

INTERNSHIP- REPORT



DILLA UNIVERSITY

College of Engineering and Technology School of Electrical and Computer
Engineering Stream of Computer Engineering

INDUSTRIAL INTERNSHIP REPORT

Duration: October - February 2020

Hosting company:- Dilla University Information Communication Technology

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Submission date: February 17/02/2020

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DECLARATION

I am here by declare that the Industrial internship report was carried out and written by me under the guidance of Mr. Abenizer, Master of science, Department of Electrical and Computer Engineering, Stream of Computer Engineering Dilla University.

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SIGNATURE.....

DATE.....

ADVISOR NAME: ABINZER.

SIGNATURE.....

DATE.....

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ACKNOWLEDGEMENT

Any accomplishment requires the blessing of the God. This work is not any different to that. So the first thanks goes to God. I also thanks my adviser Mr.Abnizer and from hosting company (Dilla University Information Communication Technology (DUICT))Mr.Ambaye my adviser at company Mr.Kebebe,Mr.Nebyu and all the members of Networking,Maintenance and software development theme for their continuous comments in every steps of the practice work that they forwards throughout the semester. I also would like to thanks Mr. Nebyu for their continuous guidance on the importance of attendance at the practice hall (room) daily as well as all ICT members of the company for their continuous standing for our security. There are also many people at the company who have helped me in my internship time by sharing their valuable experience.

Finally, a big thank to my family for their encouragement, patience and support throughout my internship time.

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ACRONYM

ARP- Address Resolution Protocol
CLI- Command Line Interface
D-link- Data Link
DHCP- Dynamic Host Configuration Protocol
DNS- Domain Name System
DUICT- Dilla University Information Communication and Technology
ISP-Internet Server provider
IPsec- Internet Protocol secure
LAN-Local Area Network
LED-Light Emitted Diode
RAM-Random Access Memory
ROM-Read Only Memory
STP- Shaded Twisted Pair
SSH-Secure Sheel
SIP-Session Initiation Protocol
TCP/IP- Transmission Control Protocol/Internet Protocol
URL-Uniform Resource Locator
VoIP-Voice Over Internet Protocol
VLAN- Virtual LAN
UTP- Unshaded Twisted Pair
WAN- Wide Area Network

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EXECUTIVE SUMMARY

Internship program is the best thing for students to change their theoretical knowledge that get from class by different course into practical knowledge and to faces the real world situation before taking a serious commitment. This internship uses to minimize company's cost used to Train workers after they graduated and employed. It also helps students to develop different skill like practical, interpersonal communication, entrepreneur, and leadership skills.

During my internship period in DUCT, for a period of four months (from October 2019 to February 2020), I have been working in different section of the industry but during my stay I focus on sections that are related to my field computer engineering. I have adapted a lot of social interaction with all Coworkers of the company and identified problems and discussed on the solutions and also I have participated in maintenance of different material with in the company. Beside to this I have given some recommendations to the company.

My report is categorized on chapters, starting from the first chapter which is focus on the brief history of the DUCT, vision, mission, objective, main product, main customer and over all organization and work flow of the company on next chapter I deal with over all internship experience, overall process description, the challenge I faced and the measure I take to overcome the challenge. The next chapter focuses on over all benefit I gained from the internship in terms of upgrading theoretical knowledge, interpersonal communication skill, team playing skill, leadership skill. Other chapters focus on over all achievement and problem-solving project and also I try to give conclusion and recommendation.

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CHAPTER ONE

1.INTRODUCTION

1.1 Back ground of the company

1.2.1 Brief history of DUICT

Dilla University is the 1996's Dilla College of Teachers' Education and Health Sciences with Faculty of Teachers' Education and Faculty of Health Sciences. However, in 2001, the College was included in the newly emerging University Debub University. In 2004 Dilla College once again went through another phase and sprung in to a full- fledged University by the councils of ministers regulation No- 129/04. ICT center of Dilla University was established in 2006 as a computer center, by deploying dial up connection, out-reaching management offices. Lack of professionals characterizes the center, where instructors from mathematics and physics departments were assigned to manage and coordinate the office. It was later in 2007 that an optical fiber installation was activated, exploring almost all the buildings of the time. Despite the launched developments, its functionality and perpetuity was obstructed for lack of documentation to refer, and the temporary instability due to institutional partitioning from the Dilla University. Ever since its establishment, the center has been working closely with different sections of the university to create awareness of ICT, giving training for some staff members of the University, and most importantly to expand network and Internet facilities for the University community. The office is currently established as an ICT Directorate office level with one director five team leaders, 21 professionals and 8 technical supportive staffs.

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1.2.2 Mission of the Company

Develop high-tech ICT infrastructure and provide superior quality services whereby the teaching, learning, research, and administrative activities of the university are carried out by utilizing the resources and services efficiently and effectively.”

1.2.3 Vision of the Company

To become a dynamic Directorate of ICT Excellence center propelling Dilla University to be one of top ten Universities of East Africa in 2013.

1.2.4 Goal of the Company

- ✓ Ensure that ICT is fully integrated into every operations of the University in order to speed up and improve quality of activities of Dilla University.
- ✓ DU ICT obligations will be executed with commitment and professionalism.
- ✓ DU ICT will maintain a sense of self respect, discipline, and responsibility.
- ✓ DU ICT commits them to the practice of teamwork.
- ✓ DU ICT embraces efficacy and excellence.

1.3 Main products or services of DUICT

- ✓ Provide sustainable and quality ICT infrastructure and improve student and staff access to ICT resources in line with University priorities.
- ✓ Ensure all staff members are motivated and skilled in the use of ICT to spark the culture of continuous development in ICT expertise and exposures.
- ✓ Initiate/Develop/Supervise application development for different sections of the University and provide ongoing maintenance of both the software and the hardware.
- ✓ Building a digital teaching-learning environment both in terms of teaching-learning materials and digital resource sharing, promoting interactive academic and professional communications between teachers, administrative staff, researchers and students.
- ✓ Provide on time and online user support platform for the University community.

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- ✓ Establish a dynamic and adaptive online University communication network serving internal and external users.
- ✓ Expand training and consultancy wings, including income-generating schemes, gearing to introduce and promote ICT to the internal and external community, by raising the capabilities and efficiency in ICT use.
- ✓ Use ICT to for E-learning, smart rooms, video conferencing and tel-medicine.

1.4 Main customers and end user of DUCT

- ✓ The DU ICT office strives to provide quality information and communication service to the university's community. Always there is a growing demand towards quality ICT facility. Moreover, each day brings its own challenge and dangers towards the safe way of communication on the internet. It is the office's ultimate objective to strive to enhance the quality of the service and maintain the already existing service intact.
- ✓ Maintenance work for all the computers, printers and some other related electronic tools in the university.
- ✓ Protecting computers in the university from various computer security threats.
- ✓ Developing important applications for the University.
- ✓ Providing ICT related training and consultancy.
- ✓ Facilitating teaching and learning technologies.
- ✓ Providing internet service for the university staff.
- ✓ Publishing and maintaining the university's website.
- ✓ Providing ICT support in cases of seminars, workshops and other events.
- ✓ Establishing computer laboratories and providing support.
- ✓ Facilitating the delivery of the ICT and other computer courses.
- ✓ Providing assistance in the purchase of computers and other related electronic tools.

Generally -duct are five ict directorate teams it grouping according to the work flow of duct to see below.

