

CONTROLLING DEVICE VIA THE INTERNET

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ABSTRACT

Internet had been used as a line of communication and wireless technology had enabled the drastic increase in internet usage. With better communication technology trend, the opportunity of creating various application systems using internet will be greatly demanded. Currently, the lab administrator at *Faculty of Computer System& Software Engineering (FSKKP)* had to manage the lab facilities manually. This has leads to slowness in managing the lab that distract their main task which is to attend to the lab directly. The main purpose of this system is to control the lab facilities through internet. A prototype of the system is developed to assist the lab administrator to control the lab facilities through internet. This would certainly improve the productivity. Other than that it also will make harmful to user if there are in rush. By implement this project it can help to control the devices whenever and wherever user wants only by using fingertip.

ABSTRAK

Internet merupakan satu rangkaian komunikasi yang sangat penting sehingga penggunaannya sangat diperlukan masa kini. Dengan perhubungan komunikasi yang lebih baik maka kelebihan membina sesuatu aplikasi menggunakan perantaraan internet sangat dikehendaki. Buat masa sekarang juru makmal di Fakulti Sistem Komputer dan Kejuruteraan Perisian (FSKKP) terpaksa mengawal semua pekakasan secara manual. Ini menyebabkan kebanyakan tugas lambat disiapkan termasuk pengawasan makmal sehingga menyebabkan tugas mereka dalam mengendalikan makmal terganggu. Tujuan utama projek ini adalah untuk mengawal pekakasan di makmal menggunakan rangkaian internet. Satu model sistem ini telah di bina untuk membantu juru makmal dalam mengawal pekakasan menerusi internet. Ini sekaligus dapat meningkatkan produktiviti kerja . Dengan menggunakan projek ini juga diharapkan ia dapat membantu dalam mengawal pekakasan dimana sahaja.

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LIST OF ABBREVIATION

| | | |
|-------|---|------------------------------------|
| PC | - | Personal Computer |
| NIC | - | Network Interface Card |
| ID | - | Identity |
| S/KEY | - | Serial Key |
| SU | - | Super User |
| SDLC | - | System Development Life Cycle |
| NIDS | - | Network Intrusion Detection System |
| NFS | - | Network File System |
| SMS | - | System Management Server |
| LAN | - | Local Area Network |
| HEX | - | Hexadecimal |
| FTP | - | File Transfer Protocol |
| HTML | - | Hypertext Markup Language |

LIST OF SYMBOLS

| | | |
|-----|---|-------------------------------|
| MB | - | Mega Bait |
| GHz | - | Giga Hertz |
| uF | - | Mikro farad |
| k | - | Kilo |
| H | - | Transformation |
| S | - | Initial step of output |
| N | - | Number of times hash function |
| W | - | Word |
| M | - | Message |
| LED | - | Light Emitting Diode (LED). |

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A. GHANT CHART

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CHAPTER 1

INTRODUCTION

1.1 Overview

The internet allows one client computer to control hardware like motors and relays installed on another computer called a server. In other words, this project can remotely control or monitor devices. Since the internet is just a medium for computers to "*talk*" to each other, it enables the administrator to perform applications like automating home remote example turn on or off air-conditioning and data acquisition example measure temperatures.

A client computer requests a server computer to perform actions. The administrator can write a simple chat program in Visual Basic to exchange text messages between a client and server. The administrator might be familiar with such programs as they are often used in on-line chat rooms. He will write two programs, one running on the client PC, the other on the server PC resulting in a teletype-like application; the administrator and a friend can type messages to each other over the internet. Understanding how these two programs work will help to develop programs to control hardware devices over the internet.

Visual Basic is a powerful, high-level Windows-based programming language with a quick learning curve. High-level means that the programmer can avoid tedious coding, one example being, Internet-related functions; Winsock is Microsoft's high-level

component that allows a Visual Basic programmer to quickly develop internet-based programs like chat, FTP and browsers.

What will be used for on/off control of an LED over the Internet? An 8255 PC interface card will be installed in the server computer ISA bus. The card is interfaced to eight LEDs with a 9V battery via a 34-pin cable and Terminal Expansion Board (TEB). The client computer then connects to the server via the Internet. Through the client, the device can turn on/off the LEDs. The LEDs could be replaced with motors, relays or other types of peripherals do like to control or monitor. The 8255 PC interface card could be replaced with other interface circuitry like a parallel port.

