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FINAL REPORT OF DIPLOMA PROJECT

KEU 380

PIC SIGNBOARD

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ABSTRACT

PIC Gallery Signboard is design to be function like an electronic signboard that can give any information that has been programmed. It has many functions such as traffic light scoreboard at stadium, signboard at LRT station and also at KLIA. For example, in LRT station the signboard shows the time of the train will arrive and departure. The signboard also was very useful especially during night and raining because in this time the driver's view is limited. The electronic signboards use a bright LED that the drivers can easily see the direction or instruction in the signboard. This signboard was widely used in many places especially in big city like Kuala Lumpur. In Kuala Lumpur, this electronic signboard was widely used in many streets. It is also functioned as a traffic light.

This signboard can be designed using the PIC programmer. It is an empty IC that can be programmed by using the software programmed. The 4 bits binary code was very important to be studied and know and programmed the circuit. This project will introduce the electronic signboard with PIC16F84A. The message is displayed to flow from right to left. 128's LED is used for this signboard. The display is based on what we programmed it into the IC.

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1.0 INTRODUCTION

1.1 Theoretical Background

PIC16F84 is an embedded micro that have 18-pin chip that can serve as the brain behind the project. The PIC can be outfitted with sensors and decide whether devices like motor and relays should be activated. PIC (Peripheral Interface Controller) is the IC, which was developed to control the peripheral device, dispersing the function of the main CPU. When comparing to the human being, the brain is the main CPU and the PIC shares the part of which is equivalent to the autonomic nervous.

PIC has the calculation function and the memory like the CPU and is controlled by the software. However, the throughput, the memory capacity isn't big. It depends on the kind of PIC but the maximum operation clock frequency is about 20 MHz and the memory capacity to write the program is about 1K to 4K words. The clock frequency is related with the speed to read the program and to execute the instruction. Only at the clock frequency, the throughput cannot be judged. It changes with the architecture in the processing part. As for the same architecture, the one with the higher clock frequency is higher about the throughput. The WORD is used for the capacity of the program memory. It represents the one instruction as being the 1 word. It often uses the BYTE to show the capacity of the memory. The 1 byte shows the 8 bits. The bit is the atomicity, which shows 1 or 0. The instruction of the PIC16F84A is composed of the 14 bits. It is $1 \times 1,024 \times 14 = 14,336$ bits when converting the 1K words to the bit. It is $14,336 / (8 \times 1,024) = 1.75$ K bytes when converting this to the byte. At the memory capacity, it is the 1G bytes, 1,024M bytes, 1M bytes = 1,024K bytes, 1K bytes = 1,024 bytes. It is not 1000 times. This is because it calculates in the binary. It is possible to make the compact circuit when using PIC. The point that the PIC is convenient for is that the calculation part, the memory, the input/output part and so on are incorporated into one piece of the IC. The efficiency, the function is limited but can