DU ICT Directorate Organization

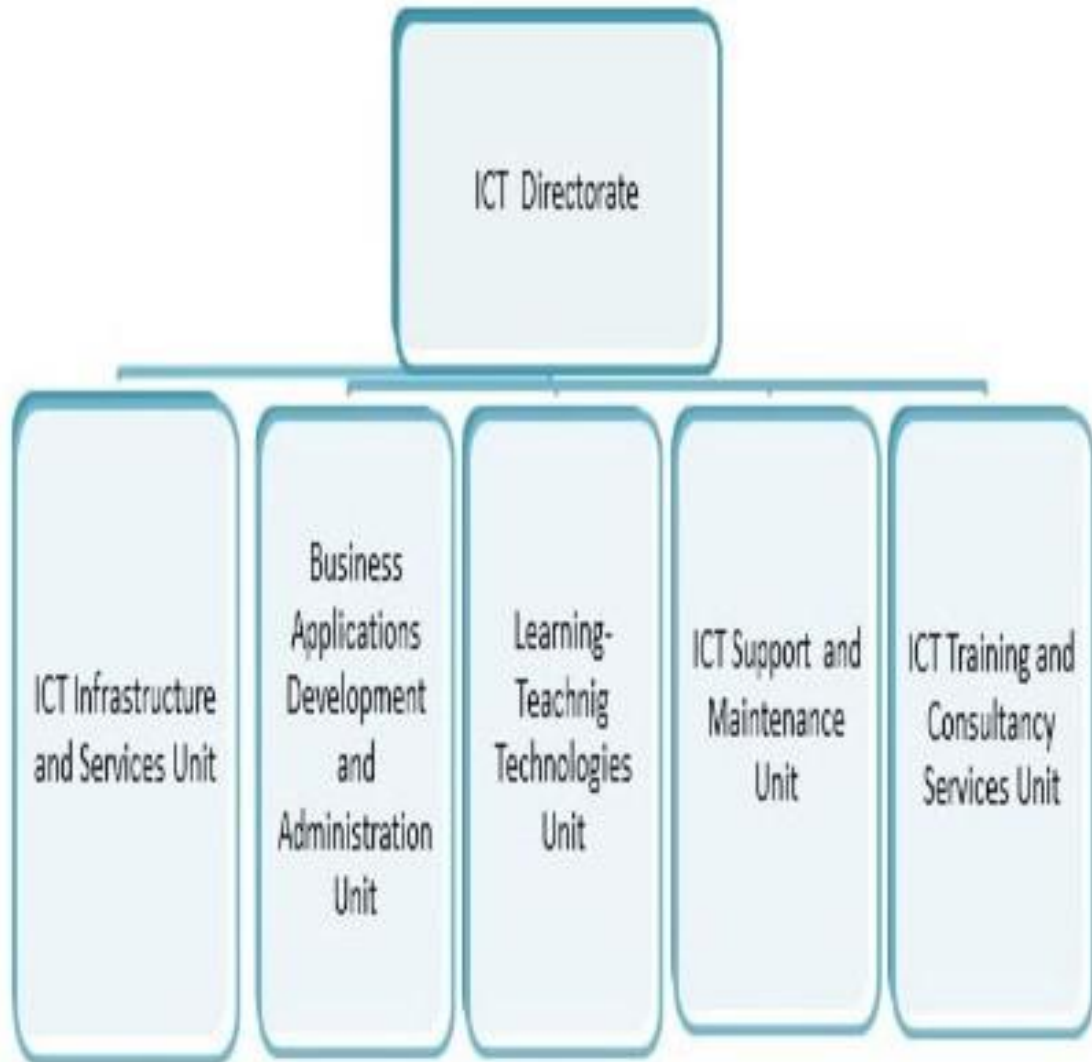


Figure1.1 Work flow of DUICT (Photo credit: Wikipedia)

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1.5 Over all organization work flow

DUICT operates with a Head office located at of ICT directors. Hierarchically, the ICT is accountable to the chairman of the board.

No	Teams	Input	Process	Output
1	Infrastructure and Services Team	Skilled professionals on networking, Electric power, Networking device like, switch, Hub Bridge and routers, cables like fiber optics UTP, budget, etc....	Plan, implement and manage the Internet connectivity to have high security, internal communication and collaboration platforms (email, portal, unified communication)s, online and offline backup, patch management and end point malware protection for campus users and staff workstations, central Identity management solution for existing and new systems to be implemented.	Create and manage the physical layer connectivity of new and existing campuses, buildings, classrooms, offices and laboratories. Creating acceptable and use policy for the network and Internet. Secure the network from Internal and external threats. Monitor real time status of the physical and logical connections. Log and audit network access.
2	Business Applications Development and Administration Team	Software like python, Xampp, Lamp, Wamp, Visuastudio, Neat beans, sublime, Notepad++, Ubuntu terminal, Adobe Dreamweaver, and framework like symphony, budget, Skilled professionals etc....	Analyzing business processes of different sections of the university and come up with automation solution. Verify the compatibility, scalability and Integrality the different business automation application going to be implemented in the University.	Automate and facilitate the student-instructor communications. Automate and facilitate the full life-cycle activities of students and staff (from enrollment to graduation/resignation/retirement). Developing or customizing applications
4	Support and Maintenance Team	Single point of contact for ICT related issues, problems, requests. Taking computer related issues/problems from anyone in the university.	Prepare depreciation, discarding and replacement plan for equipment.	Maintain failed office equipment (printer, UPS, computer, laptops, phones, network devices). Perform preventive maintenance regularly. Keep an inventory of maintained and replaced items.
5	Training and Consultancy Team	Newly Implemented applications Questions about the new system from user and ICT team.	Arrange trainings for the ICT team. Plan Inter-ICT Team knowledge and exchange sharing. Arrange training for campus users and staff about newly implemented and developed applications.	Create basic awareness on Internet, security, productivity tools, emerging technologies and new projects in ICT for the campus users and staff.

Table1.1Over all organization work flow

CHAPTER TWO

2 OVERALL INTERNSHIP EXPERIENCE

2.1 Objectives of the Internship

2.1.1 General Objective

The general objective of internship program is:

- to facilitate reflection on experience
- to enhance understanding of academic materials
- to provide students the opportunity to test their interest in a particular career before permanent commitments are made
- to develop skills and techniques directly applicable to their careers
- to provide students the opportunity to develop attitudes condensing to effective inter personal relationships
- to provide students with an in-depth knowledge of the formal functional activities of a participating organization
- to enhance advancement possibilities of graduates

2.1.2 Specific Objective

- to provide intensive field experience allowing for hands-on computer work
- to receive an introduction to an organization within the information systems industry
- to gain a better understanding of its design and structure
- to develop an understanding of an organizations varies management and technical skills, the communication techniques are the decision-making process

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- to apply what was learned during course work like theory, skill development, professionalism to the working world

2.2 The way I get to the company

As the university academic curriculum the student who finish fourth year second semester electrical engineering program, students expected to take the internship program this is done by taking a formal letter or request from university linkage for internship place for fifth year 1st semester. This formal letter or request let me to ask different company to practice the theoretical knowledge those I have learned so far in the class for eight semester change into practical knowledge. Last year at the end semester which is during the summer vacation I apply more than three letters for different companies with best regards, but I were lucky to get an acceptance from DUICT company gave me the chance to train and I take the acceptance paper. Starting from October 2019 I went to DUICT industry to join and to practice the theoretical knowledge learned in the class in different section of the industry. As I arrived first day to the company, I get a good acceptance from my electrical supervisor he told me the rule and regulation of the company before I get to work then he introduced with the other computer staff workers, operators, electrical department of the company. DUICT bureau gave the positive answer to host us for the required period.

2.3 Section I have been working and work Flow in the Section

During my study in DUICT networking, I have visited and worked in many of the company's places starting from production section to the distribution of the products that are related to my department electrical engineering. Some of the sections are:

- ICT infrastructure and services unit
- Business application development and administration unit
- Learning technologies unit
- ICT support maintenance unit
- ICT transport and consultation unit

There are also sub unit sections, but I spent most of my time in those sections listed above and also I have seen different maintenance with my electrical department staff members especially I waste team in ICT infrastructure and services and support maintenance team more practices.

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DUICT is the magnificent institution that provides in convince services for DU communities. The ICTDU is leaded by bureau of DUICT directorate.

These bureaus have different professionals. These employees (professionals) are the accessories of this company. DUICT is created to developed country based technologies. This ICT section facilitates the utilization of computers to increase their productive activity and to avoid wastage of a time. This section also gives basic computer skills how they use computers, maintaining computers, automation and how to transfer information from one section to another section by using networking. Most of the staffs in this section are graduates in Computer Science and Information Technology.

2.3.1 Business Applications Development and Administration Team

This section I analyzing business processes of different sections of the university and come up with automation solution.

Verify the compatibility and Integrate the different business automation application going to be implemented in the University. I have using the python, Visual studio, Neat beans, sublime, Notepad++, Ubuntu terminal. that I give Automate and facilitate the student-instructor communications.