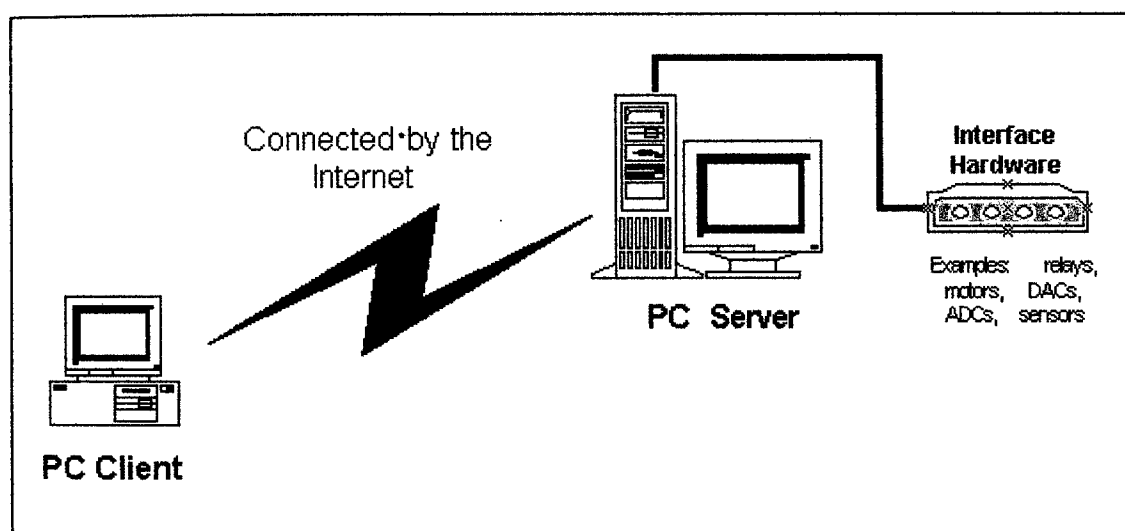


Figure 1.1 Overview diagram of controlling device via internet

1.2 Problem Statements

Controlling devices need to be done at the place that the entire device attached with. That is working place such as lab or office. If any of the devised need to be on or off so person that dealing with it need to be at the place. This will be are problem if the working place and the device are far. This will make user waste their time and energy. In facing are new technology environment an effective strategy need to be implement to solve this problem. This important to make sure that human feel comfortable and reliable at the working place.

1.3 Objective

- i) To control devices such as light, motor and switch in working area
- ii) To representing of prototype devices attached to server by using the LED as devices.
- iii) To control or check any usable device that been connected to the relay.

1.4 Scopes

This project can be implement at lab are in KUKTEM to control are devices such as light, motor and switch. Other output will be shown by using the LED as are representing to devices that can be connected by user. It will be used by lectures to control the devices that been connected.

1.5 Project Contribution

This project basically helps a lot for user especially those who need to control devices far from their working place. It helps user who control devices to control each facilities that been connected to server. It allowed user to save cost by knowing which devices ore still been used and which can be off cause not been used. It also allowed

administrator to control each devices that can be control by user or not. Other than that its helps to save time to admin by moving from one place to one place to make sure devices that not been used is totally off. It also can avoid any dangerous such as device broke because been on so long by anybody. Lastly this project gives an opportunity for user who works in big area like factory or laboratory to con troll devices in their working place.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

Since there are a variety of steps in completing the Controlling Device via Internet, lets look over the big picture briefly. An operational Controlling Device via Internet consists of two basic devices, the 'Input-Output Interface' unit and the 'Output Device' units. Besides that, there also have some programs to be programmed by using the Visual Basic. [3]

The 'Input-Output Interface' unit involves fairly conventional PC board soldering. Following the directions is very important for getting a good fit of the board into its custom case so that it fits correctly. [3]

The 'Output Device' units can be on/off circuit, measure circuit, relay circuit and many more. Even though it's not a quickie "stick-in-the-parts" job. A pre-cut piece of real, honest, shiny tin is supplied for use in forming a shield and casing around the component side of the Microwave Oscillator board. It is soldered in place very easily, so long as its creases are formed carefully. [3]

