TIME ATTENDANCE AND PAYROLL SYSTEM OF MAK TEXTILE MILLS LTD.

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Electronics and Telecommunication Engineering

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APROVAL

This Internship report entitled **"Time Attendance and Payroll system of Mak Textile Mills Ltd."** has been submitted by F. M. Rejwanul Hoq, ID No: 052-19-267, to the Department of Electronics & Telecommunication Engineering of Daffodil International University in partial fulfillment of the requirement for the Degree of Bachelor of Science in Electronics and Telecommunication Engineering. This internship report work has been accepted as satisfactory by the following Honorable Members of the Board of Examiners after its presentation that was held on September, 2010.

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DECLARATION

This is to certify that the work **"Time Attendance and Payroll system of Mak Textile Mills Ltd."** presented here is the outcome of the organizational attachment in Information Technology (IT) department of Mak Textile Mills Ltd., Bangladesh under the supervision of Md. Mirza Golam Rashed, Assistant Professor, Department of Electronics and Telecommunication Engineering, Daffodil International University, Bangladesh. During the organizational attachment period in Mak Textile Mills Ltd., I was under the supervision of Abdul Latif, System Support Engineer of IT Department, Mak Textile Mills Ltd.

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I feel fortunate to be at **Daffodil International University (DIU)**, Dhaka, Bangladesh to pursue my B. Sc., not only for its quality education, but also for the superior research environment.

First and foremost, I am extremely grateful to have worked for my supervisor **Mirza Golam Rashed** who has provided me such a great research environment. The completion of this dissertation would not have happened without his guidance and encouragement. His help is not limited to research, but in many aspects of life. I really appreciate his encouragement which is very important to me when facing challenges.

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ABSTRACT

System support consists of computer-based information systems including the efficient transmission of information and the storage and analysis of information. This paper provides an introduction to the local area network (LAN) technologies being deployed today. It includes an overview of LAN and general terminology needed to understand the issues. This is followed by a section discussing the various challenges associated with deploying LAN technologies. There is no doubt that information technology has a great impact on the way of business information systems are built today. Here I have worked with Time Attendance and Payroll System. It helps organization for registering and tracking employee attendance, it can integrate with existing payroll and human resource systems, as well as various collection devices. This system consists of three major parts. The first is the employee, through which they can record their attendance automatically through special hardware device such as card reader. The second is recording employee's attendance manually. The last is view employee information or designation information, daily attendance, IN/Out time, payroll and more.

This internship report is dedicated to my parents, who gave me life and inspiration to keep living it.

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CHAPTER: 01

INTRODUCTION

1.1 Aim

Network Support and Management Systems have played a great important role in information systems. Management or support is very important and essential in any field. There are much management such as configuration management, fault management, and also performance support, security support, accounting support and etc. Among them, configuration, fault and security support is more important than others.

1.2 Advantages and Disadvantages of LAN

Advantages of connecting computers in a LAN

- Workstations can share peripheral devices like printers. This is cheaper than buying a printer for every workstation.
- Workstations do not necessarily need their own hard disk or CD-ROM drives which make them cheaper to buy than stand-alone PCs.
- User can save their work centrally on the network is file server. This means that they can retrieve their work from any workstation on the network. They don't need to go back to the same workstation all the time.
- Users can communicate with each other and transfer data between workstations very easily.
- One copy of each application package such as a word processor, spreadsheet etc. can be loaded onto the file and shared by all users. When a new version comes out, it only has to be loaded onto the server instead of onto every workstation.

Disadvantages of connecting computers in a LAN

- Special security measures are needed to stop users from using programs and data that they should not have access to;
- Networks are difficult to set up and need to be maintained by skilled technicians.
- If the file server develops a serious fault, all the users are affected, rather than just one user in the case of a stand-alone machine [1].

1.3 Thesis Organization

To discuss the overall system in chapter 2 I tried to focus on the history and evaluation of LAN. In the next chapter I tried to give a brief idea about the networking which I used for building my network. The devices are to build my LAN is discussed in the 4th chapter .The 5th and 6th I tried to present my experimental work.

CHAPTER: 02
OVERVIEW ON LAN

2.1 Introduction

A **local area network** (**LAN**) is a computer network covering a small physical area, like a home, office, or small group of buildings, such as a school, or an airport. The defining characteristics of LANs, in contrast to wide-area networks (WANs), include their usually higher data-transfer rates, smaller geographic area, and lack of a need for leased telecommunication lines.

ARCNET, Token Ring and many other technologies have been used in the past, and G.hn may be used in the future, but Ethernet over twisted pair cabling, and Wi-Fi are the two most common technologies currently in use [1].

2.2 History

As larger universities and research labs obtained more computers during the late 1960s, there was an increasing pressure to provide high-speed interconnections. A report in 1970 from the Lawrence Radiation Laboratory detailing the growth of their "Octopus" network gives a good indication of the situation.

Cambridge Ring was developed at Cambridge University in 1974 but was never developed into a successful commercial product.

Ethernet was developed at Xerox PARC in 1973–1975, and filed as U.S. Patent 4,063,220. In 1976, after the system was deployed at PARC, Metcalfe and Boggs published their seminal paper, "Ethernet: Distributed Packet-Switching For Local Computer Networks."

ARCNET was developed by Datapoint Corporation in 1976 and announced in 1977. It had the first commercial installation in December 1977 at Chase Manhattan Bank in New York [2].

2.3 Evolution of LAN

The development and proliferation of CP/M-based personal computers from the late 1970s and then DOS-based personal computers from 1981 meant that a single site began to have dozens or even hundreds of computers. The initial attraction of networking these was generally to share disk space and laser printers, which were both very expensive at the time. There was much enthusiasm for the concept and for several years, from about 1983 onward, computer industry pundits would regularly declare the coming year to be “the year of the LAN”.

In practice, the concept was marred by proliferation of incompatible physical Layer and network protocol implementations, and a plethora of methods of sharing resources. Typically, each vendor would have its own type of network card, cabling, protocol, and network operating system. A solution appeared with the advent of Novell NetWare which provided even-handed support for dozens of competing card/cable types, and a much more sophisticated operating system than most of its competitors. Netware dominated the personal computer LAN business from early after its introduction in 1983 until the mid 1990s when Microsoft introduced Windows NT Advanced Server and Windows for Workgroups.

Of the competitors to NetWare, only Banyan Vines had comparable technical strengths, but Banyan never gained a secure base. Microsoft and 3Com worked together to create a simple network operating system which formed the base of 3Com's 3+Share, Microsoft's LAN Manager and IBM's LAN Server. None of these were particularly successful, Unix computer workstations from vendors such as Sun Microsystems, Hewlett-Packard, Silicon Graphics, Intergraph, NeXT and Apollo were using TCP/IP based networking. Although this market segment is now much reduced, the technologies developed in this area continue to be influential on the Internet and in both Linux and Apple Mac OS X networking—and the TCP/IP protocol has now almost completely replaced IPX, AppleTalk, NBF and other protocols used by the early PC LANs [3].

2.4 Cabling

Early LAN cabling had always been based on various grades of co-axial cable, but IBM's Token Ring used shielded twisted pair cabling of their own design, and in 1984 StarLAN showed the potential of simple Cat3 *unshielded* twisted pair—the same simple cable used for telephone systems. This led to the development of 10Base-T (and its successors) and structured cabling which is still the basis of most LANs today. In addition, fiber-optic cabling is increasingly used [4].

2.5 Technical views

Switched Ethernet is the most common Data Link Layer implementation on local area networks. At the Network Layer, the Internet Protocol has become the standard. However, many different options have been used in the history of LAN development and some continue to be popular in niche applications. Smaller LANs generally consist of one or more switches linked to each other—often at least one is connected to a router, cable modem, or ADSL modem for Internet access.

Larger LANs are characterized by their use of redundant links with switches using the spanning tree protocol to prevent loops, their ability to manage differing traffic types via quality of service (QoS), and to segregate traffic with VLANs. Larger LANS also contain a wide variety of network devices such as switches, firewalls, routers, load balancers, and sensors.

LANs may have connections with other LANs via leased lines, leased services, or by tunneling across the Internet using virtual private network technologies. Depending on how the connections are established and secured in a LAN, and the distance involved, a LAN may also be classified as metropolitan area network (MAN) or wide area networks (WAN) [5].

2.6 Standardization

Notwithstanding its technical merits, timely standardization was instrumental to the success of Ethernet. It required well-coordinated and partly competitive activities in several standardization bodies such as the IEEE, ECMA, IEC, and finally ISO.

In February 1980 IEEE started a project, IEEE 802 for the standardization of Local Area Networks (LAN).

The "DIX-group" with Gary Robinson (DEC), Phil Arst (Intel) and Bob Printis (Xerox) submitted the so-called "Blue Book" CSMA/CD specification as a candidate for the LAN specification. Since IEEE membership is open to all professionals including students, the group received countless comments on this brand-new technology.

In addition to CSMA/CD, Token Ring (supported by IBM) and Token Bus (selected and henceforward supported by General Motors) were also considered as candidates for a LAN standard. Due to the goal of IEEE 802 to forward only one standard and due to the strong company support for all three designs, the necessary agreement on a LAN standard was significantly delayed.

In the Ethernet camp, it put at risk the market introduction of the Xerox Star workstation and 3Com's Ethernet LAN products. With such business implications in mind, David Liddle (General Manager, Xerox Office Systems) and Metcalfe (3Com) strongly supported a proposal of Fritz Röscheisen (Siemens Private Networks) for an alliance in the emerging office communication market, including Siemens' support for the international standardization of Ethernet (April 10, 1981). Ingrid Fromm, Siemens representative to IEEE 802 quickly achieved broader support for Ethernet beyond IEEE by the establishment of a competing Task Group "Local Networks" within the European standards body ECMA TC24. As early as March 1982 ECMA TC24 with its corporate members reached agreement on a standard for CSMA/CD based on the IEEE 802 draft. The speedy action taken by ECMA decisively contributed to the conciliation of opinions within IEEE and approval of IEEE 802.3 CSMA/CD by the end of 1982.

Approval of Ethernet on the international level was achieved by a similar, cross-partisan action with Fromm as liaison officer working to integrate IEC TC83 and ISO TC97SC6, and the ISO/IEEE 802/3 standard was approved in 1984 [6].

CHAPTER: 03

BASICS OF NETWORKING

3.1 Introduction:

A computer network consists of a collection of computers, printers and other equipment that is connected together so that they can communicate with each other. Fig 3.1 gives an example of a network in a company comprising of a local area network or LAN connecting computers with each other, the internet, and various servers [7].

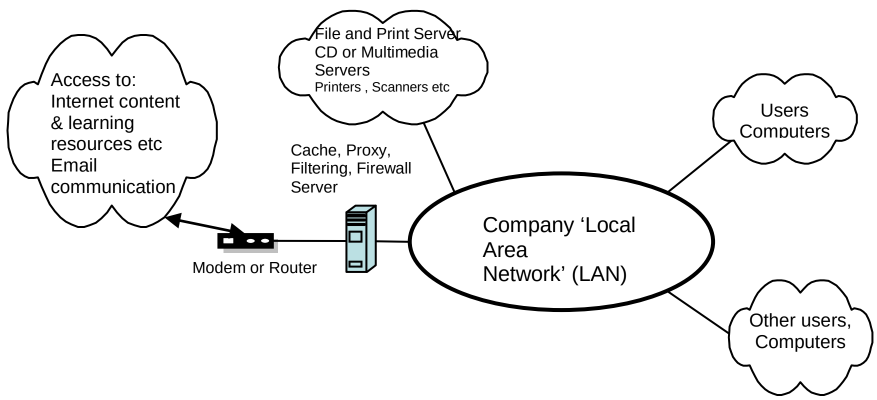

Fig 3.1: Representation of Network in a company.

Broadly speaking, there are two types of network configuration:

- peer-to-peer networks and
- Client/server networks.

3.1.1 Peer-to-peer network:

Peer-to-peer networks are more commonly implemented where less then ten computers are involved and where strict security is not necessary. All computers have the same status, hence the term 'peer', and they communicate with each other on an equal footing. Files, such as word processing or spreadsheet documents, can be shared across the network and all the computers on the network can share devices, such as printers or scanners, which are connected to any one computer.

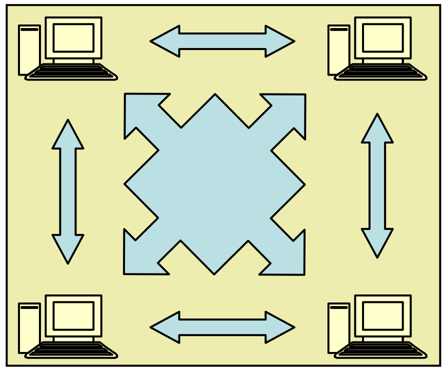

Fig 3.2: Peer to Peer Networking

3.1.2 Client/server network:

Client/server networks are more suitable for larger networks. A central computer, or 'server', acts as the storage location for files and applications shared on the network. Usually the server is a higher than average performance computer. The server also controls the network access of the other computers which are referred to as the 'client' computers. Typically, office users in a company will use the client computers for their work and only the network administrator (usually a designated staff member) will have access rights to the server.

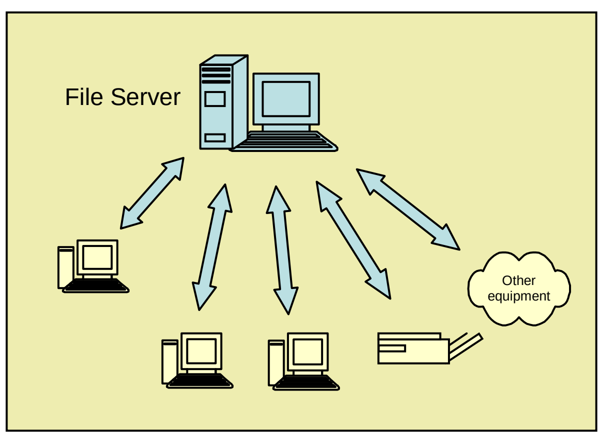

Fig 3.3: Client - Server Networking

Table 3.1 provides a summary comparison between Peer-to-Peer and Client/Server Networks [8].

Peer-to-Peer Networks vs. Client/Server Networks	
Peer-to-Peer Networks	**Client/Server Networks**
• Easy to set up	• More difficult to set up
• Less expensive to install	• More expensive to install
• Can be implemented on a wide range of operating systems	• A variety of operating systems can be supported on the client computers, but the server needs to run an operating system that supports networking
• More time consuming to maintain the software being used (as computers must be managed individually)	• Less time consuming to maintain the software being used (as most of the maintenance is managed from the server)
• Very low levels of security supported or none at all. These can be very cumbersome to set up, depending on the operating system being used	• High levels of security are supported, all of which are controlled from the server. Such measures prevent the deletion of essential system files or the changing of settings
• Ideal for networks with less than 10 computers	• No limit to the number of computers that can be supported by the network
• Does not require a server	• Requires a server running a server operating system
• Demands a moderate level of skill to administer the network	• Demands that the network administrator has a high level of IT skills with a good working knowledge of a server operating system

Table 3.1: Peer-to-Peer Networks vs. Client/Server Networks

3.2 Network Topologies and Access Methods:

Network topology is the physical interconnections of the elements (links, nodes, etc.) of a computer network. A local area network (LAN) is one example of a network that exhibits both a physical topology and a logical topology. Any given node in the LAN has one or more links to one or more other nodes in the network and the mapping of these links and nodes in a graph results in a geometrical shape that may be used to describe the physical topology of the network. Likewise, the mapping of the data flows between the nodes in the network determines the logical topology of the network. The physical and logical topologies may or may not be identical in any particular network.