2.3.2 Training and Consultancy Team

This section I work to create basic awareness on Internet, security, productivity tools, emerging technologies and new projects in ICT for the campus users and staff.

2.3.3 Support and Maintenance Team

This section is produce maintain failed office equipment (computer, printer, laptops, phones, network devices).

2.3.4 ICT infrastructure and services unit

In ict infrastructure and services section all the components related to electrical device is found in this section of the company. Some of the Electric power, Networking device like, switch, Hub Bridge and routers, cables like fiber optics UTP, budget, that is found in this section. In this section electrical material are repaired since most of the systems in the company are electrically controlled and

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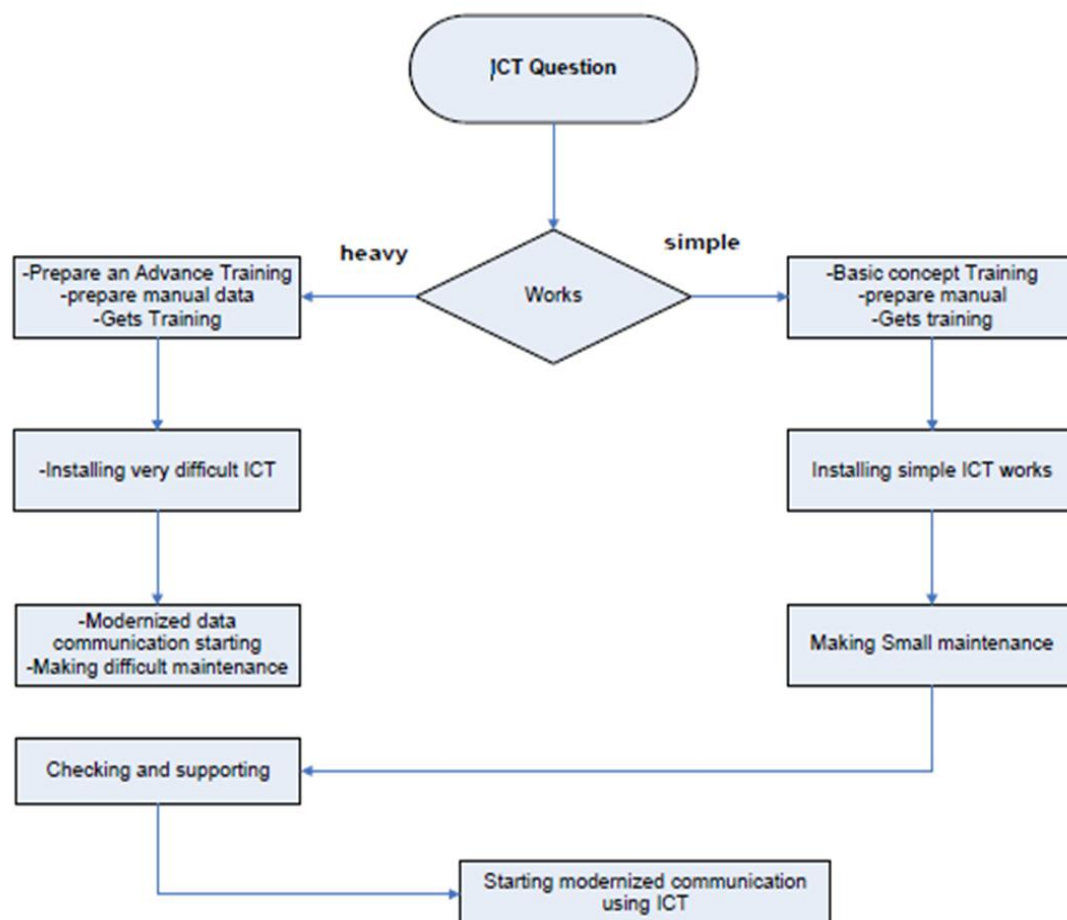
programmed. Some of the works done in this section are: network installation that are damaged during production will be repaired, different switches, routers, cables will be designed and installed.

2.4 The work flow look like in the company

DUICT:- is the magnificent institution that provides convincing services for DU communities. The ICTDU is led by the bureau of DU ICT directorate.

These bureaus have different professionals. These employees (professionals) are the accessories of this company.

DUICT is created to develop country-based technologies. This ICT section facilitates the utilization of computers to increase their productive activity and to avoid wastage of time. This section also gives basic computer skills, how they use computers, maintaining computers, automation and how to transfer information from one section to another section by using networking. Most of the staffs in this section are graduates in Computer Science and Information Technology.



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Figure2.1High level map business process section work

2.5 The major duties I were assigned to perform

This section I mainly executed six tasks, after that I encountered problem-solving project:-

1. Physical components of Network .
2. Network Installation .
3. Router and or Switch Configuration.
4. Wireless router (D-Link) setup Configuration.
5. Problem with Solution of Computer Networking Troubleshooting .
6. Computer maintenance
7. Problem-Solving project ,description that importance for the company.

2.5 Procedures I have been using while performing work tasks

➤ Physical components of network

Under this I have been performing cabling,local area network installation and design

Internet cabling types and it's protocol

Twisted-pair cables:use electrical signals over copper to transmit data.

Twisted-pair cable types:

- ✓ Un shielded Twisted-Pair (UTP)
- ✓ Shielded Twisted-Pair (STP)

Twisted-pair Cables color code protocols

1. **Straight-through cable**(standard B in both end):-This cable type has identical wiring on both ends(pin1 on one end of the cable is connected to pin 1 at the other end of the cable,pin 2 is connected to pin 2 ...up to pin 8).
2. **Crossover cable**(Standard A one end Standard B anther end):-This type of cable is used when you need to connect two devices that use same wires to send and receive data.
3. **Roll Over Cable**:-Rollover cable(standard B one end and the reverse of standard B in another end):-it is used to construct of console cable.

Orange/white→orange→green/white→blue→blue/white→green→brown/white→brown in one end and pin inverse another end.

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
Cable connection selection				
	Hub	Switch	Router	Computer
Hub	Crossover	Crossover	Straight Through	Straight Through
Switch	Crossover	Crossover	Straight Through	Straight Through
Router	Straight Through	Straight Through	Crossover	Crossover
Computer	Straight Through	Straight Through	Crossover	Crossover

Table 2.2 Cable type selection method



Figure 2.3 Cable protocol (Photo credit: Wikipedia)

B. Fiber-optic cables :use light signals to transmit data.that classified into two types.

1. Single-mode fiber:- Uses lasers to send a single ray of light that can travel hundreds of kilometers.
2. Multi mode fiber :- Uses LEDs to send multiple light signals that can travel up to 550 meters. Above the range of the meter to use repeater.

➤ Network installation

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In network installation I executing LAN Cable installation Testing cable :- I have test the cable by using cable tester. is done to check whether the cable crimp is correct or not? Is the Physical connectivity is correct or not? check LAN connectivity:- Using the ping command is an effective way to test connectivity. Open CMD → ping write destination IP/DNS→ Enter then echo connectivity is correct or not?

➤ Network Switch and or Router Configuration

Using Putty and Tera Term application Manage Switches .Accessing the CLI allows command to be entered in a terminal based window.

