1 Introduction	41