Any particular network topology is determined only by the graphical mapping of the configuration of physical and/or logical connections between nodes. The study of network topology uses graph theory. Distances between nodes, physical interconnections, transmission rates, and/or signal types may differ in two networks and yet their topologies may be identical [9].

Basic topology types: The study of network topology recognizes four basic topologies

- Bus topology
- Star topology
- Ring topology
- Tree topology

Classification of network topologies

There are also three basic categories of network topologies:

- physical topologies
- signal topologies
- logical topologies

3.2.1 Physical topologies

The mapping of the nodes of a network and the physical connections between them – i.e., the layout of wiring, cables, the locations of nodes, and the interconnections between the nodes and the cabling or wiring system [9].

3.2.1.1 Bus

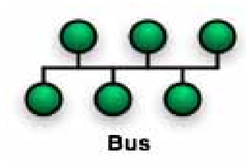

Fig 3.4: Bus topology

In local area networks where bus topology is used, each machine is connected to a single cable. Each computer or server is connected to the single bus cable through some kind of connector. A terminator is required at each end of the bus cable to prevent the signal from bouncing back and forth on the bus cable. A signal from the source travels in both directions to all machines connected on the bus cable until it finds the MAC address or IP address on the network that is the intended recipient. If the machine address does not match the intended address for the data, the machine ignores the data. Alternatively, if the data does match the machine address, the data is accepted. Since the bus topology consists of only one wire, it is rather inexpensive to implement when compared to other topologies. However, the low cost of implementing the technology is offset by the high cost of managing the network. Additionally, since only one cable is utilized, it can be the single point of failure. If the network cable breaks, the entire network will be down.

a. Linear bus

The type of network topology in which all of the nodes of the network are connected to a common transmission medium which has exactly two endpoints (this is the 'bus', which is also commonly referred to as the backbone, or trunk) – all data that is transmitted between nodes in the network is transmitted over this common transmission medium and is able to be received by all nodes in the network virtually simultaneously (disregarding propagation delays).

The two endpoints of the common transmission medium are normally terminated with a device called a terminator that exhibits the characteristic impedance of the transmission medium and which dissipates or absorbs the energy that remains in the signal to prevent the signal from being reflected or propagated back onto the transmission medium in the opposite direction, which would cause interference with and degradation of the signals on the transmission medium.

b. Distributed bus

The type of network topology in which all of the nodes of the network are connected to a common transmission medium which has more than two endpoints that are created by adding branches to the main section of the transmission medium – the physical distributed bus topology functions in exactly the same fashion as the physical linear bus topology (i.e., all nodes share a common transmission medium).

All of the endpoints of the common transmission medium are normally terminated with a device called a 'terminator'. The physical linear bus topology is sometimes considered to be a special case of the physical distributed bus topology – i.e., a distributed bus with no branching segments. The physical distributed bus topology is sometimes incorrectly referred to as a physical tree topology – however, although the physical distributed bus topology resembles the physical tree topology, it differs from the physical tree topology in that there is no central node to which any other nodes are connected, since this hierarchical functionality is replaced by the common bus [9].

3.2.1.2 Ring

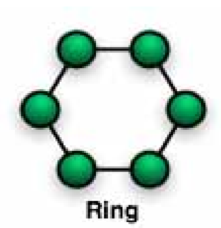

Fig 3.5: Ring topology

In local area networks where the ring topology is used, each computer is connected to the network in a closed loop or ring. Each machine or computer has a unique address that is used for identification purposes. The signal passes through each machine or computer connected to the ring in one direction. Ring topologies typically utilize a token passing scheme, used to control access to the network. By utilizing this scheme, only one machine can transmit on the network at a time. The machines or computers connected to the ring act as signal boosters or repeaters which strengthen the signals that transverse the network. The primary disadvantage of ring topology is the failure of one machine will cause the entire network to fail [10].

3.2.1.3 Star

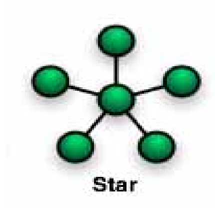

Fig 3.6: Star topology

In local area networks with a star topology, each network host is connected to a central hub. In contrast to the bus topology, the star topology connects each node to the hub with a point-to-point connection. All traffic that transverses the network passes through the central hub. The hub acts as a signal booster or repeater. The star topology is considered the easiest topology to design and implement. An advantage of the star topology is the simplicity of adding additional nodes. The primary disadvantage of the star topology is that the hub represents a single point of failure.

a. Extended star

A type of network topology in which a network that is based upon the physical star topology has one or more repeaters between the central node (the 'hub' of the star) and the peripheral or 'spoke' nodes, the repeaters being used to extend the maximum transmission distance of the point-to-point links between the central node and the peripheral nodes beyond that which is supported by the transmitter power of the central node or beyond that which is supported by the standard upon which the physical layer of the physical star network is based.

If the repeaters in a network that is based upon the physical extended star topology are replaced with hubs or switches, then a hybrid network topology is created that is referred to as a physical hierarchical star topology, although some texts make no distinction between the two topologies.

b. Distributed Star

A type of network topology that is composed of individual networks that are based upon the physical star topology connected together in a linear fashion – i.e., 'daisy-chained' – with no central or top level connection point (e.g., two or more 'stacked' hubs, along with their associated star connected nodes or 'spokes')[10].

3.2.1.4 Mesh

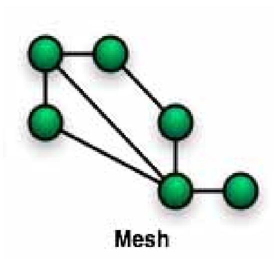

Fig 3.7: Mesh topology

The value of fully meshed networks is proportional to the exponent of the number of subscribers, assuming that communicating groups of any two endpoints, up to and including all the endpoints, is approximated by Reed's Law.

The physical fully connected mesh topology is generally too costly and complex for practical networks, although the topology is used when there are only a small number of nodes to be interconnected [11].

3.2.1.5 Tree

Tree network topology is also known as a hierarchical network.

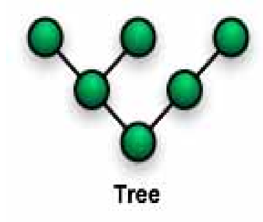

Fig 3.8: Tree topology

The type of network topology in which a central 'root' node (the top level of the hierarchy) is connected to one or more other nodes that are one level lower in the hierarchy (i.e., the second level) with a point-to-point link between each of the second level nodes and the top level central 'root' node, while each of the second level nodes that are connected to the top level central 'root' node will also have one or more other nodes that are one level lower in the hierarchy (i.e., the third level) connected to it, also with a point-to-point link, the top level central 'root' node being the only node that has no other node above it in the hierarchy (The hierarchy of the tree is symmetrical.) Each node in the network having a specific fixed number, of nodes connected to it at the next lower level in the hierarchy, the number, being referred to as the 'branching factor' of the hierarchical tree [11].

3.2.2 Signal topology

The mapping of the actual connections between the nodes of a network, as evidenced by the path that the signals take when propagating between the nodes.

The term 'signal topology' is often used synonymously with the term 'logical topology', however, some confusion may result from this practice in certain situations since, by definition, the term 'logical topology' refers to the apparent path that the data takes between nodes in a network while the term 'signal topology' generally refers to the actual path that the signals (e.g., optical, electrical, electromagnetic, etc.) take when propagating between nodes [12].

3.2.3 Logical topology

The logical topology, in contrast to the "physical", is the way that the signals act on the network media, or the way that the data passes through the network from one device to the next without regard to the physical interconnection of the devices. A network's logical topology is not necessarily the same as its physical topology. For example, twisted pair Ethernet is a logical bus topology in a physical star topology layout. While IBM's Token Ring is a logical ring topology, it is physically set up in a star topology.

The logical classification of network topologies generally follows the same classifications as those in the physical classifications of network topologies, the path that the *data* takes between nodes being used to determine the topology as opposed to the actual *physical* connections being used to determine the gyutt

Logical topologies are often closely associated with media access control (MAC) methods and protocols. The logical topologies are generally determined by network protocols as opposed to being determined by the physical layout of cables, wires, and network devices or by the flow of the electrical signals, although in many cases the paths that the electrical signals take between nodes may closely match the logical flow of data, hence the convention of using the terms 'logical topology' and 'signal topology' interchangeably. Logical topologies are able to be dynamically reconfigured by special types of equipment such as routers and switches [12].

3.3 Ethernet

Ethernet is a family of frame-based computer networking technologies for local area networks (LANs). The name comes from the physical concept of the ether. It defines a number of wiring and signaling standards for the Physical Layer of the OSI networking model, through means of network access at the Media Access Control protocol (a sub-layer of Data Link Layer), and a common addressing format.

Ethernet is standardized as IEEE 802.3. The combination of the twisted pair versions of Ethernet for connecting end systems to the network, along with the fiber optic versions for site backbones, is the most widespread wired LAN technology. It has been in use from around 1980 to the present, largely replacing competing LAN standards such as token ring, FDDI, and ARCNET.

A standard 8P8C (often called RJ45) connector used most commonly on cat5 cable, a type of cabling used primarily in Ethernet networks.

This diagram was hand drawn by Robert M. Metcalfe and photographed by Dave R. Boggs in 1976 to produce a 35mm slide used to present Ethernet to the National Computer Conference in June of that year. On the drawing are the original terms for describing Ethernet.

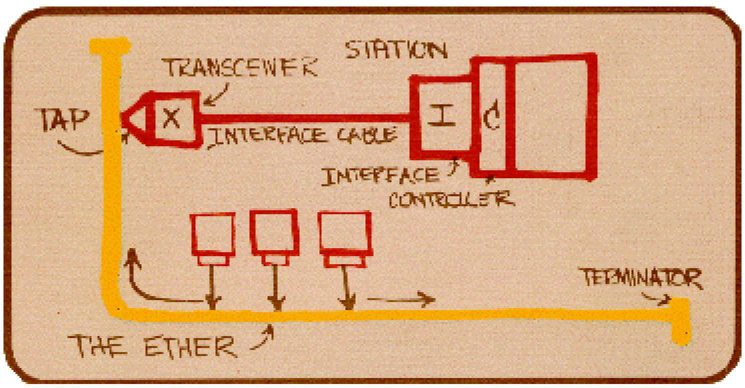

Fig 3.9: Original drawing of Ethernet

All Ethernet networks share the same access method, Carrier Sense Multiple Access with Collision Detection (CSMA/CD) [13].

3.3.1 CSMA/CD (Carrier Sense Multiple Access with Collision Detection)

Ethernet originally used a shared coaxial cable (the shared medium) winding around a building or campus to every attached machine. A scheme known as carrier sense multiple access with collision detection (CSMA/CD) governed the way the computers shared the channel. This scheme was simpler than the competing token ring or token bus technologies. When a computer wanted to send some information, it used the following algorithm :

Main procedure

1. Frame ready for transmission.
2. Is medium idle? If not, wait until it becomes ready and wait the interframe gap period (9.6 μs in 10 Mbit/s Ethernet).
3. Start transmitting.
4. Did a collision occur? If so, go to collision detected procedure.
5. Reset retransmission counters and end frame transmission.

Collision detected procedure

1. Continue transmission until minimum packet time is reached (jam signal) to ensure that all receivers detect the collision.
2. Increment retransmission counter.
3. Was the maximum number of transmission attempts reached? If so, abort transmission.
4. Calculate and wait random backoff period based on number of collisions.
5. Re-enter main procedure at stage 1.

Dual speed hubs

In the early days of Fast Ethernet, Ethernet switches were relatively expensive devices. Hubs suffered from the problem that if there were any 10BASE-T devices connected then the whole network needed to run at 10 Mbit/s. Therefore a compromise between a hub and a switch was developed, known as a dual speed hub. These devices consisted of an internal two-port switch, dividing the 10BASE-T (10 Mbit/s) and 100BASE-T (100 Mbit/s) segments. The device would typically consist of more than two physical ports. When a network device becomes active on any of the physical ports, the device attaches it to either the 10BASE-T segment or the 100BASE-T segment, as appropriate. This prevented the need for an all-or-nothing migration from 10BASE-T to 100BASE-T networks. These devices are hubs because the traffic between devices connected at the same speed is not switched [14].

3.4 Token Ring

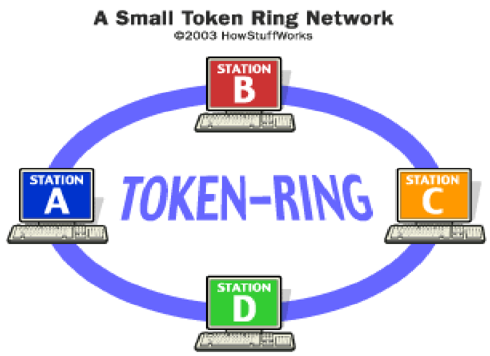

Fig 3.10: Token ring

The most common local area network alternative to Ethernet is a network technology developed by IBM, called **token ring.** Where Ethernet relies on the random gaps between transmissions to regulate access to the medium, token ring implements a strict, orderly access method. A token-ring network arranges nodes in a logical ring, as shown below. The nodes forward frames in one direction around the ring, removing a frame when it has circled the ring once. The ring initializes by creating a **token**, which is a special type of frame that gives a station permission to transmit. The token circles the ring like any frame until it encounters a station that wishes to transmit data. This station then "captures" the token by replacing the token frame with a data-carrying frame, which encircles the network. Once that data frame returns to the transmitting station, that station removes the data frame, creates a new token and forwards that token on to the next node in the ring.
Token-ring nodes do not look for a carrier signal or listen for collisions; the presence of the token frame provides assurance that the station can transmit a data frame without fear of another station interrupting. Because a station transmits only a single data frame before passing the token along, each station on the ring will get a turn to communicate in a deterministic and fair manner. Token-ring networks typically transmit data at either 4 or 16 Mbps.[14].

3.5 FDDI (Fiber Distributed Data Interface)

Fiber-distributed data interface (FDDI) is another token-passing technology that operates over a pair of fiber optic rings, with each ring passing a token in opposite directions. FDDI networks offered transmission speeds of 100 Mbps, which initially made them quite popular for high-speed networking. With the advent of 100-Mbps Ethernet, which is cheaper and easier to administer, FDDI has waned in popularity [15].

3.6 ATM (Asynchronous Transfer Mode)

A final network technology that bears mentioning is **asynchronous transfer mode**, or ATM. ATM networks blur the line between local and wide area networking, being able to attach many different devices with high reliability and at high speeds, even across the country. ATM networks are suitable for carrying not only data, but voice and video traffic as well, making them versatile and expandable. While ATM has not gained acceptance as rapidly as originally predicted, it is nonetheless a solid network technology for the futurem.