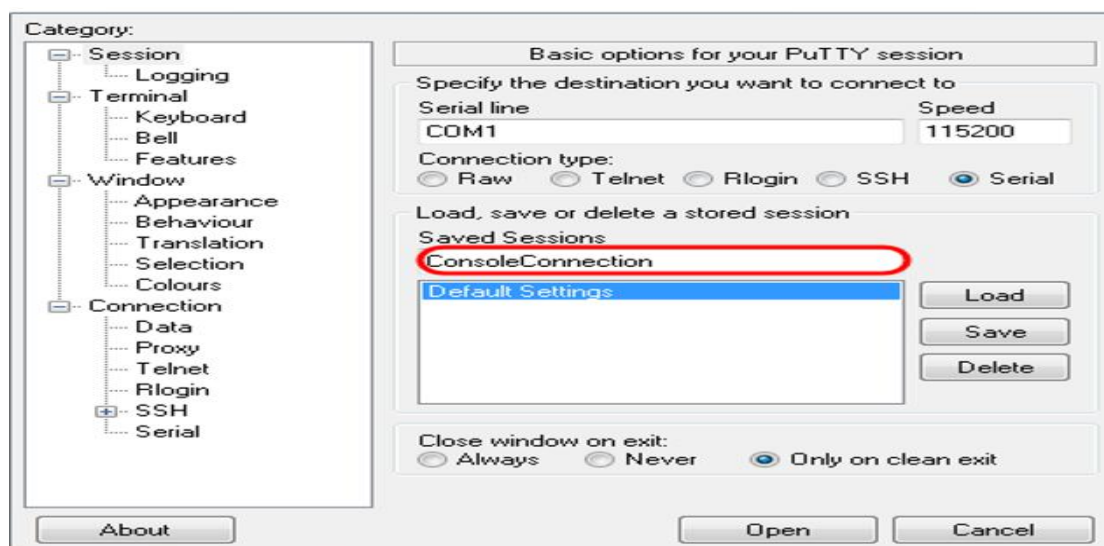


Figure2.2Putty connection screen shoot 1 .

Then it open the above putty apps in CLI set the command below.

```
<Quidway> System-View
[Quidway] sysname Switch-1

[Switch-1] VLAN 100
[Switch-1-vlan100] quit
[Switch-1] interface vlanif 100
[Switch-1-Vlanif100] IP address 192.168.1.20 255.255.255.0
[Switch-1-Vlanif100] undo shutdown
[Switch-1-Vlanif100]quit

[Switch-1] IP route-static 0.0.0.0 0.0.0.0 192.168.1.1

[Switch-1] ntp-service unicast-peer 192.168.1.1
[Switch-1] undo HTTP server enable
[Switch-1] undo DHCP enable

[Switch-1] int gigabitethernet 0/0/1
[Switch-1-GigabitEthernet0/0/1]port link-type trunk
[Switch-1-GigabitEthernet0/0/1]port trunk allow-pass VLAN 100
[Switch-1-GigabitEthernet0/0/1]quit

[Switch-1] user-interface vty 0 4
[Switch-1-ui-vty0-4] authentication-mode password
[Switch-1-ui-vty0-4] set authentication password cipher P@sswOrd
[Switch-1-ui-vty0-4] quit
[Switch-1]quit

<Switch-1> clock datetime 20:49:00 2014-12-16
<Switch-1> clock timezone UTC add 06:00:00

<Switch-1> save
```

Figure2.3Switch configuration screen shoot 2

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Vlan numbering:- 12-bit field (1-4094), (0 and 4095 are reserved), 1 is default Ethernet vlan , normal vlans (1-1005), extended vlans (1006-4094) ,2950/2960 supports up to 255 vlans.

VLAN membership:- Three categories: 1.Access switch ports (one vlan per port) 2.Trunk switch ports (multiple vlans per port) 3.Auto-negotiating trunk(automatically choose access/trunk):-Switches can auto-negotiate trunk connections using the dynamic trunking protocol .



Figure2.4Switch access/trunk port physical connection

```
<Quidway> System-View
[Quidway] sysname Switch-1

[Switch-1] VLAN 100
[Switch-1-vlan100] quit
[Switch-1] interface vlanif 100
[Switch-1-Vlanif100] IP address 192.168.1.20 255.255.255.0
[Switch-1-Vlanif100] undo shutdown
[Switch-1-Vlanif100] quit

[Switch-1] IP route-static 0.0.0.0 0.0.0.0 192.168.1.1

[Switch-1] ntp-service unicast-peer 192.168.1.1
[Switch-1] undo HTTP server enable
[Switch-1] undo DHCP enable

[Switch-1] int gigabitethernet 0/0/1
[Switch-1-GigabitEthernet0/0/1] port link-type trunk
[Switch-1-GigabitEthernet0/0/1] port trunk allow-pass VLAN 100
[Switch-1-GigabitEthernet0/0/1] quit

[Switch-1] user-interface vty 0 4
[Switch-1-ui-vty0-4] authentication-mode password
[Switch-1-ui-vty0-4] set authentication password cipher P@ssw0rd
[Switch-1-ui-vty0-4] quit
[Switch-1] quit

<Switch-1> clock datetime 20:49:00 2014-12-16
<Switch-1> clock timezone UTC add 06:00:00

<Switch-1> save
```

Figure2.5Switch Vlan Configuration screen shoot 3

➤ Wireless Router Setup (D-Link)

D-Link wireless are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or public access wireless networks. Access your network using a wireless connection from virtually anywhere within the operating range of your wireless network.

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Hardware Overview LEDs

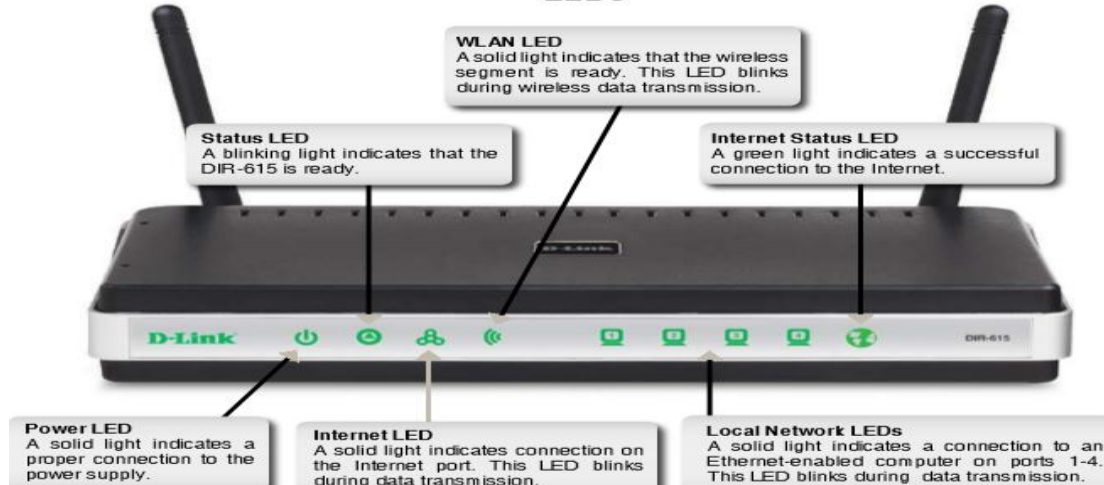


Figure 2.6 Wireless router hardware overview (Photo credit: Wikipedia)

I have change the Password of D-link.

Open network R- click Wi-Fi → Ethernet R-click properties Tcp/Ipv4 R-click properties set ip (192.168.0.x) → open CMD → ipconfig 192.168.0.x → ping 192.168.0.y → open web browser search <https://192.168.0.y> (Before this Refresh wireless USB port) → Click wireless setup → change password or Any wireless setting → Finally click Saving Setting.

Data link Problem-Solving, I describe the importance for a company.

Placement of the router set in very important place. Do not place the router in an enclosed area such as a closet, cabinet, limit charging power by using divider because it prevent over power supply. Troubleshooting D-link first to know the Problems after that go to the solution.

1. I Can't access the web-based. To solve such type of problem the D-Link router connect the computer and Internet Using UTP cable, after that go to my computer setting to do the below producers.

Go to Start → Settings → Control Panel → Double-click Internet Options Icon → click the button to restore settings → Click the Connection tab and set the dial-up option to Never Dial a Connection → Click the LAN Settings button → Make sure nothing is checked → Click OK,

If I forgot the **password**.

The solve this problem it recommend to use backup mechanism, means it set the password that have save by either the computer or the handbook, but if not you recommend to reset the router. To reset the router, locate the reset button (hole) on the rear panel of the unit. With the router powered on, use a paperclip to hold the button down for 10 seconds.