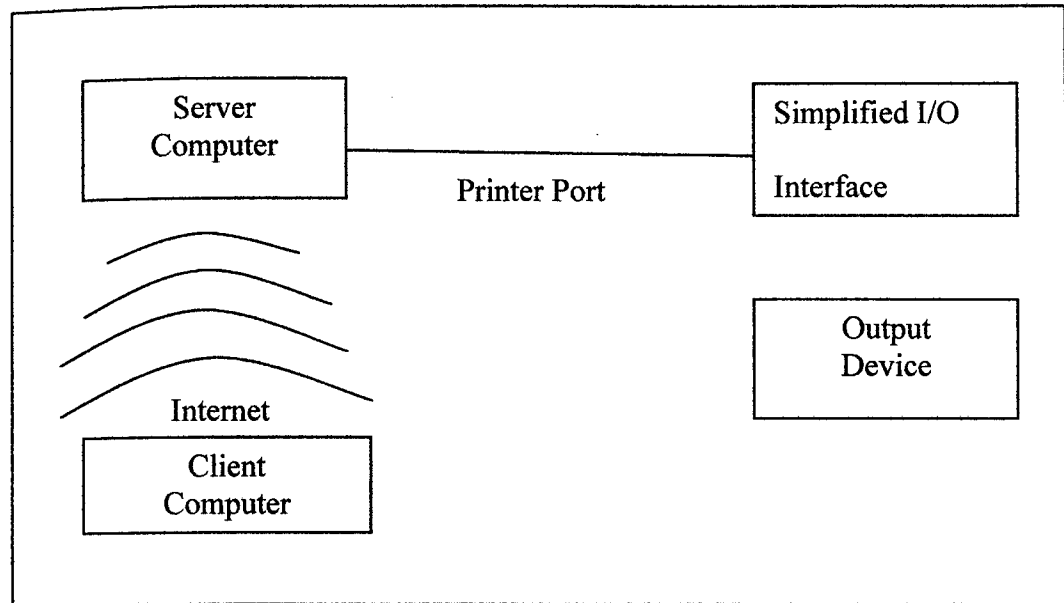


Figure 2.1 Block Diagram of Controlling Device via Internet

The block diagram shown the movement of process in way to controlling device that output been connected to the relay board. It showed clearer of each step starting from user (input) until to the device. Before these the proses been develop using the 8255 board that been plug through the PCI slot. By this implementation user can cut the cost and used it efficiently. It also easily can be detect the error or problem when it has been used. Comparing to 8255 board user can't repair any component if having problem with it. [2]

2.2 PC Board layout

The PCB board is the board to create both circuit that is input and output. Each unusable conductor between parts had been removing. The connection shown in figure 2.2 is the final part after all the process to simplify it had been done.

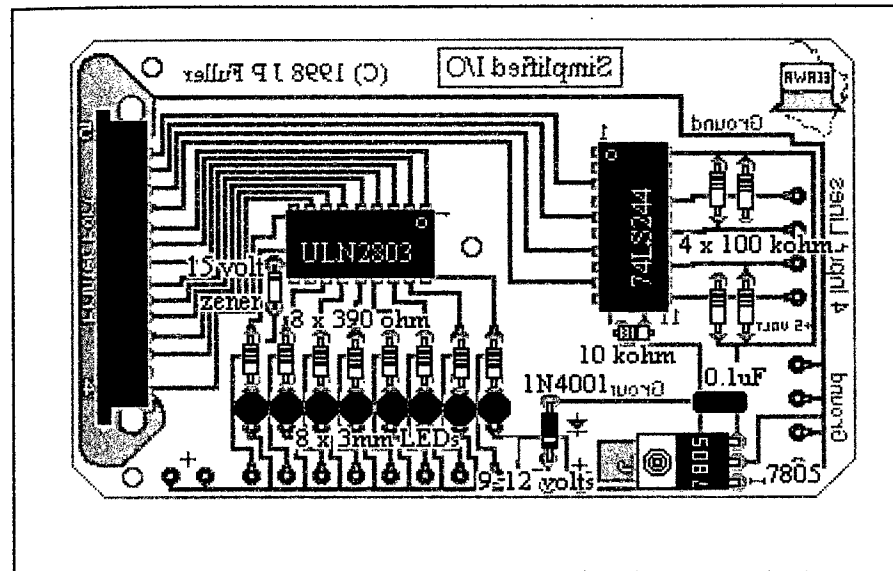


Figure 2.2 Example of complete PCB layout

2.3 Circuit

The Controlling Device via Internet project includes several circuits. The main circuit is the 'Simplified I/O Interface'. To complete the circuit, all the processes below need to be completed.