Ethernet’s popularity continues to grow. With almost 30 years of industry acceptance, the standard is well known and well understood, which makes configuration and troubleshooting easier. As other technologies advanced, Ethernet has evolved to keep pace, increasing in speed and functionality [14].

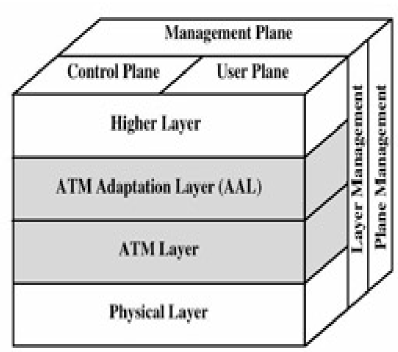

Fig 3.11: Asynchronous Transfer Mode

CHAPTER: 04

LAN DEVICES AND DESIGN

4.1 Components of a Network

A computer network comprises the following components:

- A minimum of at least 2 computers
- Cables that connect the computers to each other, although wireless communication is becoming more common
- A network interface device on each computer (this is called a network interface card or NIC)
- A ‘Switch’ used to switch the data from one point to another. Hubs are outdated and are little used for new installations.
- Network operating system software

4.2 Structured Cabling

The two most popular types of structured network cabling are **twisted-pair** (also known as **10BaseT**) and **thin coax** (also known as **10Base2**). 10BaseT cabling looks like ordinary telephone wire, except that it has 8 wires inside instead of 4. Thin coax looks like the copper coaxial cabling that's often used to connect a Video Recorder to a TV [16]

4.3 10BaseT Cabling

When 10BaseT cabling is used, a strand of cabling is inserted between each computer and a hub. If you have 5 computers, you'll need 5 cables. Each cable cannot exceed 325 feet in length. Because the cables from all of the PCs converge at a common point, a 10BaseT network forms a **star configuration**.

Fig 4.1 shows a Cat5e cable, with a standard connector, known as an RJ-45 connector.

Fig 4.2 shows a standard Cat5e Wall Outlet socket which the cables are connected to.

Fig 4.3 shows a standard Cat5e Patch Panel Wall Outlet socket which is used to terminate the cables from various points in the school bank to a central point.

Fig 4.4 shows a wall mounted cabinet used to house and protect patch panel cables and connectors.

Fig 4.1: Cat5e Cable and a close up of RJ-45 connector

Fig 4.2: Cat5e Wall Outlets

Fig 4.3: Cat5e Patch Panel

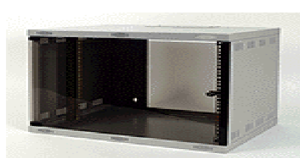

Fig 4.4: Wall Mounted Cabinet

10BaseT cabling is available in different grades or **categories**. Some grades, or "cats", are required for Fast Ethernet networks, while others are perfectly acceptable for standard 10Mbps networks--and less expensive, too. All new networks use a minimum of standard **unshielded twisted-pair (UTP) Category 5e** 10BaseT cabling because it offers a performance advantage over lower grades [16].

4.4 Network Interface Card (NIC)

A NIC (pronounced 'nick') is also known as a network card. It connects the computer to the cabling, which in turn links all of the computers on the network together. Each computer on a network must have a network card. Most modern network cards are 10/100 NICs and can operate at either 10Mbps or 100Mbps.

Only NICs supporting a minimum of 100Mbps should be used in new installations schools.

Computers with a wireless connection to a network also use a network card (see Advice Sheet 20 for more information on wireless networking).

Fig 4.5: Network Interface Cards (NICs)

4.5 Hub and Switch

A hub is a device used to connect a PC to the network. The function of a hub is to direct information around the network, facilitating communication between all connected devices. However in new installations switches should be used instead of hubs as they are more effective and provide better performance. Switch is often termed as a 'smart hub'.

Switches and hubs are technologies or ‘boxes’ to which computers, printers, and other networking devices are connected. Switches are the more recent technology and the accepted way of building today's networks. With switching, each connection gets "dedicated bandwidth" and can operate at full speed. In contrast, a hub shares bandwidth across multiple connections such that activity from one PC or server can slow down the effective speed of other connections on the hub.

Now more affordable than ever, Dual-speed 10/100 auto sensing switches are recommended for all school networks. Schools may want to consider upgrading any hub based networks with switches to improve network performance – i.e. speed of data on the network [16].

Fig 4.6: An 8 port Hub

Fig 4.7: 24 port Switches

4.6 Wireless Networks

The term 'wireless network' refers to two or more computers communicating using standard network rules or protocols, but without the use of cabling to connect the computers together. Instead, the computers use wireless radio signals to send information from one to the other. A wireless local area network (WLAN) consists of two key components: an access point (also called a base station) and a wireless card. Information can be transmitted between these two components as long as they are fairly close together (up to 100 meters indoors or 350 meters outdoors).

Fig 4.8: Wireless Access point or Wireless Base station

Suppliers would need to visit the schools and conduct a site survey. This will determine the number of base stations you need and the best place(s) to locate them. A site survey will also enable each supplier to provide you with a detailed quote. It is important to contact a number of different suppliers as prices, equipment and opinions may vary. When the term 'wireless network' is used today, it usually refers to a wireless local area network or WLAN. A WLAN can be installed as the sole network in a school or building.

However, it can also be used to extend an existing wired network to areas where wiring would be too difficult or too expensive to implement, or to areas located away from the main network or main building. Wireless networks can be configured to provide the same network functionality as wired networks, ranging from simple peer-to-peer configurations to large-scale networks accommodating hundreds of users.

Fig 4.9: Desktop PC Wireless LAN card

Fig 4.10: Laptop Wireless LAN card

4.7 LAN Design

One of the most important components to consider in network design is the cables. Today, most LAN cabling is based on Fast Ethernet technology. Fast Ethernet is Ethernet that has been upgraded from 10 Mbps to 100 Mbps, and has the ability to utilize full-duplex functionality. Fast Ethernet uses the standard Ethernet broadcast-oriented logical bus topology of 10BASE-T and the CSMA/CD method for MAC addresses [17].

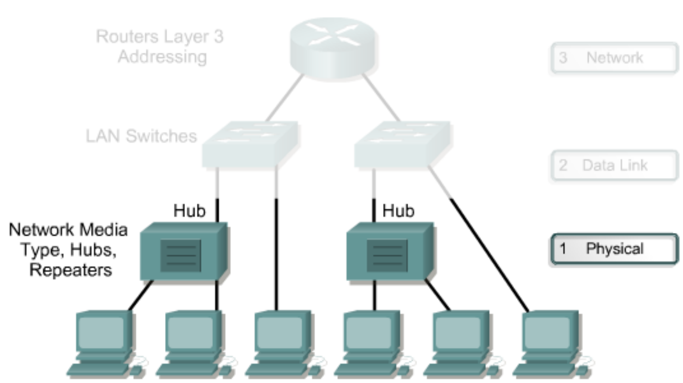

Fig 4.11: Basic design of LAN

Design issues at Layer 1 include the type of cabling to be used, typically copper or fiber-optic, and the overall structure of the cabling. Fig 4.12 also includes the TIA/EIA-568-A standard for layout and connection of wiring schemes. Layer 1 media types include

10/100BASE-TX, Category 5, 5e, or 6 unshielded twisted-pair (UTP), or shielded twisted-pair (STP), and 100BaseFX fiber-optic cable.

	Data Rate	Signaling Method	Medium Type	Maximum Length
10BASE-T	10 Mbps	Baseband	Category 5e UTP	100 meters
10BASE-FL	10 Mbps	Baseband	Fiber-optic	2000 meters
100BASE-TX	100Mbps	Baseband	Category 5e UTP	100 meters
100BASE-FX	100 Mbps	Baseband	Multi-mode fiber (two strands)	2000 meters

Fig 4.12: IEEE 802.3 values

Careful evaluation of the strengths and weaknesses of the topologies should be performed. A network is only as effective as the cables that are used. Layer 1 issues cause most network problems. A complete cable audit should be conducted, when significant changes are planned for a network. This helps to identify areas that require upgrades and rewiring.

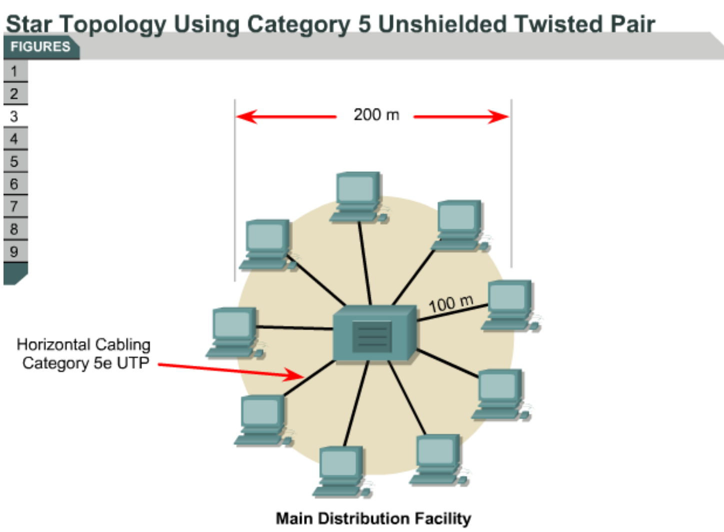

Fig 4.13: Layers of star topology

Fiber-optic cable should be used in the backbone and risers in all cable designs. Category 5e UTP cable should be used in the horizontal runs. The cable upgrade should take priority over any other necessary changes. Enterprises should also make certain that these systems conform to well-defined industry standards, such as the TIA/EIA-568-A specifications.

The TIA/EIA-568-A standard specifies that every device connected to the network should be linked to a central location with horizontal cabling. This applies if all the hosts that need to access the network are within the 100-meter (328 ft.) distance limitation for Category 5e UTP Ethernet.

In a simple star topology with only one wiring closet, the MDF includes one or more horizontal cross-connect (HCC) patch panels Fig 4.14. HCC patch cables are used to connect the Layer 1 horizontal cabling with the Layer 2 LAN switch ports. The uplink port of the LAN switch, based on the model, is connected to the Ethernet port of the Layer 3 router with a patch cable. At this point, the end host has a complete physical connection to the router port.

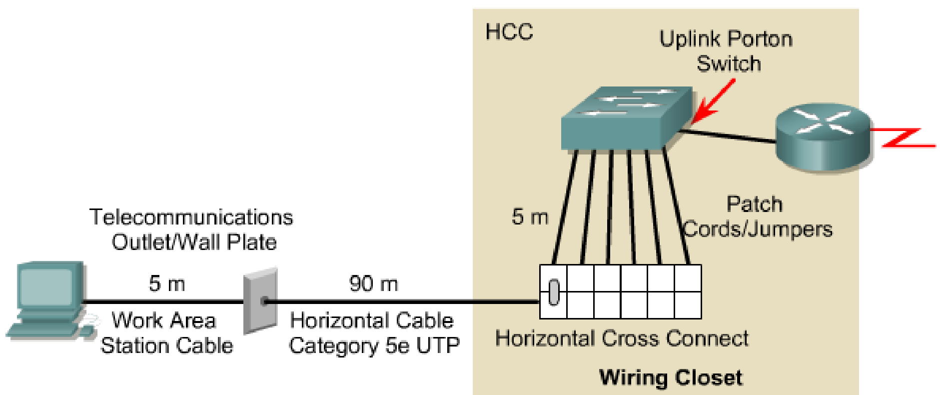

Fig 4.14: MDF (Main distribution facility)

When hosts in larger networks exceed the 100-meter (328 ft.) limitation for Category 5e UTP, more than one wiring closet is required. Multiple wiring closets mean multiple catchments areas. The secondary wiring closets are referred to as IDFs. Fig 4.15 shows TIA/EIA-568-A standards specify that IDFs should be connected to the MDF by vertical cabling, also called backbone cabling.

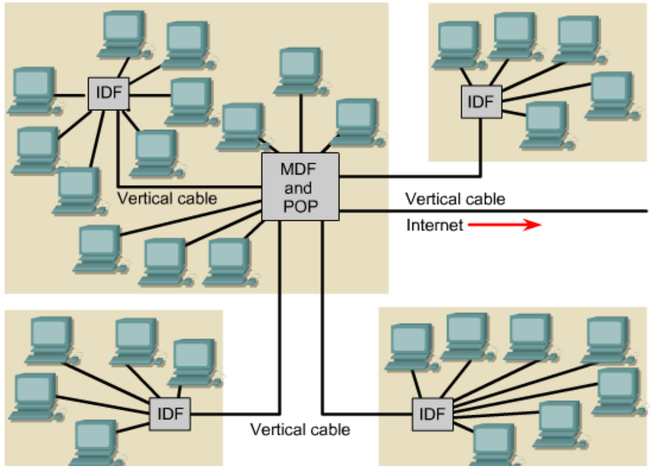

Fig 4.15: Multi Building (Office)

A vertical cross-connect (VCC) is used to interconnect the various IDFs to the central MDF. Fiber-optic cable is normally used because the vertical cable lengths are typically longer than the 100-meter (328 ft.) limit for Category 5e UTP cable.

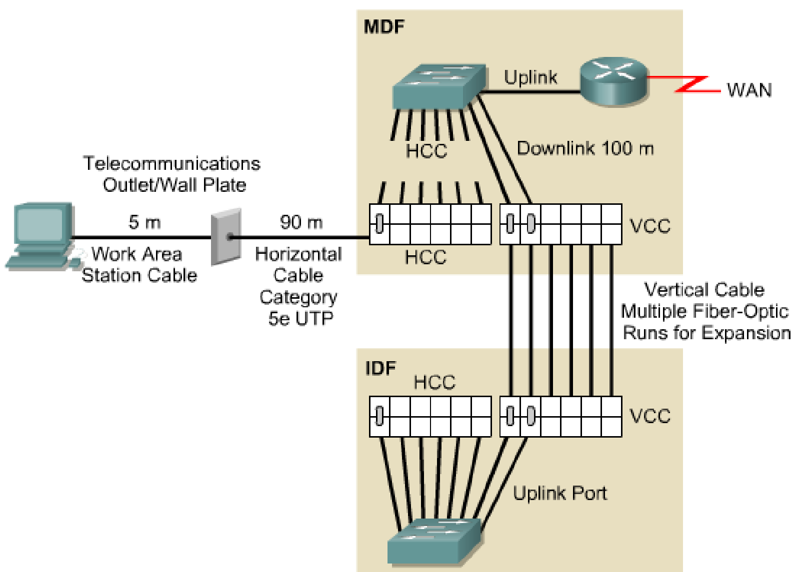

Fig 4.16: Extended Start Topology (Multi buildings)

Fig 4.17 shows the logical diagram is the network topology model without all the details of the exact installation paths of the cables.