➤ Network Troubleshooting

Troubleshooting computer network techniques is among the most important resolve network problem of the computer user, administrators, system administrators,

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network technicians and the IT consultants. I have network problem encounter during my fourth internship are:

- ☑ The network device or service was unsuccessful. I have use ping, tracer, traceroute.
- ☑ The machine has absolutely no connectivity to a network. I have use ipconfig/release, ipconfig/renew.
- ☑ Unplugged or bad network patch cable. I have use ipconfig /?.
- ☑ Bad network line or jack run from the wall outlet back to the data center room. I have use arp protocol.
- ☑ Bad network switch. I have use ipconfig/release finally ipconfig/renew.
- ☑ Bad network card.
- ☑ Incorrect network card drivers loaded on the machine. I have load the NIC by using internet refer the producer in below fig- 16.
- ☑ Wrong network settings on the computers. I have use DNS lookup.

This all the above problem is solved, I use the basic network troubleshooting, I have resolve in Windows based operating systems and UNIX show in below.

Procedural I have to done :

Windows, click on Start and Run → Open CMD press <Enter> → write troubleshoot command → identify problem → end.

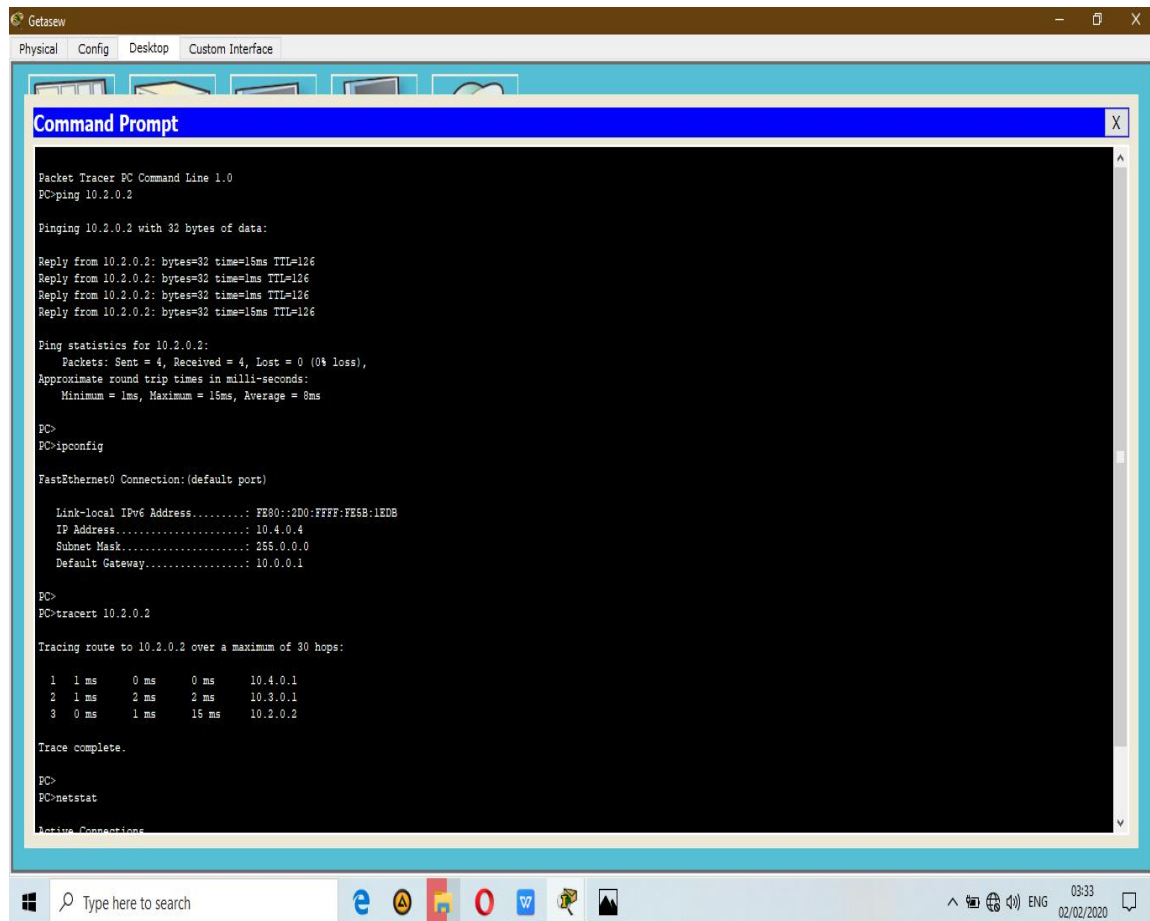
PING :- Ping utility check is the network device or service was successful or not. I checks the connectivity with the other device to test between the requesting host and a destination host. For example your network servers' IP address is 10.2.0.2 and you can check the connectivity with the server by using the Ping command see fig.8.

Ipconfig/ifconfig:- It shows the IP address of the computer and also it shows the DNS, DHCP, Gateway addresses of the network and subnet mask. The utilities that can be used to find out this IP configuration information include the ipconfig utility on Windows and the ifconfig utility on Linux/*nix based. shows Fig.8 ipconfig utility information of host/Getasew.

TRACERT:- is used to determine the path of the remote system. This tool also provides the number of hops and the IP address of each hop. refer to Fig.8

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TRACEROUTE:- is a very useful network debugging command and it is used in locating the server that is slowing down the transmission on the internet and it also shows the route between the two systems.



```
Packet Tracer PC Command Line 1.0
PC>ping 10.2.0.2

Pinging 10.2.0.2 with 32 bytes of data:

Reply from 10.2.0.2: bytes=32 time=15ms TTL=126
Reply from 10.2.0.2: bytes=32 time=1ms TTL=126
Reply from 10.2.0.2: bytes=32 time=1ms TTL=126
Reply from 10.2.0.2: bytes=32 time=15ms TTL=126

Ping statistics for 10.2.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 15ms, Average = 8ms

PC>
PC>ipconfig

FastEthernet0 Connection: (default port)

    Link-local IPv6 Address . . . . . : FE80::2D0:FFFF:FE5B:1E0B
    IP Address. . . . . : 10.4.0.4
    Subnet Mask . . . . . : 255.0.0.0
    Default Gateway . . . . . : 10.0.0.1

PC>
PC>tracert 10.2.0.2

Tracing route to 10.2.0.2 over a maximum of 30 hops:

  0  1 ms  0 ms  0 ms  10.4.0.1
  1  1 ms  2 ms  2 ms  10.3.0.1
  2  0 ms  1 ms  15 ms  10.2.0.2

Trace complete.

PC>
PC>netstat

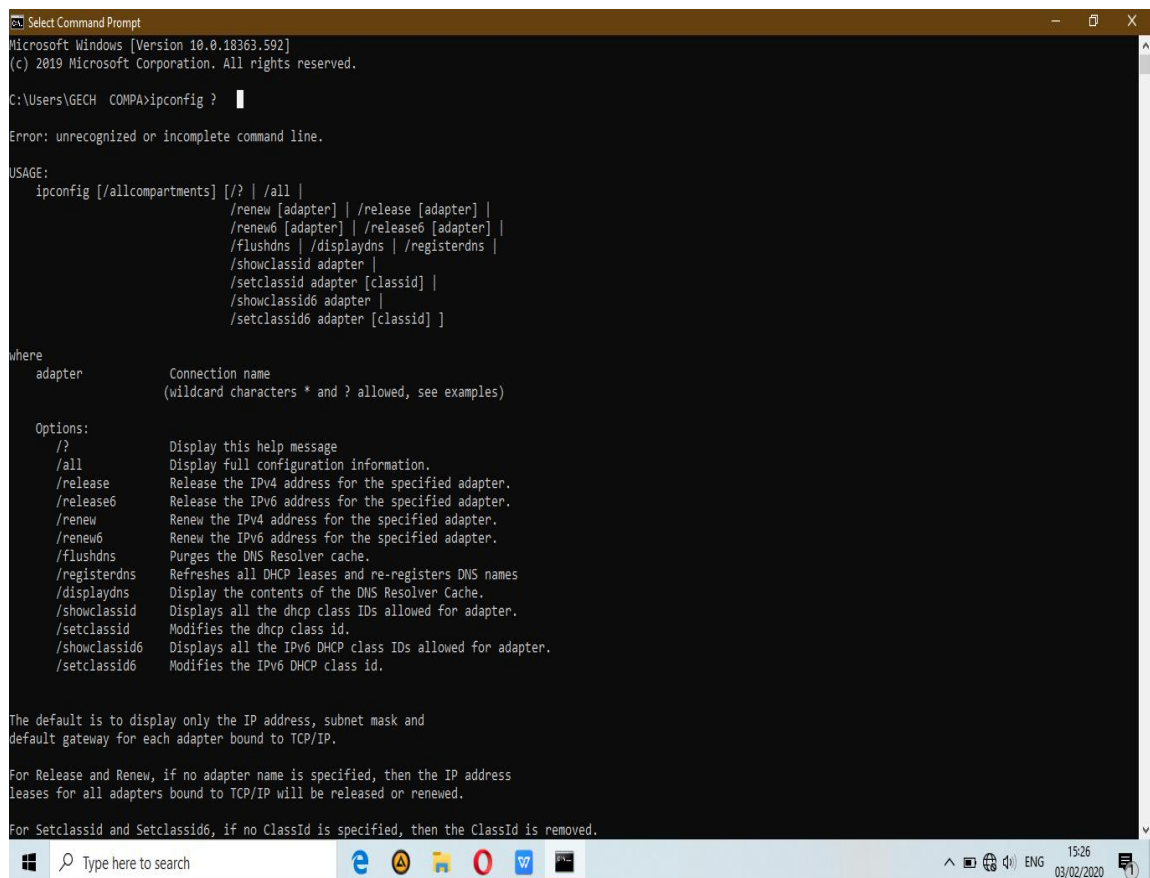
Active Connections
```

