

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**AN APPLICATION OF FLOYD-WARSHALL ALGORITHM IN
FINDING SHORTEST PATH OF ORDER PICKER IN
WAREHOUSE**

P43S19

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

Shortest path is a route that can be passed by the order picker with the least distance while order picker is a person who are assigned to travel along the aisle to collect the order. Meanwhile, shortest path for order picker achieve the worker that is assigned to complete their order picking list with optimal distance. It is one of the challenging tasks for the warehouse. This study focused on Floyd-Warshall Algorithm in finding the route of the order picker in finishing their item in the picking list. Every warehouse is extremely cost-conscious for each activity that run in there, and order picking is no exception. Most of the warehouse are still using human power in the order picking activities. Worker's fatigue can lead to delay of work and the consequences are lead to unhappy customer and require work overtime. Therefore, the worker need to work efficiently in order to reduce the bad effects. The objectives of this study are to construct the distance matrix and sequence matrix based on the network layout and to find the shortest path to collect the item in the warehouse. Based on the data collected, the distance matrices and sequence matrices are build referred through the layout that provided by the local automotive warehouse. Floyd-Warshall Algorithm is implemented after both matrices are done. This algorithm run in a software called Toolkit for Oracle (TORA) software. For the result, shortest path for the order pickers in iterations. The algorithm used can help the order picker to have the shortest path, but it have no direct path. The order picker need to identify which node to start and proceed the collecting process. The shortest path for the order picker is 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19 with 39.3821 kilometer (km) of distance.