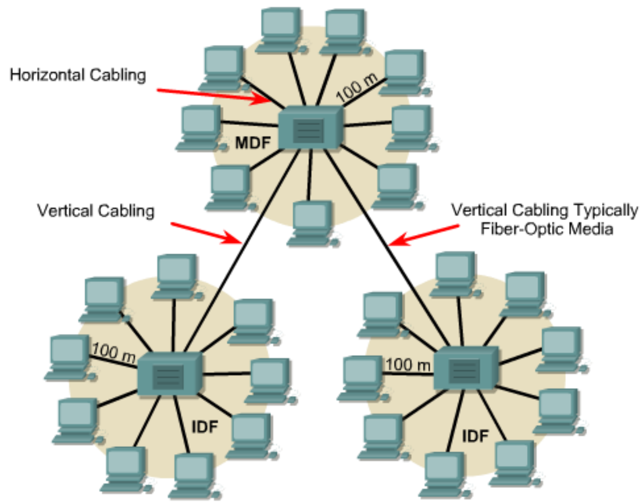

Fig 4.17: Logical diagram

Fig 4.18 shows the logical diagram is the basic road map of the LAN which includes the following elements:

- Specify the locations and identification of the MDF and IDF wiring closets.
- Document the type and quantity of cables used to interconnect the IDFs with the MDF.
- Document the number of spare cables that are available to increase the bandwidth between the wiring closets. For example, if the vertical cabling between IDF 1 and the MDF is at eighty percent utilization, two additional pairs could be used to double the capacity.
- Provide detailed documentation of all cable runs, the identification numbers, and the port the run is terminated on at the HCC or VCC.

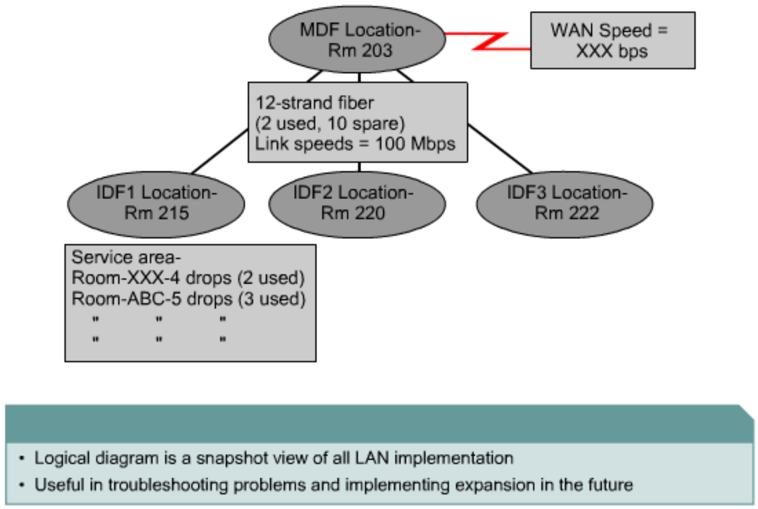

Fig 4.18: Layer 1 Documentation (Logical Diagram)

Fig 4.19 shows the logical diagram is essential to troubleshoot network connectivity problems. If Room 203 loses connectivity to the network, the cut sheet shows that the room has cable run 203-1, which is terminated on HCC1 port 13. Cable testers can be used to determine Layer 1 failure. If it is, one of the other two runs can be used to reestablish connectivity and provide time to troubleshoot run 203-1.

Connection	Cable ID	Cross Connection Paired#/Port#	Type of Cable	Status
IDF1 to Rm 203	203-1	HCC1/Port 13	Category 5e UTP	Used
IDF1 to Rm 203	203-2	HCC1/Port 14	Category 5e UTP	Not Used
IDF1 to Rm 203	203-3	HCC2/Port 3	Category 5e UTP	Not Used
IDF1 to MDF	IDF1-1	VCC1/Port 1	Multimode fiber	Used
IDF1 to MDF	IDF1-2	VCC1/Port 2	Multimode fiber	Used

Fig 4.19: Cut Sheet

In this curriculum, concentration will be on the star topology and extended star topology. The star topology and extended star topology use Ethernet 802.3 CSMA/CD technology. CSMA/CD star topology is the dominant configuration in the industry. Figure 10 LAN topology design can be broken into the following three unique categories of the OSI reference model:

- Network layer
- Data link layer
- Physical layer

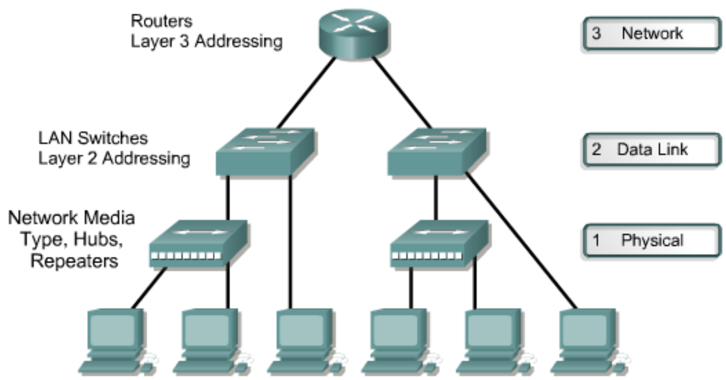

Fig 4.20: Final diagram

The final step in LAN design methodology is to document the physical and logical topology of the network. The physical topology of the network refers to the way in which various LAN components are connected together. The logical design of the network refers to the flow of data in a network. It also refers to the name and address schemes used in the implementation of the LAN design solution [17].

CHAPTER: 5

LAN ARCHITECTURE OF MAK TEXTILE MILLS

5.1 Introduction

In this chapter we will describe the practical view of my experiment. In this part I include block diagram of Network Design of the factory and finally the Hardware setting and IP address.

5.2 Network Design

First of all to make a better network a proper network design is very essential and MAK TEXTILE MILLS LTD. also has a very good network design.

Figure 5.1 gives the total idea of the design.

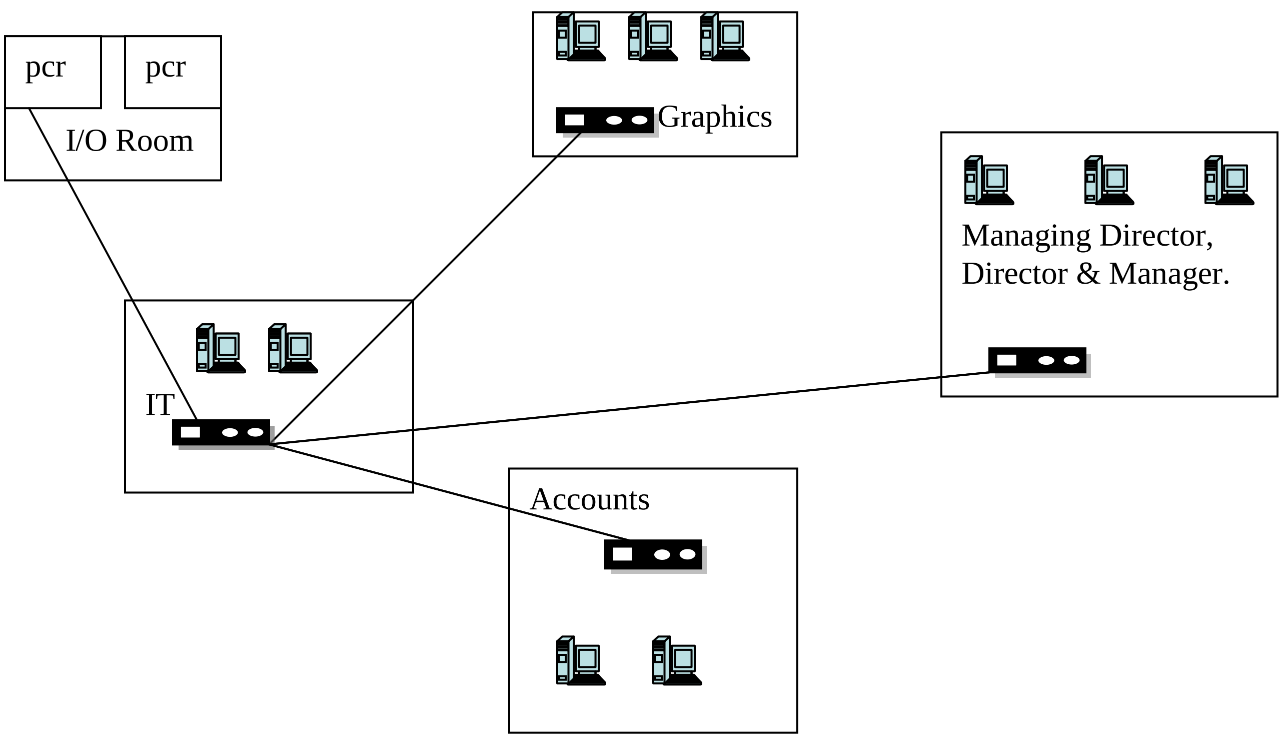

Figure 5.1: LAN design of the factory

5.2.1 IT room

All the connections are distributed and maintained from the IT room. Here we used D-Link 8 ports switch. There are two computers in this IT room. One computer is used as Server and another as Client. Another four connections I/O, Graphics, Accounts and Admin are distributed from this room.

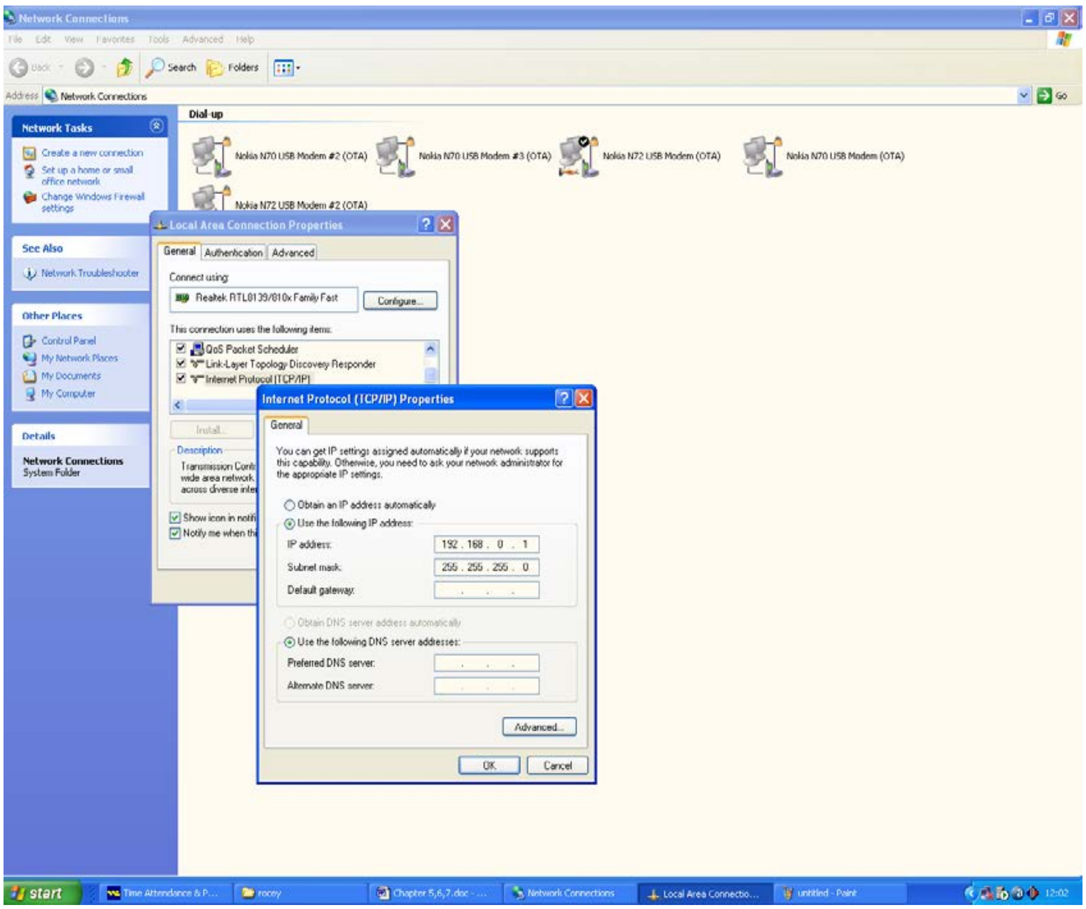

Fig 5.2: Pc1 (192.168.0.1)

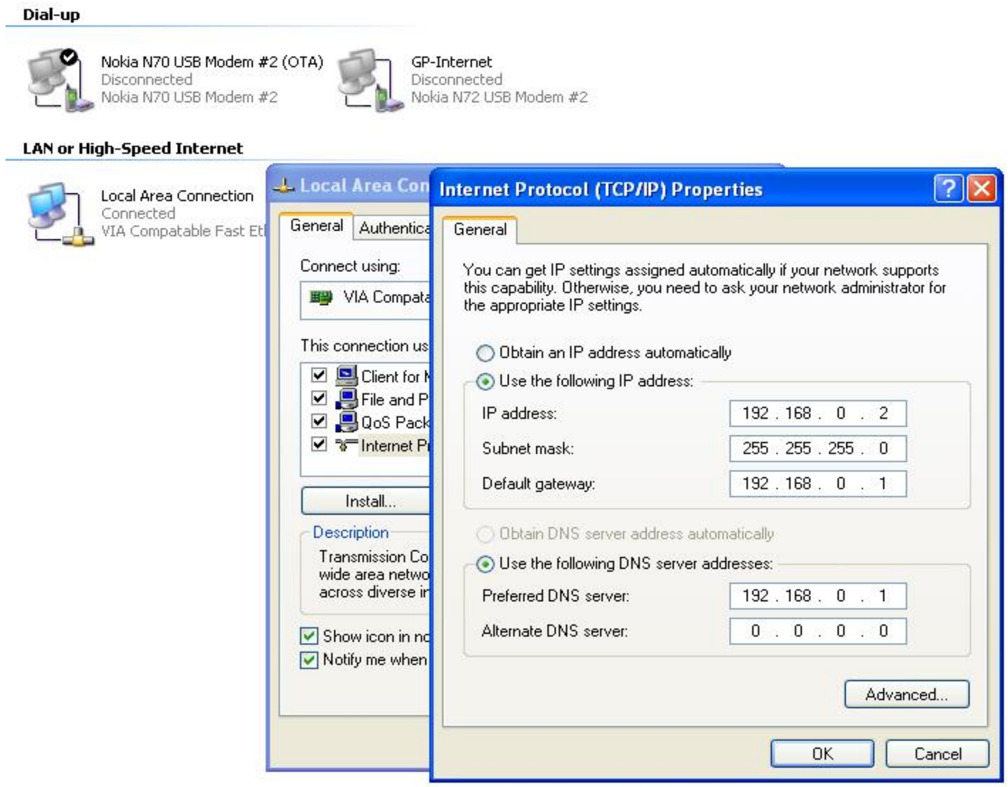

Fig 5.3: Pc2 (192.168.0.2)

5.2.2 I/O room

I/O means **In** and **Out** room for the workers. Workers and all the Office Stuffs use this room for in and out. This room does not have any computer but it has two Proximity Card Reader and three cameras which are all controlled and maintained using LAN.

5.2.3 Accounts room

LAN is very essential for this room. A D-Link 8 port switch is used to make internal and external network. Through which the admin observe the accounts all the time.