Figure2.7ping, ipconfig and tracert respectively screen shoot 5

Ipconfig/release:- is one of the troubleshooting mechanism if the computer networking is not working properly it is used to resolve the computer or network problem .it also used to display the network problem then after write ipconfig/renew in the CLI to begin the original condition,to see figure 9 windows screen shoot.

Ipconfig/renew:- after release to re-networking ,it is used to after resolve the computer or network problem .so it recommend that after release that can be renew the network to usee ipconfig/renew in windows utility and ifconfig/renew in Linux utility.show below figure 9 windows screen shoot to see all option of ipconfig/option in windows command.

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```
Select Command Prompt
Microsoft Windows [Version 10.0.18363.592]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\GECH >ipconfig ?

Error: unrecognized or incomplete command line.

USAGE:
    ipconfig [/allcompartments] [/? | /all |
        /renew [adapter] | /release [adapter] |
        /renew6 [adapter] | /release6 [adapter] |
        /flushdns | /displaydns | /registerdns |
        /showclassid adapter |
        /setclassid adapter [classid] |
        /showclassid6 adapter |
        /setclassid6 adapter [classid] ]

where
    adapter          Connection name
                    (wildcard characters * and ? allowed, see examples)

Options:
    /?              Display this help message
    /all            Display full configuration information.
    /release        Release the IPv4 address for the specified adapter.
    /release6       Release the IPv6 address for the specified adapter.
    /renew          Renew the IPv4 address for the specified adapter.
    /renew6         Renew the IPv6 address for the specified adapter.
    /flushdns       Purges the DNS Resolver cache.
    /registerdns    Refreshes all DHCP leases and re-registers DNS names
    /displaydns     Display the contents of the DNS Resolver Cache.
    /showclassid    Displays all the dhcp class IDs allowed for adapter.
    /setclassid     Modifies the dhcp class id.
    /showclassid6   Displays all the IPv6 DHCP class IDs allowed for adapter.
    /setclassid6    Modifies the IPv6 DHCP class id.

The default is to display only the IP address, subnet mask and
default gateway for each adapter bound to TCP/IP.

For Release and Renew, if no adapter name is specified, then the IP address
leases for all adapters bound to TCP/IP will be released or renewed.

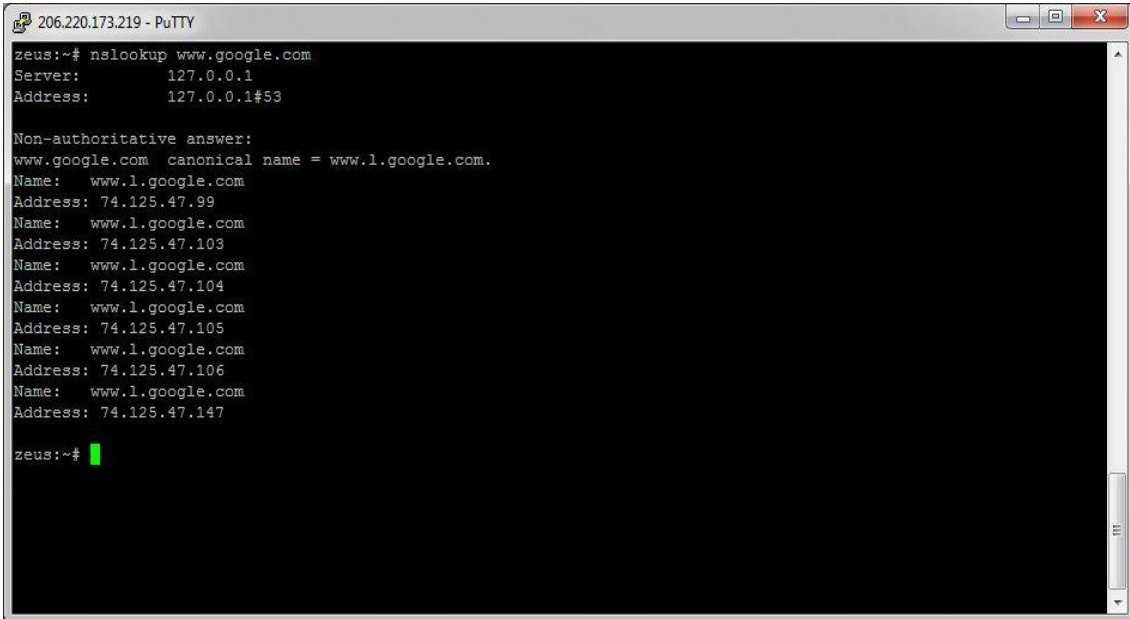
For Setclassid and Setclassid6, if no Classid is specified, then the Classid is removed.
```

Figure2.8Ipconfig/option screen shoot 6

Nslookup :-To revolve Dynamic Name System (DNS) address resolution issues. DNS is used by everyone using the Internet to resolve commonly known domain names (i.e. google.com) to commonly unknown IP addresses (i.e. 74.125.115.147). show in below Fig10.

Putty/Tera Term :-When connecting to a variety of different types of equipment, a telnet, SSH or serial client is required; when this is required both the putty and Tera Term programs are able to provide these functionalists,mainly used to Secure ,configure ,reset of network and nslookup troubleshoot of network.

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```
206.220.173.219 - PuTTY
zeus:~# nslookup www.google.com
Server:      127.0.0.1
Address:     127.0.0.1#53

Non-authoritative answer:
www.google.com canonical name = www.l.google.com.
Name:   www.l.google.com
Address: 74.125.47.99
Name:   www.l.google.com
Address: 74.125.47.103
Name:   www.l.google.com
Address: 74.125.47.104
Name:   www.l.google.com
Address: 74.125.47.105
Name:   www.l.google.com
Address: 74.125.47.106
Name:   www.l.google.com
Address: 74.125.47.147

zeus:~#
```

Figure 2.9 Nslookup by using putty screen shoot 7

NETSTAT:- if the protocol statistics and TCP/IP connection is not properly, to shows the protocols statistics and the current established TCP/IP connections in the computer by windows utility.

NBTSTAT:-this command is used to helps to troubleshoot the NETBIOS name resolutions problems.

Address Translation Protocol(ARP):-displays and modifies IP to Physical address translation table that is used by the ARP protocols.it used to create ARP table (arp-d) and also it displays ARP entities(arp-a).

