

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF
LEAST SQUARE ADJUSTMENT
APPLICATION FOR TRAVERSING**

HARITH FADHILLAH BIN SOEB

Thesis submitted in partial fulfillment
of the requirements for the degree of
Geomatics Science and Surveying

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AUTHOR'S DECLARATION

I declare that the work in this 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 : Harith Fadhillah bin Soeb

Student I.D. No. : 2015191351

Programme : Bachelor of Surveying Science and Geomatics – AP220

Faculty : Architecture, Planning and Surveying

Thesis : Development of Least Square Adjustment Application
for Traversing

Signature of Student :

Date : January 2019

ABSTRACT

Referring to the current issue, most of the adjustment applications for traversing work are using Bowditch for Android and iOS operating system. However, the least square method is a better method than Bowditch method. Meanwhile, there is an adjustment application that uses least square method with different observation equation and using angle based method. Based on that situation, the demanding to build least square adjustment application for traversing that focus on bearing and distance are required. In addition, the development stage started by perform calculation process using MATLAB software. Next, the algorithm for calculation process was generated using the Eclipse application that uses Java programming language. Interface design for application uses Android Studio as an official Integrated Development Environment (IDE). Proper assessment also being conducted by compared parameters from developed application with StarNet software that used as a reference for this study. Parameters comparisons are adjusted coordinates, bearings and distances, residual and standardized residual for both bearings and distances observation, and also Chi-Square test result. There are six study cases for this research that aimed at the accuracy and limitation of this application in conducting adjustment process. In conclusion, the least square adjustment application was successfully developed, besides the indicator of its accuracy is shown by the different value for each parameters that been compared.

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