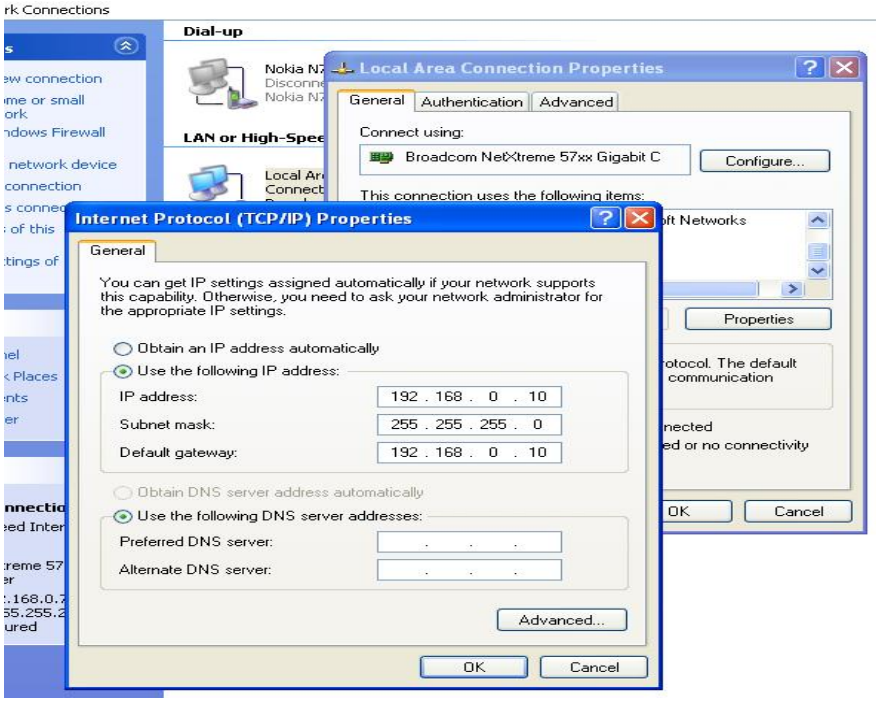

Fig 5.4: Pc3 (192.168.0.10)

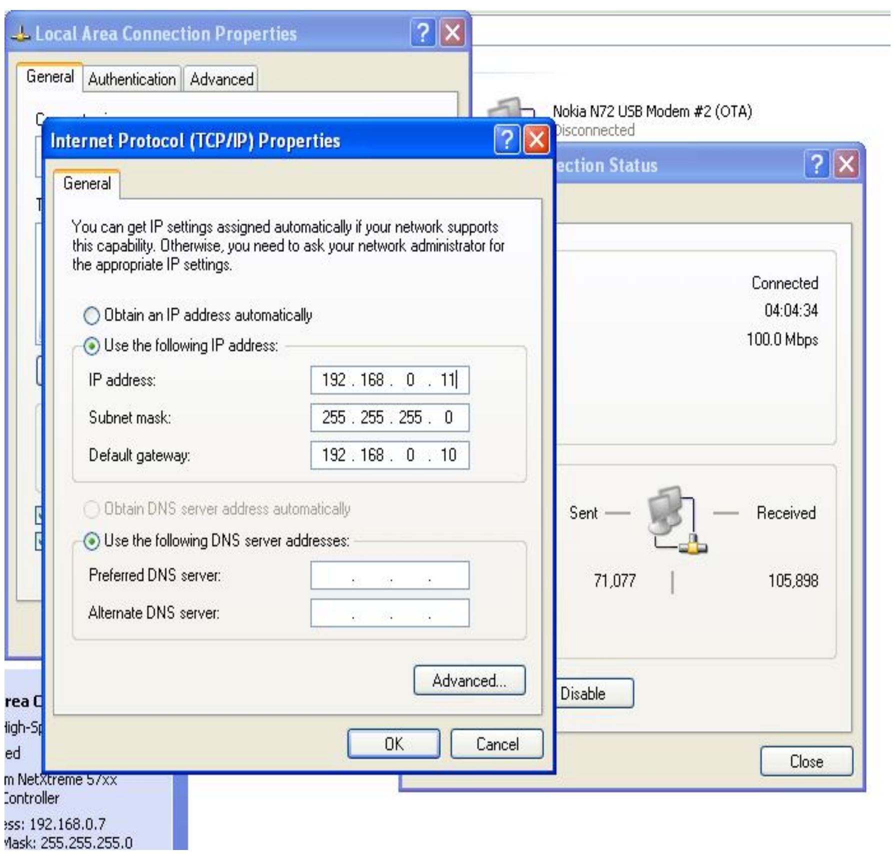

Fig 5.5: Pc4 (192.168.0.11)

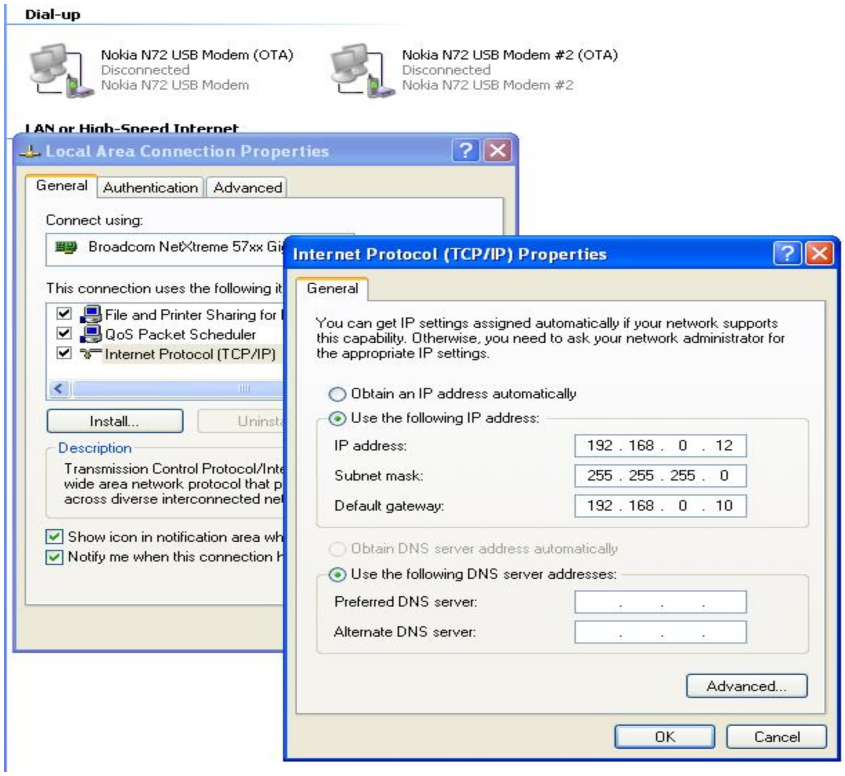

Fig 5.6: Pc5 (192.168.0.12)

5.2.4 Graphics room

They also use D-Link 8 port switch for internal and external network. They can share printer and scanner by using LAN.

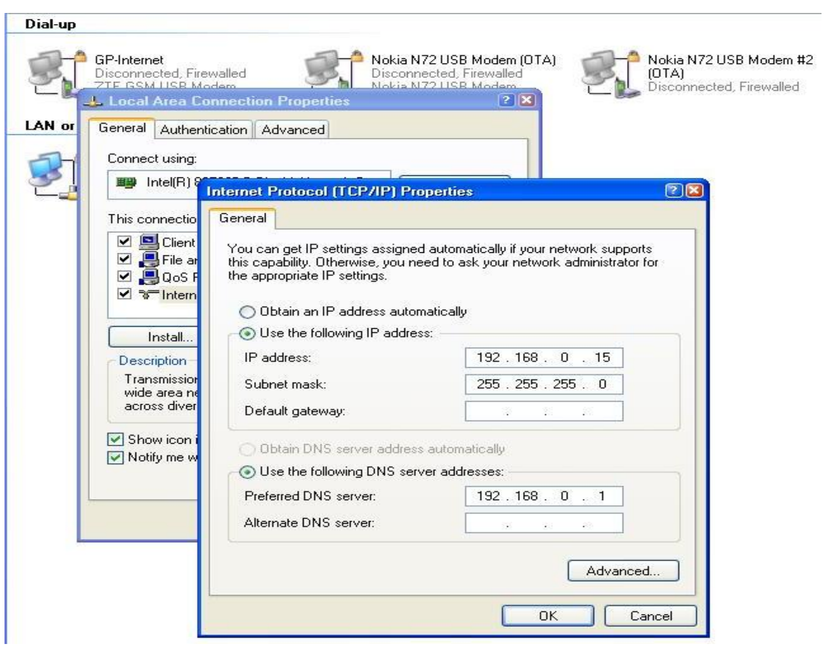

Fig 5.7: Pc6 (192.168.0.15)

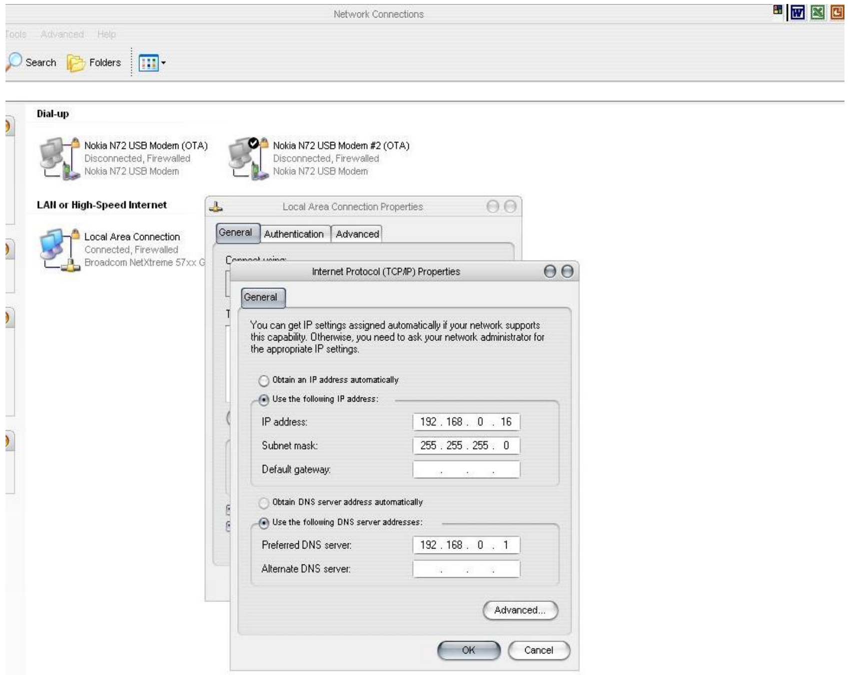

Fig 5.8: Pc7 (192.168.0.16)

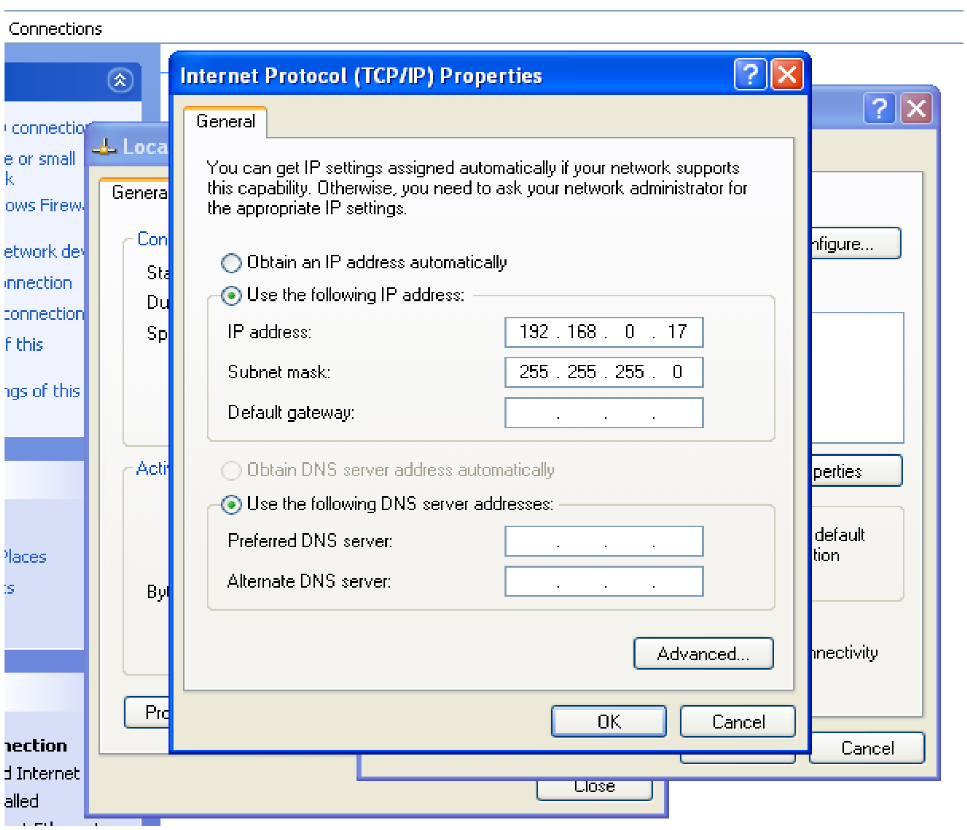

Fig 5.9: Pc8 (192.168.0.17)

5.2.5 Admin room

Same as the other room this room has a D-link switch and three computers. The Managing Director, Director and the Manager use these computers to observe all the room by using camera. Control the accounts using Tally software.

