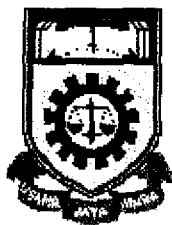# DESIGN OF TRAFFIC LIGHT CONTROLLER USING

MENTOR GRAPHICS

This thesis is presented in partial fulfilment for the award of the Bachelor in Electrical

Engineering (Hons.) of Institut Teknologi MARA.

NOR SAINA BINTI ABDUL RAHMAN

Faculty of Electrical Engineering

Institut Teknologi MARA

40450 Shah Alam, Malaysia

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ABSTRACT

A fixed time traffic signal controller is designed for a four-leg intersection. The design is based on past traffic data and it assumes that traffic conditions are unchanged throughout the day. Based on a timing plan obtained for an intersection at Bukit Beruang in Malacca, a sequential logic traffic light controller is design and modeled using the Mentor Graphics Design Architect and subsequently simulated using the Mentor Graphics QuickSimII package. The objective of this project is to use the Mentor Graphics package in part of the design process.

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CHAPTER 1

1.0 INTRODUCTION

Traffic control and management is central to the mission of all public transportation agencies. The ultimate goal of traffic control is to increase public safety and efficiency of various transportation modes. One long standing as well as challenging problem is to apply traffic signal control so as to (a) maximize the efficiency of existing traffic systems without new road constructions, (b) reduce the vehicle delay or equivalently queue length, and (c) minimize the air and noise pollution.[1]

1.1 Traffic light.

Years ago, traffic signals were controlled by a simple electric clock. These clocks allocated a specific amount of time to each traffic direction, in a specific pattern. The problems with this arrangement are obvious under today's heavy traffic condition. The clock left no room to adjust for peak traffic periods, or unusual conditions.

The next step was to create a clock that operated differently at different times of the day. Still largely mechanical, these devices can still be found in use in some locations. They may have several different patterns for different times of day.

As electronics have influenced everything, so have they changed traffic control. Today, traffic signal controller is a device that monitors traffic in several directions, and adjusts the signal timing and sequence based on that traffic.

The first traffic signal was built at Westminster, Great Britain in 1868. In 1918, a manually controlled 3-color traffic light was first used in New York. Seven years later the manual traffic control was used in Piccadilly. In 1926, the automatic traffic signal was utilized in Walverhampton, Great Britain. Although they helped to reduce the police