- i. Design schematic circuit
- ii. Design PCB
- iii. Exposing circuit
- iv. Developing
- v. Etching
- vi. Drilling.
- vii. Remove stain.
- viii. Tin plating
- ix. Drying.
- x. Soldering

After completed these processes, the circuit is ready to testing before it ready to be use for this project. [1]

2.3.1 Design schematic circuit

To done this process must used the Circuit Maker V5.0 software. The software can help the user to crate the circuit into the soft copy and the software also can examine the voltage, current and power of the circuit. Before draw the circuit, it needs to confirm that there are no errors because if there have an error the circuit cannot function successfully.

2.3.2 Design PCB

The second process is to design the PCB layout. This process is the difficult because the size of the components and overall of the schematic need to be known. One more thing, is need to done is a mirror of the schematic circuit because the layout is the back of the PCB. Before make the PCB layout, just draw a simple layout on a piece of paper. After that transformed it into the computer used the 'PCB Designer' software. From the software, print it on a piece of tracing paper

2.3.3 Exposing

After printed the PCB layout on the tracing paper, it need to expose onto the 'PCB UV-Board' by using the 'UV-Board Exposer'.

2.3.4 Developing

The developing process is the process to develop the PCB UV-Board after the exposing process. So, the PCB UV-Board after this process shows the PCB Layout on it.

2.3.5 Etching

The etching process is the process to remove the useless cuprum on the PCB UV-Board. To do this process, it need to give high attention and safety because the process is using the acid. The etching process begins with melting the acid powder onto

the boiling water. After that, put the PCB UV-Board into the liquid. After a few minutes, take out the PCB UV-Board and wash it with water and dry it. The safety regulations of the etching process:

- i. Use the correct measurement of both acid powder and water because if extra acid powder been added, the Layout will also disappear.
- ii. Do not shake the container
- iii. Use glove to protect hand from the liquid
- iv. Put another container over the liquid container to protect the liquid from spreading out.

2.3.6 Drilling

The drilling process is to make holes onto the PCB UV-Board. The holes are to put the component's legs into it. There are many sizes of the drill point. For this circuit use the 1mm and 2mm sizes. It must be drill all the points that need to solder the component's legs.

2.3.7 Remove stain

After finished the drilling process, now need to remove the stain on the PCB UV-Board. The stain is the green colour on the layout. Must be used the special chemical to remove the stain. The chemical have been mixed with the pour water. After that, put the PCB UV-Board into the container. Shake the container for a few times until all the stain disappear and the layout will be on the cuprum colour.

2.3.8 Tin plating

The tin plating process is used to remove the oxide on the copper layout. The objective of this process is to make the soldering process easier than the PCB UV-Board that without the tin plating process. Besides that, the process also can make the PCB UV-Board looking good. This process was using a special liquid chemical. Put the PCB UV-Board into the container and shake it. The completed process will show a chrome colour on the layout. Take out the PCB UV-Board and wash it with pure water.

2.3.9 Drying

The drying process is the process to dry the PCB UV-Board after the tin plating. Do not dry the tin plating by using a fabric. The tin will be removed if it has been used to dry it. So, the best thing is to use the electronic oven. Put the PCB UV-Board into the oven. Set the temperature of the oven but be careful because the high temperature can burn the PCB UV-Board. The best thing is to ask the expert before using the oven. After that, try to see the PCB UV-Board every one minute to confirm that the PCB UV-Board is already dry. Another way is to dry the PCB UV-Board under the sun.

2.3.10 Soldering

The last process of the circuit is the soldering process. This process is to stick the components on the PCB UV-Board. All the equipment below is needed to complete the soldering process without any defect.

- i. Solder
- ii. Flux