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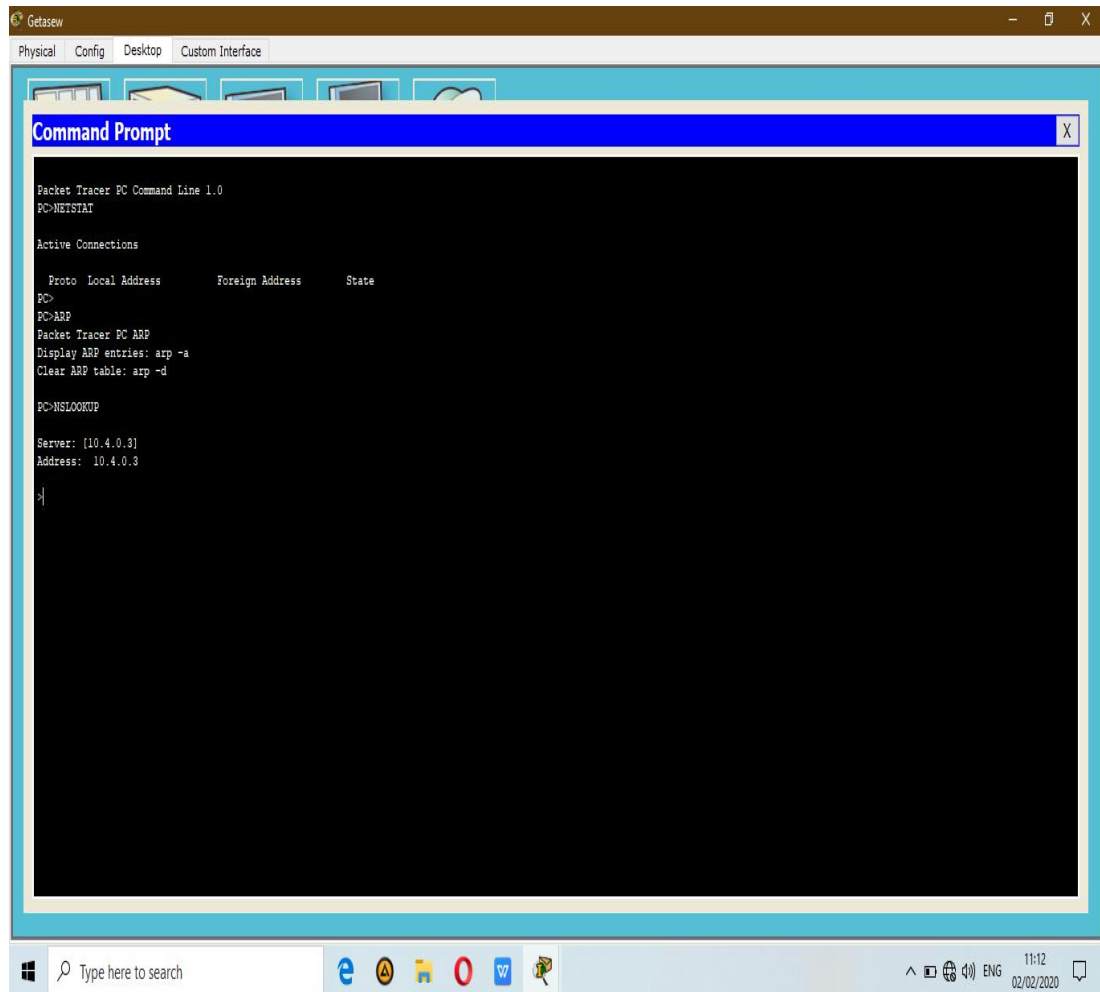


Figure2.10Netstat,ARP and nslookup screen shoot 8

finally I have not resolve all the above method ,I recommend the company loaded network card drivers on the computer.I have load the NIC by using internet connection by using the procedure:

R-click my computer press <Enter>→ manage press <Enter>→Device manager press <Enter>→go to network adapter press <Enter>→updating this sign !→end.

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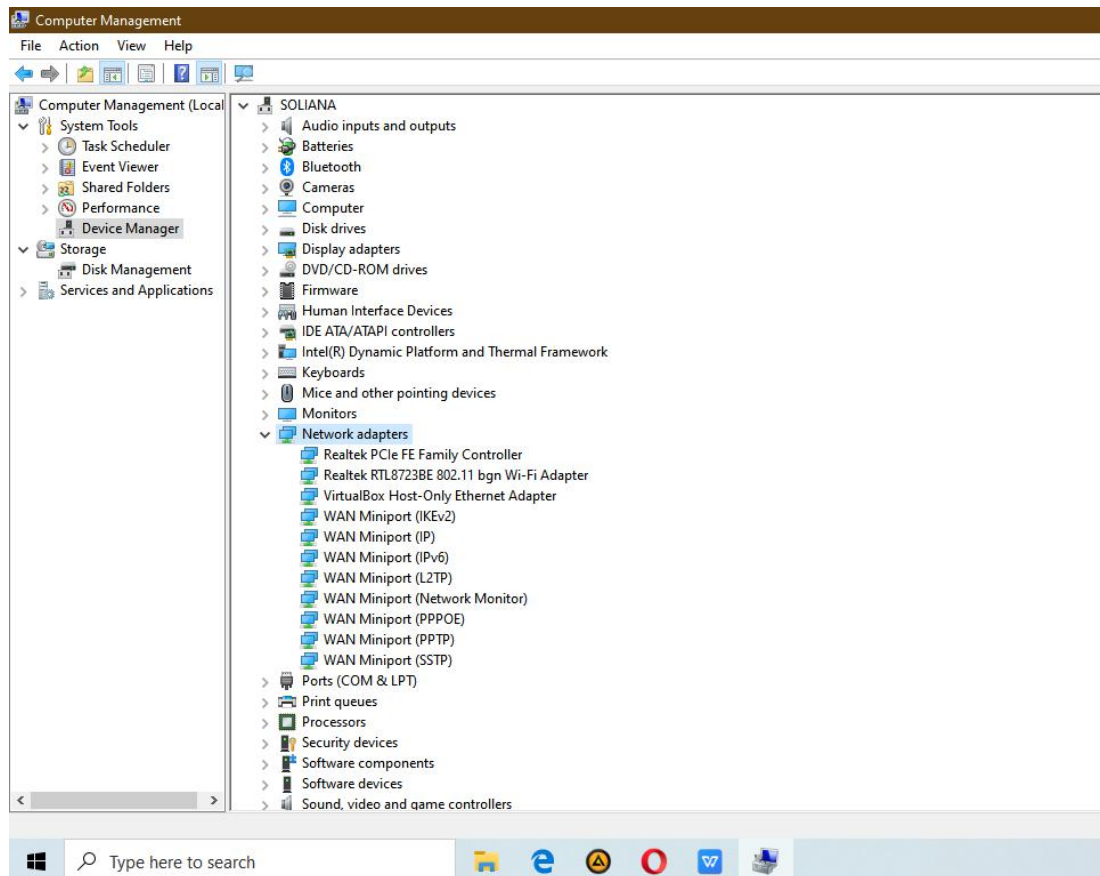


Figure2.11network card drivers loaded screen shoot 9

➤ Computer Maintenance

Computer is electronic device,operating under the control of instructions stored in its own memory.

Computer are basically two component:

- hardware component.
- software component.

The basic work flow of computer is:

Input→Procedure→Processes →output.

The physical part of computer is known as hardware competent ,those are:

Power supply,power cable, case fan,Ram,Rom,case,hard disk,data cable,motherboard

Battery,cpu fan etc. To the physical hardware part in fig2.1

Case.The computer case is the box that encloses many of the parts shown below.