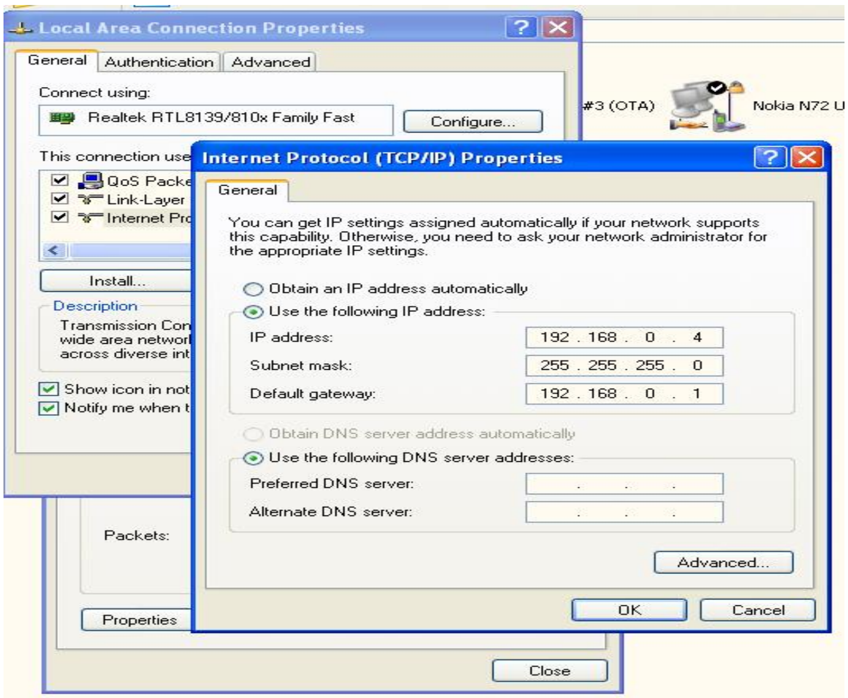

Fig 5.10: Pc9 (192.168.0.4)

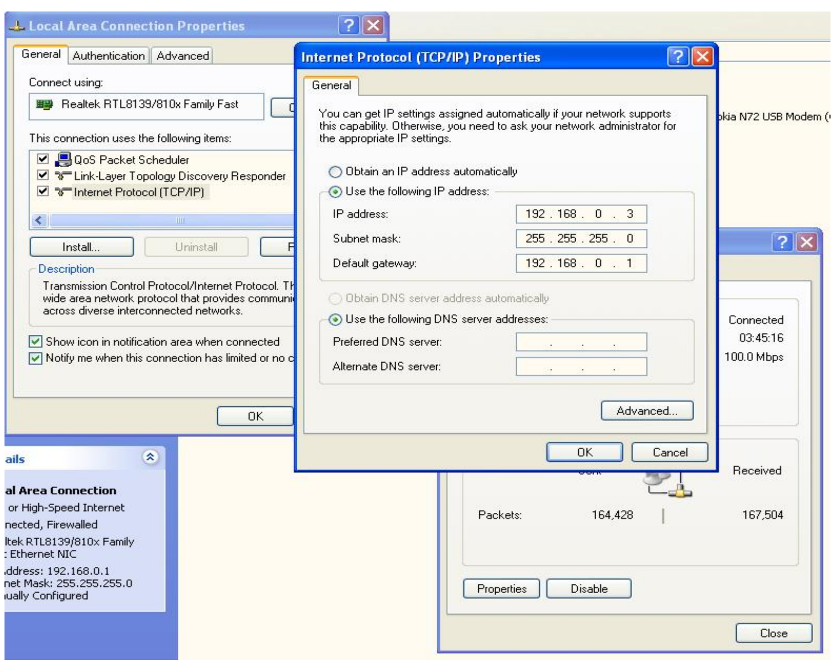

Fig 5.11: Pc8 (192.168.0.3)

5.3 Hardware

Here we have used some hardware. Those are given bellow

5.3.1 D-link Switch

Figure 5.12: D-Link switch

This switch doesn't need to set configuration. It is an auto configured switch.

TECHNICAL SPECIFICATIONS:

STANDARDS

+ IEEE 802.3 10Base-T Ethernet
+ IEEE 802.3u 100Base-TX Fast Ethernet
+ IEEE 802.3ab 1000Base-T Gigabit Ethernet
+ IEEE 802.3 Nway Auto-negotiation
+ IEEE 802.3x Flow Control
+ IEEE 802.1p QoS Prioritization

FEATURES

+ Number of Ports: Eight 10/100/1000BASE-T
+ MAC Address Table: 4k
+ Switch Fabric: 16Gbps
+ Packet Buffer Memory: 192KBytes
+ Transmission Method: Store-and-forward
+ Jumbo Frames: Up to 9720 Bytes
+ Cable Diagnostic LEDs

NETWORK DATA TRANSFER RATE

+ Ethernet: 10Mbps (Half-duplex)
+ Ethernet: 20Mbps (Full-duplex)
+ Fast Ethernet: 100Mbps (Half-duplex)
+ Fast Ethernet: 200Mbps (Full-duplex)
+ Gigabit Ethernet: 1000Mbps (Half-duplex)
+ Gigabit Ethernet: 2000Mbps (Full-duplex)

INTERFACE OPTIONS

RJ-45: 10BASE-T, 100BASE-TX

Universal, 1000BASE-T UTP

Cable Recognition for Straight-through

or Crossover Cables

CERTIFICATIONS

FCC Class B, CE, VCCI, cUL

LEDs

+ Per Unit: Power

+ Per Port: Link/Activity,

100/1000Mbps

POWER CONSUMPTION

5.2 Watts Maximum

POWER SUPPLY

+ Switching 5V/2A

+ Linear AC-DC 7.5V/1A

OPERATING TEMPERATURE

32°F to 104°F (0°C to 40°C)

OPERATING HUMIDITY

5% ~ 90% (Non-condensing)

DIMENSIONS

+ Item (WxDxH): 7.5” x 4.6” x 1.4”

(191mm x 117mm x 35mm)

+ Packaging (WxDxH): 11.8” x 8.2” x

4.8”(300mm x 208mm x 122mm)

WEIGHT

+ Item: 1.2 lbs (0.5 kg)

+ Packaging: 2.5 lbs (1.1 kg)

WARRANTY

3-Years Limited

5.3.2 D-link rj45 connector

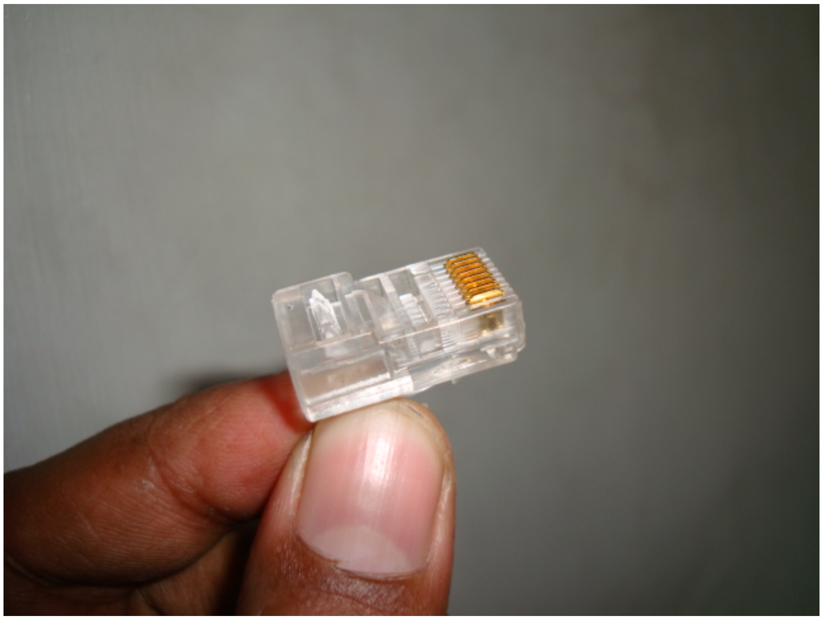

Figure 5.13: RJ45 connector

5.3.3 CC Camera

Figure 5.14: CC Camera

5.3.4 Monitoring of cc camera

I was working there as an IT assistant with their IT Incharge. My first work of the day was to check their security system which was controlled by their security team. The following picture shows an idea of the security process.

Figure 5.15: Monitoring of cc camera

CHAPTER: 6

TIME ATTENDANCE AND PAYROLL

6.1 Hardware

Time attendance and payroll system has several hardware and software.

6.1.1 RF card reader RAC-900

Figure 6.1: Proximity Card Reader

This is a Proximity Card Reader device. This device uses the RF (Radio Frequency) signal to read and separate the card from each other.

6.1.1.1 Hardware Specifications

Input voltage	DC 12V @1A
Output voltage	DC 5v @ 100mA (max)/ DC 12v @ 100mA (max)
Power consumption	5W (max)
Operating temperature	$0c^{o}$ ~50 c^{o} / 32^{o} F
Relative humidity	20%-95% (Non-condensing)
Keypad	(15 keys) 0-9, F1, F2, F3, CE, Enter
Enter range	0-9, A-Z, a-z, + , - , * , /, % , $, ?, Space
Slot reader	Barcode infrared or magnetic stripe reader
Barcode reader	Resolution: 0.15mm Scanning speed: 3-4oips
Magnetic stripe card	ISO3554 standard track 1 or 2 or 3
Reading distance (Proximity type)	RF 125KHz, 8~10 cm.
Input devices	5 sets input point (Sensor)
Output device	2 output relays
Communication interface	RS-232/RS-422/RS-485
Display	2*16 LCD (back light) 2 row*16 character LCD
Dimension	153mm (L)* 120mm (W)* 60mm (H)
Weight	450g
Baud rate	9600bps-N-8-1
SRAM	128 KB memory
Others	Built-in real time clock external reset switch.

This machine is connected to a computer through a converter which called data converter. This converter is working as an analog to digital converter. It converts the RF signal into binary signal.

6.1.2 Data Converter RS-485

Figure 6.2: RS- 485 data converters

Features

- Port Powered: No External Power Required
- Optical isolation eliminates ground loop and noise problems
- Data Direction, auto-turnaround, no flow control is necessary
- Plug-and-Play (Device is hot-pluggable)
- 5 Year Manufacturer’s Warranty
- CE Compliance Certified
- Built-in surge protection, static protection and circuit protection
- Surface Mount Technology manufactured to ISO 9001 Standards

6.2 Software

To install Time Attendance and Payroll software first of all a server should be installed. We use Microsoft SQL Server-2000.

6.2.1 Hardware and Software Requirements for Installing SQL Server 2000

The minimum hardware and software requirements for running Microsoft® SQL Server™ 2000 are listed in the following tables.

a. Hardware Requirements

This table shows hardware requirements for installing Microsoft SQL Server 2000 or SQL Server client management tools and libraries.

Hardware	Minimum requirements
Computer	Intel® or compatible Pentium 166 MHz or higher.
Memory (RAM)[1]	Enterprise Edition: 64 MB minimum, 128 MB or more recommended Standard Edition: 64 MB minimum Personal Edition: 64 MB minimum on Windows 2000, 32 MB minimum on all other operating systems Developer Edition: 64 MB minimum Desktop Engine: 64 MB minimum on Windows 2000, 32 MB minimum on all other operating systems
Hard disk space[2]	SQL Server database components: 95 to 270 MB, 250 MB typical Analysis Services: 50 MB minimum, 130 MB typical English Query: 80 MB

	Desktop Engine only: 44 MB
Monitor	VGA or higher resolution 800x600 or higher resolution required for the SQL Server graphical tools

1 Additional memory may be required, depending on operating system requirements.
2 Actual requirements will vary based on your system configuration and the applications and features you choose to install.

b. Operating System Requirements

This table shows the operating systems that must be installed to use the various editions or components of Microsoft SQL Server 2000.

SQL Server edition or component	Operating system requirement
Enterprise Edition	Microsoft Windows NT Server 4.0, Microsoft Windows NT Server Enterprise Edition 4.0, Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Data Center Server. Note that Microsoft Windows 2000 Server (any version) is required for some SQL Server 2000 features.
Standard Edition	Microsoft Windows NT Server 4.0, Windows 2000 Server, Microsoft Windows NT Server Enterprise Edition, Windows 2000 Advanced Server, and Windows 2000 Data Center Server.
Personal Edition	Microsoft Windows Me, Windows 98, Windows NT Workstation 4.0, Windows 2000 Professional, Microsoft Windows NT Server 4.0, Windows 2000 Server, and all the more advanced Windows operating systems.
Developer Edition	Microsoft Windows NT Workstation 4.0, Windows 2000 Professional, and all other Windows NT and Windows 2000 operating systems.
Client Tools Only	Microsoft Windows NT 4.0, Windows 2000 (all versions), Windows Me, and Windows 98.
Connectivity Only	Microsoft Windows NT 4.0, Windows 2000 (all versions), Windows Me, Windows 98, and Windows 95.

6.2.2 Crystal Report

Installation requirements

a. Local installation (from CD) requirements

- Microsoft Windows 95/98/2000, Windows NT 4.0, or higher
- Minimum RAM: 16 MB (32 MB for Windows NT)
- Recommended RAM: 32 MB
- Minimum hard drive space required (all editions): 60 MB
- Maximum hard drive space required:
- Developer Edition: 350 MB
- Professional Edition: 350 MB
- Standard Edition: 155 MB.

We also recommend having an additional 100 MB of free disk space on your C: drive for use by Windows during the installation. If your system does not meet these requirements, the program may not run correctly.

b. Network installation requirements

- Microsoft Windows 95/98/2000, Windows NT 4.0, or higher
- Minimum RAM: 16 MB (32 MB for Windows NT)
- Recommended RAM: 32 MB
- Typical hard drive space required on a network server: 217 MB
- Typical hard drive space required on a workstation: 105 MB.

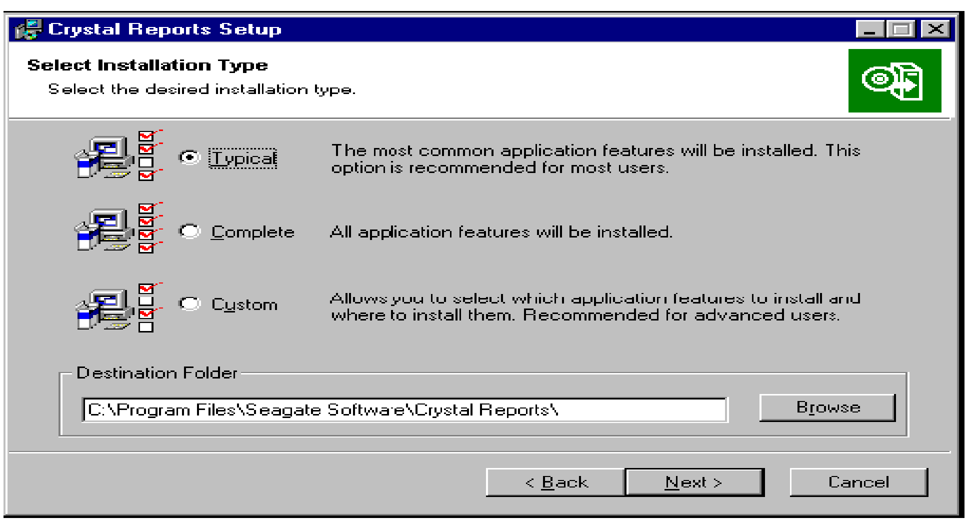

Figure 6.3: Crystal Report installation

6.2.3 Data Comm2 v171

Datacomm2 is software to receive data from the RF card reader. And the steps of setting are shown below.

Step 1: after installation first we need to choose our device. Here I choose RAC-900.

Figure 6.4: Step 1 of installing Data Comm2

Step 2: then the data saving path and the clock type is settled.

