# ENHANCEMENT OF WATER LEVEL CONTROL SYSTEM
## (SOFTWARE DEVELOPMENT)

Thesis is presented to fulfill the requirement
of Bachelor Engineering (Hons) Electrical
**MARA Institute of Technology**


**HAIROL BIN JAFFAR**

Faculty of Electrical Engineering
MARA Institute of Technology
40450 Shah Alam
Selangor
**MALAYSIA**


APRIL 1998

**ABSTRACT**

Automatic Control System has played a vital role in the advance of engineering and science. In addition to its extreme importance in space-vehicle systems, misslile guidance system, air-craft-autopiloting systems, robotics systems and the like, automatic control has become an important and integral part of modern manufacturing and industrial operations as controlling pressure, tempureture humidity, viscosity, flow in process industries and controlling liquid in specific tank.

Since advances in the theory and practice of automatic control provide the means for attaining optimal performance of dynamics system, improving productivity, relieving the drudgery of many routine repetitive manual operations, and more, most engineers and scientists must now have a good understanding of this field.

For this thesis, the main objective is to make the system in the plant fully controlled by computer. Thus the computer is now easy to use and available in the low cost of price, its become one of the powerful tool in control system applications. The PC will be a major element in this project and supported by PCL-812PG card as a interfacing card and Turbo C as a programming language in this application. All the setting and theory are provided in this thesis.

**ACKNOWLEDGMENT**

By the name of Allah, the beneficent, the merciful. First and most importantly, I thank to Allah for all of the incredible gifts upon me.

From the bottom of my heart, I would like to extend a very special thank to my supervisor Prof. Madya Dr. Yusof bin Md. Salleh. I am so glad that you accept me to run this project . Thank you for your guidance and for your taking care of me. Good advice sure is expensive...

Appreciation extend to En. Kamal Zamli for your advise and teaching in using C programming language. Special thanks to Sahrul Azizi (project partner) who give a best cooperation and idea during develop this project. I am glad to be working with you.

Dear Ayu, lovely thanks for your loving support. You have made this project the most exciting, the most memorable and the most wonderful experience of my life. You mean so much to me.

Thanks especially to my family and all my housemates for allowing me to do this final project at home.

Lastly, may Allah bless you all.

# WATER LEVEL CONTROL SYSTEM
# (SOFTWARE DEVELOPMENT)

## CONTENTS

## 1.1 Water Level Control System.

In recent years, digital computers have been playing an important role in the analysis design and operation of control systems. The computer may be used to carry out necessary computations, to simulate a plant or system components, or to control a system. Computer control has become increasingly common and many industrial control systems utilize digital controllers.

Let me define some definition before further explaination:

***System*** ~ A combination of components that act together and perform a certain objective. A system is not limited to physical ones. The concept of the system can be applied to abstract, dynamic phenomena such as those encountered in economics. The word system should , therefore be interpreted to imply physical biological, economic and the like, systems.[1]

***Plants*** ~ A piece of equipment, perhaps just a set of machine parts functioning together, the purpose of which is to perform a particular operation.[1]

***Controller*** ~ Produces control signals based on the difference between the reference input and the output. In general, a good control system must follow the command input closely, but must not sensitive to external noises and parameter variations.

Figure 1.1 shows the schematic diagram of a water level control system in this project. Here is the automatic controller (called specific operation in this project) maintains the liquid level by comparing the actual level and correcting any error by adjusting the opening of magnetic valve.