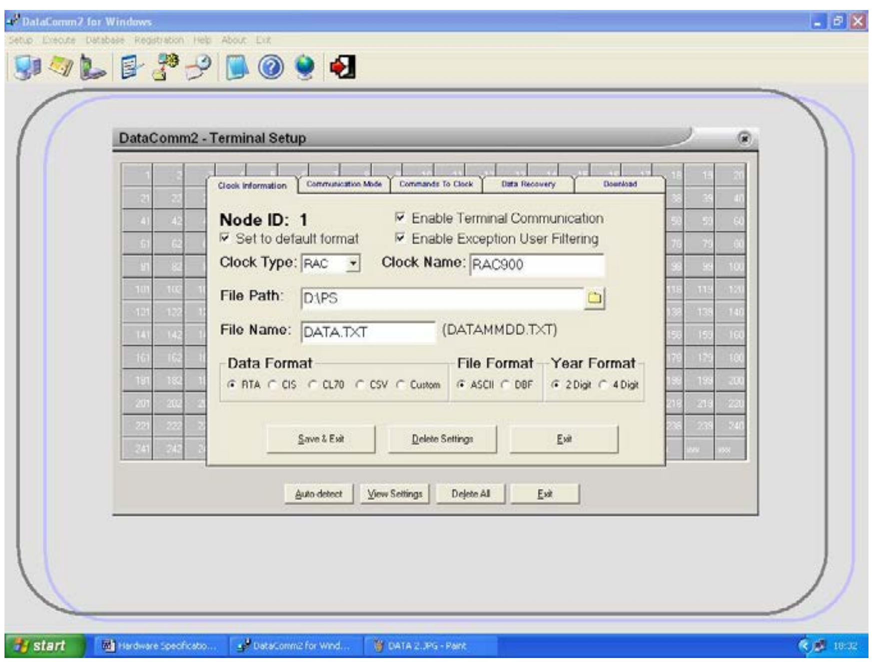

Figure 6.5: Step 2 of installing Data Comm2

Step 3: At the final step after a successful setting the software shows a green signal.

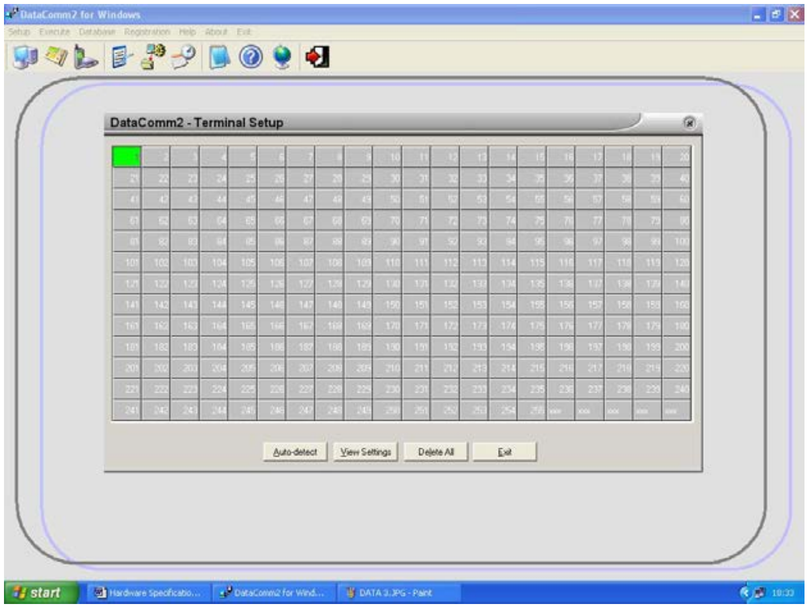

Figure 6.6: Step 3 of installing Data Comm2

6.2.4 Time Attendance and Payroll System

There are few menus in the Time attendance and Payroll software like “Setup”, ”Download”, “Time attendance”, “Report”, “Payroll”, “Payroll-Report”, “Utilities”, “Exit” for operational cause.

6.2.4.1 Setup

This menu is used to enter all the information about employees to the software. Because this Time attendance and Payroll software does not know the identity of the employees so as a matter of fact for the first time we have to enter all the information.

Figure 6.7: Setup

a. Employee

Under the "Setup" Menu there is a menu named as "Employee" that is used to enter all the employee information of your company to the software. There are few Boxes to enter data like code (unique number of a particular employee), name, name bangle, company, department, designation, sub department/section, group, shift, roster, gross salary, OT status, Joining date, status etc.

Button Info---

SL	Button Tag	Description
01.	"Add"	This button is used to enter new company information.
02.	"Delete"	This button is used to delete the existing information.
03.	"Edit"	This button is used update the existing information.
04.	"Close"	This button is used to close the company form.
05.	"First"	This button is used to see the first information of all the data.
06.	"Previous"	This button is used to see the previous information.
07.	"Next"	This button is used to see the next information.
08.	"Last"	This button is used to see the last information.
09	"Search"	This button is used to find a employee based on code
10	"Id Print"	This button is used to print ID card

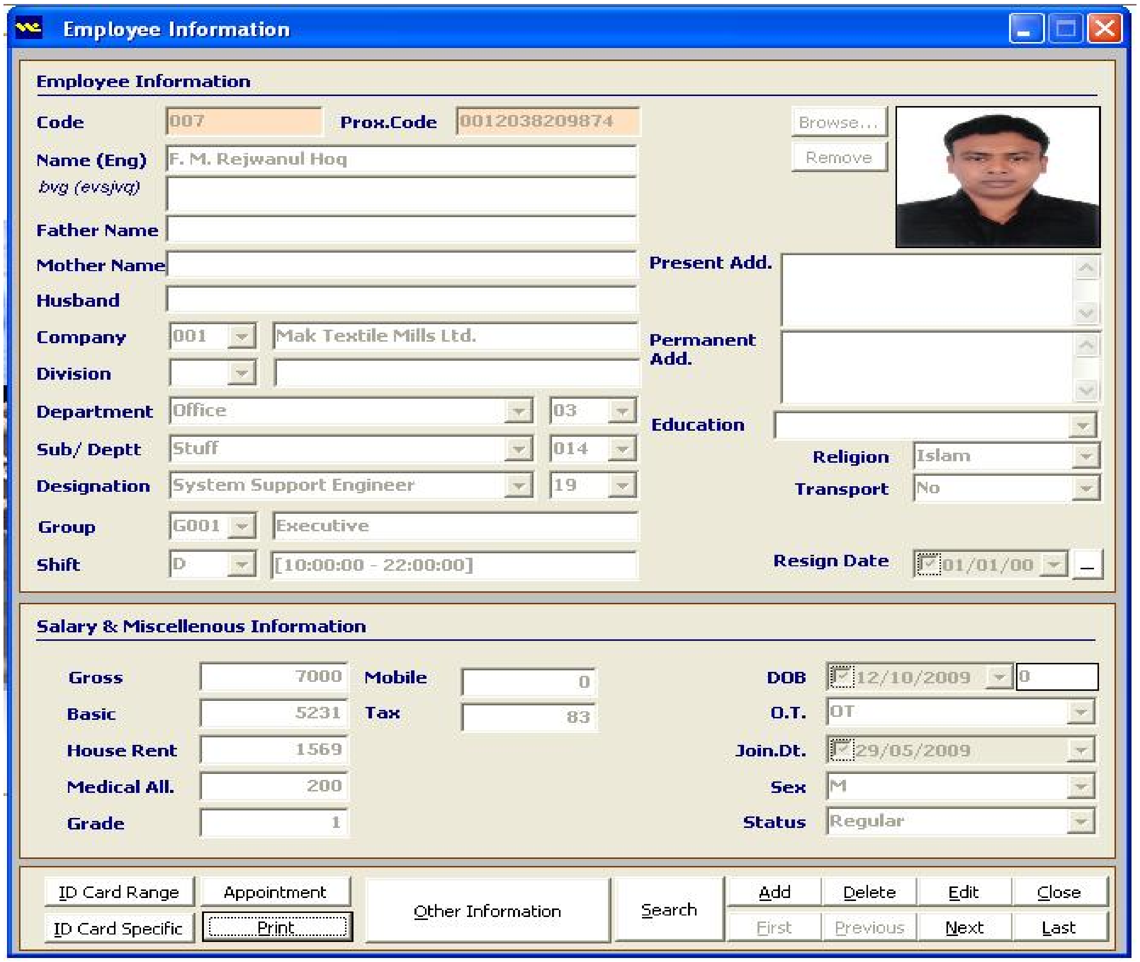

Figure 6.8: Employee Information

6.2.4.2 Download

This menu has only sub menu as named “Download Data” which is used to download data from the machine (RAC 900).

Why shall we download: There is an explanation like--- when an employee punches a card in the morning his punch information will be stored in the machine. So To get this information we need to download this data from the machine to our software. The procedures are as follows.

1. Click on “Download Data” sub menu. (The new from will open. There you will see the data is downloading. Till wait there is a message come out like “Download complete”)
2. Click on “Download complete” message.

Click on “Close” to exit.

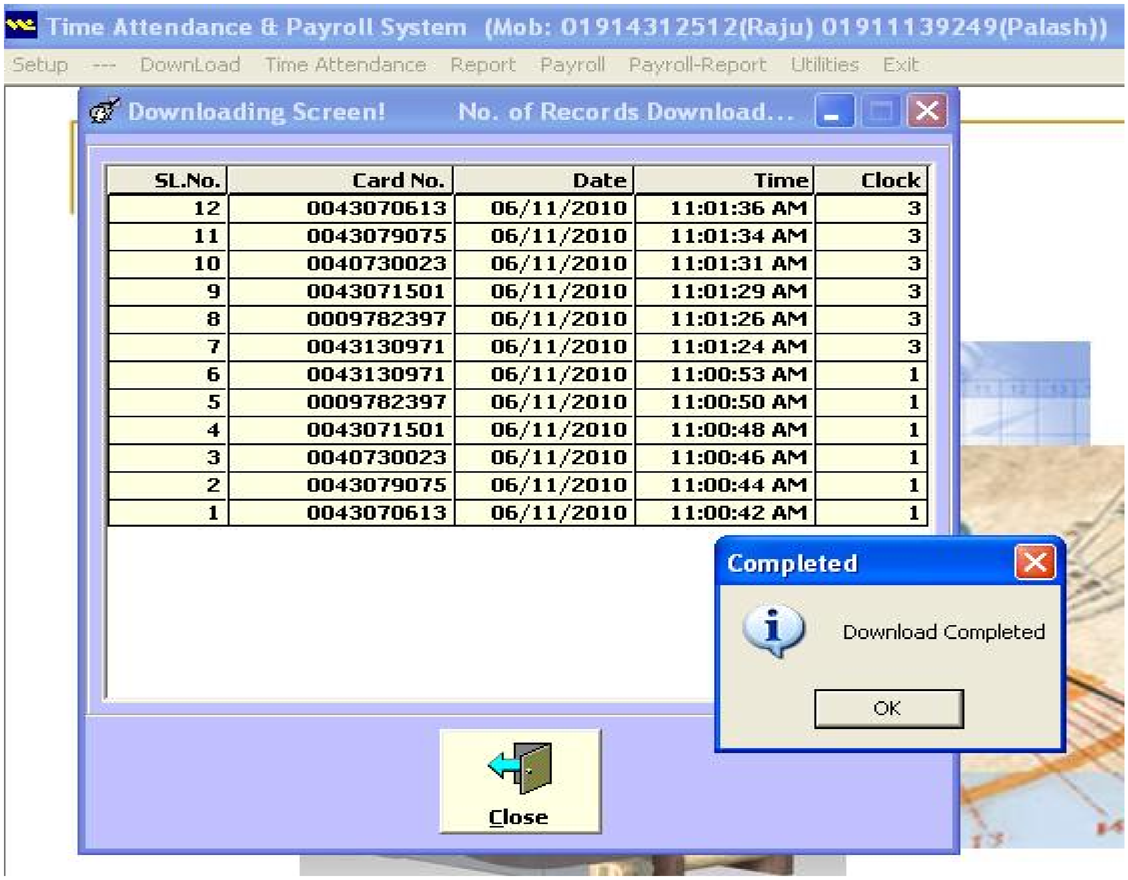

Figure 6.9: Data Download

6.2.4.3 Time Attendance

After downloading data from RF card reader (RAC 900) this menu is used to save the workers In/Out information into Database of the software.

Figure 6.10: Time attendance

a. Daily Process:

This menu is used to make daily report of the day.

<u>What is daily process:</u> we first download data from machine there we get “Intime” and “Outtime” but this information need to be calculated for getting working hour, overtime hour.

Because of this each day daily process will be done.

SL	Button Tag	Description
01.	“Process”	This button is used to Start the process
02.	“Close”	This button is to close the from

<u>How to Process:</u> To do daily process does the follow procedure.

1. Select the date. (Date needs to be processed.)
2. There are 3 option button below it describes here—
   a. Regular day: select this if the day is working day.
   b. Weekly Holiday: select this if the day is Friday.
   c. Holiday: select this if the day is govt. Holiday (like 21st February.)
3. Click on “Process” button.
4. Click on “Close” button.

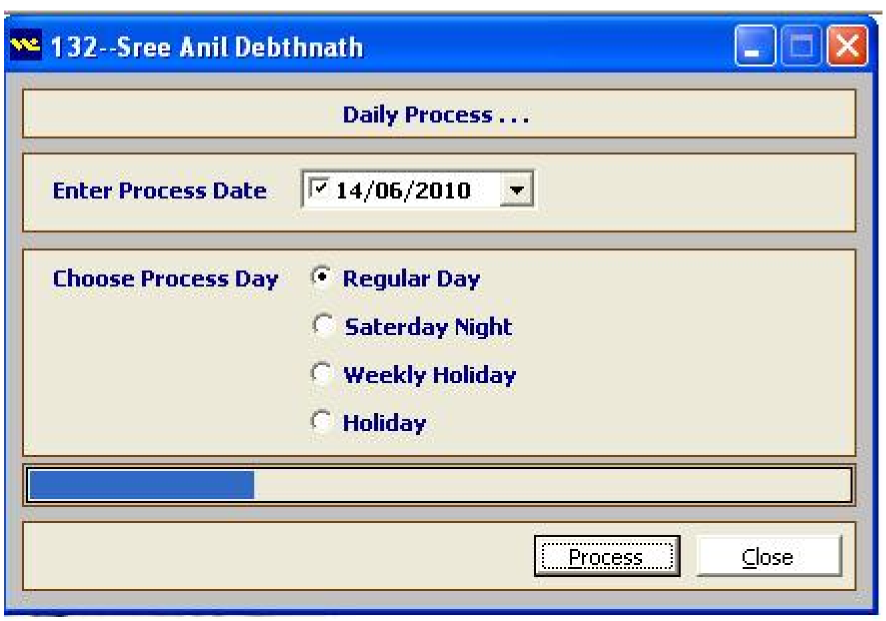

Figure 6.11: Daily Process

6.2.4.4 Report

This menu is used to get Daily status report, Job card, Employee report and other reports.

Figure 6.12: Report

a. Daily Attendance:

This menu is used to get daily report

Daily Status Report

Mak Textile Mills Ltd.

Print Time :	12:27	Date: 14/06/2010	**Print date:**	**June 14, 2010**
				Page 1 of 6

Card No	Name	Designation	Shift	In Time	Late	Status
Department	**: Dying**					
Sub Deptt	**: Standard**					
035	Md. Babul	Incharge	A	0:00	0:00	A
160	Md. Ashraful 2	Helper	A	0:00	0:00	A
166	Md. Roni Miah	Helper	A	8:17	0:17	L
168	Md. Shohidullah	Clipman	A	8:13	0:00	P
169	Md. Badsha	Helper	A	0:00	0:00	A
170	Sree Roki Kumar Saha	Clipman	A	7:58	0:00	P
173	Md. Liton	Clipman	A	0:00	0:00	A
175	Md. Faruk	Clipman	A	8:12	0:00	P
176	Md. Jorge Mia	Clipman	A	8:19	0:19	L
179	Md. Dulal	Helper	A	7:34	0:00	P
181	Md. Monu Mia	Helper	A	8:17	0:17	L
184	Ms. Shanta Akter	Helper	A	0:00	0:00	A
186	Md. Younus Ali	Helper	A	8:05	0:00	P
187	Ms. Sahera Begam	Helper	A	8:25	0:25	L
190	Ms. Morium	Helper	A	8:12	0:00	P
191	Md. Nazmul	Helper	A	8:05	0:00	P
192	Md. Manik Mia	Helper	A	8:15	0:00	P
193	Ms. Happy Aktar	Helper	A	8:16	0:16	L
197	Md. Nobiullah	Clipman	A	8:01	0:00	P
199	Md. Rasel	Oparator	A	8:44	0:44	L
207	Md. Nadim	Helper	A	7:47	0:00	P
225	Md. Ashraful	Helper	A	8:17	0:17	L
226	Md. Rubel 2	Clipman	A	8:01	0:00	P
227	Md. Tuhin	Helper	A	0:00	0:00	A
229	Md. Rashedul	Helper	A	0:00	0:00	A
237	Md. Firoz Shek	Helper	A	0:00	0:00	A
402	Md. Sobir Hossain	Helper	A	0:00	0:00	A
403	Md. Arif	Helper	A	0:00	0:00	A
520	Md. Rubel-3	Helper	A	0:00	0:00	A
526	Ms. Rumi Akter	Helper	A	7:59	0:00	P
529	Md. Khalil Mia	Helper	A	8:15	0:00	P
Sub Total : 31	**Absent : 11**	**Late: 7**	**Present : 13**		**Total Present:**	**20**
Department	**: Dying**					
Sub Deptt	**: Jigger**					
072	Md. Tito Mia	Oparator	A	7:52	0:00	P

Figure 6.13: Daily Status Report

6.2.4.5 Payroll

This menu has few sub menus. These sub menus are Attendance Entry, Advance/ Loan, Advance Process, Allowance, Allowance Details, Arear Add, Arear Less, Deduction, Deduction Details, Increment, Weekly Payment Salary Process.

Figure 6.14: Payroll

6.2.4.6 Payroll-Report

It is used to get reports on weekly and monthly salary, over time sheet, salary summary and Eid bonus.

Figure 6.15: Payroll-report

a. Salary Sheet (Month):

Mak Textile Mills Ltd.

MONTHLY SALARY SHEET

For the month of May, 2010 (All)

Days of Month :	31
Working Days :	31

Department :Dying

Sl. No.	Card No	Employee Name Designation	Late	Absent	Leave	Attendance Day	Working Hour	Salary: Basic	House Rent	Medical	Convence	Gross Salary	Deduction: Weekly	Advance	Absent	Ded. M. Bill	Tax	Others	Total	Payable Salary	Arear: Add	Less	Mobile Bill	Advance weekly (workers)	NET PAYABLE SALARY	Stamp &
Sub Department/Line: Boiler																										
1	032	Md. Skek Farid Oparator	0	0	0	31	372.00					5500	6000	0	0 0	0	0	0	6000	(500)	0	0	0	**(500)**	**0**	
2	033	Md. Shek Bahar Oparator	0	3	0	28	336.00					5500	4000	1000	532 0	0	0	0	5532	(32)	0	0	0	**(32)**	**0**	
3	249	Md. Rashed Khan Helper	0	0	0	31	372.00					3000	2400	600	0 0	0	0	0	3000	0	0	0	0	**0**	**0**	
Total Sub Department/Line:												**14,000**	**12,400**	**1,600**	**532**	**0**	**0**	**0**	**14,532**	**(532)**	**0**	**0**	**0**	**(532)**	**0**	
Sub Department/Line: Cleaner																										
4	277	Sree Sohon Das Oparator	0	10	0	21	252.00					1700	0	0	548 0	0	0	0	548	1152	0	0	0	**0**	**1152**	
5	401	Ms. Morjina Begum Helper	0	1	0	30	360.00					2700	2000	0	87 0	0	0	0	2087	613	0	0	0	**0**	**613**	
Total Sub Department/Line:												**4,400**	**2,000**	**0**	**635**	**0**	**0**	**0**	**2,635**	**1,765**	**0**	**0**	**0**	**0**	**1,765**	
Sub Department/Line: Driver																										
6	276	Md. Sirikiul Oparator	0	6	0	25	300.00					4500	2400	0	871 0	0	0	0	3271	1229	0	0	0	**0**	**1229**	
7	961	Md. Esmail Helper	0	0	0	31	372.00					7000	7000	0	0 0	0	0	0	7000	0	0	0	0	**0**	**0**	
Total Sub Department/Line:												**11,500**	**9,400**	**0**	**871**	**0**	**0**	**0**	**10,271**	**1,229**	**0**	**0**	**0**	**0**	**1,229**	
Sub Department/Line: Electrical																										
8	025	Md. Mostofa Oparator	0	1	0	30	360.00					10000	8000	0	323 0	0	0	0	8323	1677	0	0	0	**0**	**1677**	
9	026	Md. Nasir Uddin Oparator	0	1	0	30	360.00					6000	8200	0	194 0	0	0	0	8394	(2394)	0	0	0	**(2394)**	**0**	
10	028	Md. Golger Helper	0	0	0	31	372.00					3700	3000	0	0 0	0	0	0	3000	700	0	0	0	**0**	**700**	
Total Sub Department/Line:												**19,700**	**19,200**	**0**	**516**	**0**	**0**	**0**	**19,716**	**(16)**	**0**	**0**	**0**	**(2,394)**	**2,377**	

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Figure 6.16: Monthly Salary Sheet

6.2.4.7 Utilities

This menu is used to enter data manually.

Why shall we use this manual entry from: Because of the following cause, we can use this manual entry form.

1. When workers first time punch his/her card most of the time happened that they could not punch their card properly. May be it happens that in the morning time they punch their card of going time they forgot to punch on that cause from our software we can't get his/her working hour or OT hour at this circumstances we have to manually enter his/her time.
2. We can enter any employee's in time or out time.

We can get missing list of those employees who did not punch card morning time or evening time.

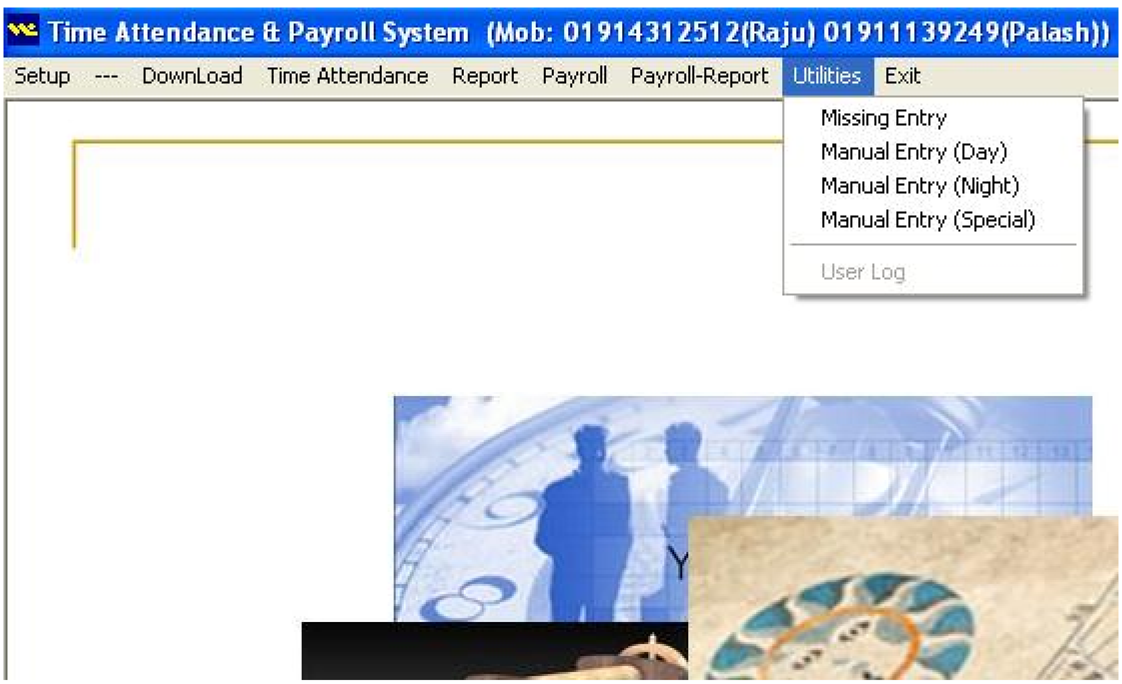

Figure 6.17: Utilities

a. Manual Entry

This menu is used to enter data manually

<u>*Why shall we use this manual entry from:*</u> Because of the following cause may be we can use this manual entry form.

3. When a worker first time punches his card most of the time happened that they could not punch their card properly. May be it happens that in the morning time they punch their card of going time they forgot to punch on that cause from our software we can't get his/her working hour or OT hour at this circumstances we have to manually enter his/her time.
4. We can enter any employee's intime or ourtime.

We can get missing list of those employees who did not punch card morning time or evening time.

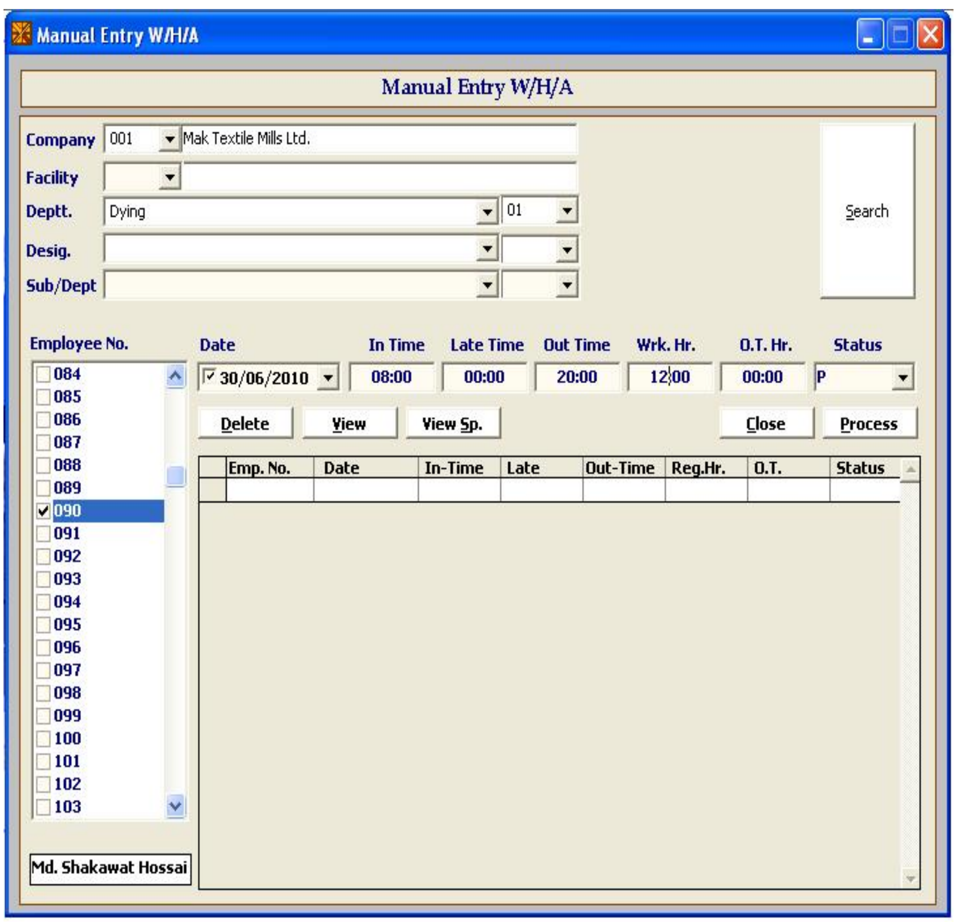

Figure 6.18: Manual Entry

CHAPTER: 07
CONCLUSION

7.1 Conclusions

Mak Textile Mills Ltd. is still a fast growing company, in spite of all the success it has achieved so far. Behind reason about this success for never compromise for quality of products & instrument e.g. it always recommended number one company's goods for the system support. These quality instruments are installed by qualified & experienced system engineer and they have to follow the industry standard installation procedure.

The findings of this internship showed that the initial step by step setup procedure, how the system works and how the system operated.

In my working of view I can say that this technology or system such a useful technique by which any company can get huge output without invest extra money or man power.

7.2 Problems I Faced

There are some problems I faced during my internship. Those are

- Some times workers don't punch their card (proximity card) properly. So the software shows workers absent in Daily Report, though the workers are physically present in factory.
- Some times LAN shows disconnected, due to internal problems in computer.
- One of the bigger problems I have faced in my internship time that was the conversion of cc camera storage memory. Mak Textile uses DVR cards, which converts the video into *.box* format. It takes more space and time to convert.

7.3 Future works

After supporting the system of Mak Textile Mills, the following issues were found to be recommended:

- From the analytical discussion it was found that the system is strongly working but if the department gives more concentration on IN/OUT devices (RAC 900), may be it will help to increase efficiency of workers daily report.
- Conversion technique of cc camera's memory/storage files can be changed by replacing the DVR card.

Reference:

1. LAN Overview, http://www.lis.uiuc.edu/
2. "OCTOPUS: THE LAWRENCE RADIATION LABORATORY NETWORK", Samuel F. Mendicino
3. G. Keisler, “Local Area Networks”, McGraw-Hill, 2002.
4. Anonymous. No Date. Computer Network Study Guide with Microsoft NT 4.0.
5. "A Review of the Basic Components of a Local Area Network (LAN)", J. Metzler and L. Denoia
6. W. Stallings, Local and Metropolitan Area Networks, Sixth Edition, Prentice-Hall, 2000.
7. MCSE Network Essential, Second Edition, Chellis, Perkins, Strebe
8. Network Management System. http://encyclopedia the freedictionary.com/Network+management +system
9. Groth, David; Toby Skandier (2005). Network+ Study Guide, Fourth Edition'. Sybex, Inc.. ISBN 0-7821-4406-3.
10. Network Management Basics. http://www.cisco.com/univercd/cc/td/doc/Cisintwk /ito_doc/nmba sics.htm
11. http://searchnetworking.techtarget.com/sDefinition/0, sid7gci212495, 00.html http://en.wikipedia.org/wiki/Local_area_network
12. http://compnetworking.about.com/cs/clientserver http://compnetworking.about.com/od/basicnetworkingconcepts/g/ network_servers.htm
13. "Communications of the ACM" of Ethernet: Distributed Packet Switching for Local Computer Networks by Robert M. Metcalfe and David R. Boggs.
14. D. Monoli and A. Alles, *LAN, ATM, and LAN Emulation Technologies* , Artech House, 1996.
15. S. Mirchandani and R. Khanna, *FDDI: Technology and Applications*, Wiley, 1993.

16. M. Hein and D. Griffiths, *Switching Technologies in the Local Network: From LAN to Switched LAN to Virtual LAN*.
17. J. Martin, K. Chapman, and J. Leben, *Local Area Networks: Architectures and Implementations*, Second Edition, Prentice-Hall, 1994.