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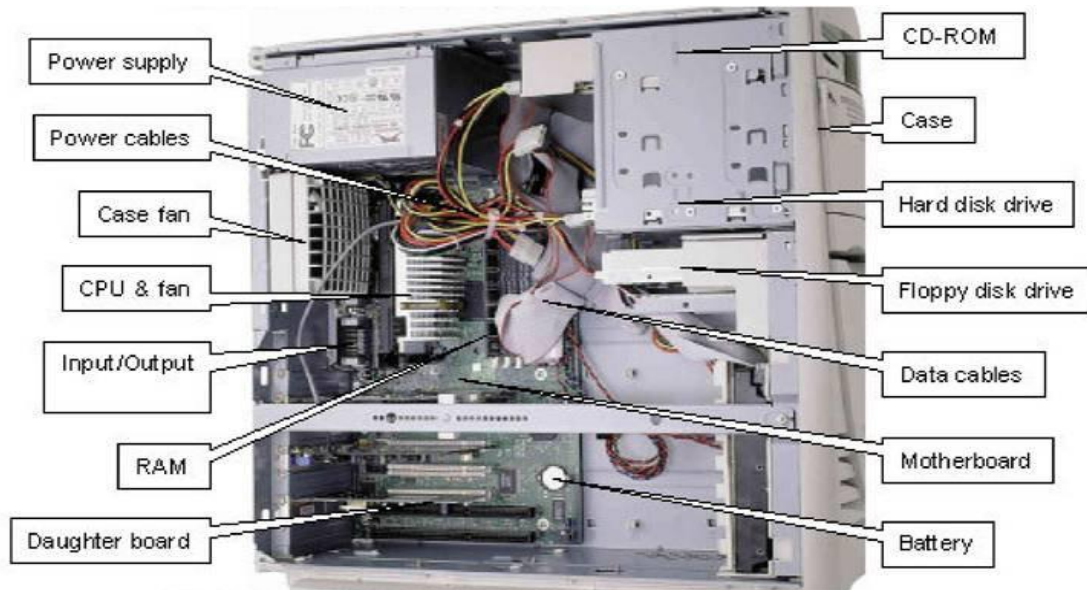


Figure2.12Computer case part(photo credit: maintenance)

Problem-Solved , I describe a Computer for the company.

The knowledge I gain a computer maintenance, previous four last year's theoretical And I also upgrading practically during my fourth month's internship period.the problem-solved I describe a computer for the company are list:

1.Improving Slow Performance.causes, much older computers with small amounts of RAM and slow processors .the solutions to this slow performance is to increase the RAM. By means of change the old RAM or to add another expansion card RAM.

2.Hard Disk Fragmentation.causes, is when files are stored in different places on a hard drive.the better solution to this is depending on what storage space was available when the file was last modified.

3.Working Environment.I recommend the company, computer work room should be clean, well organized and properly lit.Avoid hazards to the computer and hazards to the workers .

5.Replacing a Power Supply. Power fault is mainly burn electrical devices,so recommend the company to use power divider to resist the power.



Figure2.13 Removing a Hard Drive and Replacing a Power Supply.

6.Replacing RAM. RAM is the working place of CPU ,so it can fail or come loose from its housing and need to be restated. In this cause easily damaged by electrostatic charges, so it is very important for the user to be grounded before picking up RAM.



see http://www.fonerbooks.com/laptop_2.htm

see http://www.fonerbooks.com/r_ram.htm

Figure2.14 Installing RAM&Replacing RAM(Photo credit:maintenance team)

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More know about computer Web Address (URL)

Title	Web Address (URL)
International Computer Driver	www.icdl.org
Replacing PC Parts	www.fonerbooks.com/replace.htm
Microsoft Downloads	www.microsoft.com/downloads
Computer Ports Hardware	http://en.wikipedia.org/w/index.php

Table2.3Computer Web Address (URL)

➤ Printers Maintenance

Printers are a great thing and an irreplaceable office asset, until they start presenting a maddening range of problems for their users. diagnosing printer problems can end up on the back burner.

The printer process are :

Charging Roller → beam position → modulate laser beam → developer roller→discharging/support → printed copy.

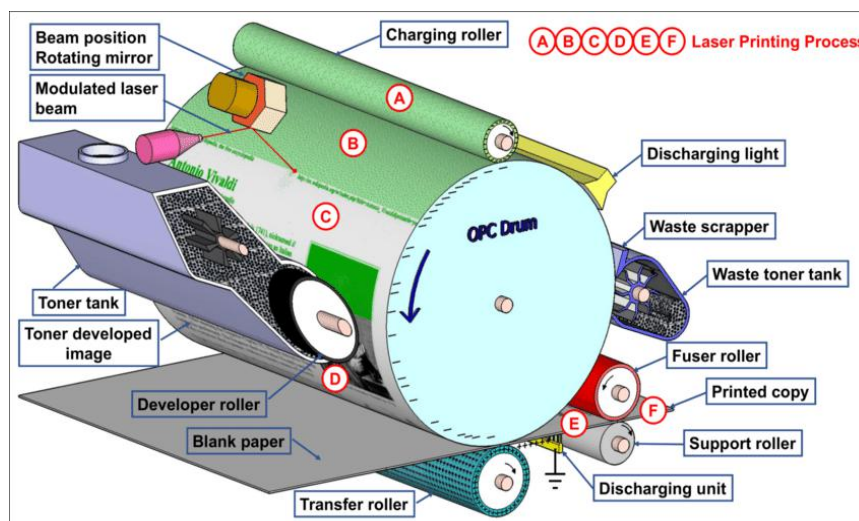


Figure2.15Laser Printer and its work process(Photo credit: Wikipedia)

#Problem-Solving, I describe that a Printer importance for the company.

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Problem-Solving ,description that importance a Printer for the company,that are describe my in theoretical and real level projects are list below.

1. **Toner Lines-** If your finished product has lines added to it, it may be acting up for a variety of reasons. Solution to this is random substances accumulating on the scanner glass, to drum malfunction or fuse issue.
2. **Replace the ink cartridge-** Don't freak out, you will get your print job completed. Solution sort of ink tank level indicator and will issue warnings when it starts to get low.
3. **Wrinkling Pages-** There is nothing professional about copy pages that come out of the machine crinkled looking like they have been pulled out of the bottom of a backpack. Moisture from humidity, worn out feed rollers, worn out paper trays and fuse assemblies all cause wrinkled pages.
- 4.**Paper jams-** Paper jams are way less common than they were a decade ago, yet they still happen. By far the most common cause of paper jams is paper misalignment, causing small shreds of paper to get stuck somewhere in the paper feed mechanism. solution Be sure to square off the stack of paper before inserting it into the tray,avoid over-filling the tray.
- 5.**Blank Sheets Ejected-** In a busy office where a printer is shared.best solution to this is blank pages will automatically be removed from the printer preferences.
- 6.**Copies are too light or too dark-** light and dark on pages is the result of an imbalance in the density controls on the copier. The best solution in this case, is resetting the density levels.
- 7.**Web page won't print properly-**The problem with web pages is that they can be any size because they aren't limited by the width or height of the paper in your printer.Solution properly set the paper.
- 8.**Printer is too slow-** Some printers are cheetahs and some printers are turtles, but you may be able to get even a slow printer to speed up a bit. Solution slow down all print jobs, since it has to transfer all the information.

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9.Printed Text looks lousy- Printers vary widely in text quality.Solution Cleaning the nozzles and make sure the print head is aligned correctly.

10.Seeing Spots- printer isn't playing tricks on your eyes. Solution Replacing the drums should fix the issue.

➤ **Problem-Solving project ,I described that importance for the company.**

Problem-Solving projects ,description that importance for the company,that are describe and or design in both Theoretical and real-simulation.In Web Browser(URL) Server Control to Integration With VOIP Project design ,to see in below.I have done in the guidance of my adviser Mr.Abinzer.

1.Security problem:This problem is happened during physical and logical configuration of networking like,routers and switches configuration this mean the logical security and the placement of devices is not confirm.

Solution to this :To solve the security problem by two mechanisms the first logical security by using Encryption ,secure sheel (SSH),firewall,AAA,password, the second one is physical security by using locked ,Encapsulation the Material, good placement technology using to avoid security problem. Because to protect reset,broken,high temperate,of the material, See more refer to the appendices in a real simulation.

2.Phone Voice Over Internet (PVOI) problem: This problem is happened the case of lack of Arguments between the Internet and Telecommunication monitors.this means there is no power over internet , no voice over internet integrate.

Solution: To Integration Internet over Telecommunication mechanism ,by means of the internet company and Telecommunication company that Argument to integrate PVOI.See more refer to the appendices in a real simulation.

3.Power over Ethernet (POE) problem: This problem is happened the case of a company that made the device to transmit the power and Ethernet is not simultaneous Example RG45 is transmit only Ethernet but not power .

Solution: Solution for such type of problem is to integrate the power over Ethernet make either wired or wireless communication.

4.IP loose: This problem is happened in dilla university the behavioral science many Ip is wastage.

Solution:To solve such ambiguous first to expanding the Ethernet, to know how many users are used ,to calculate IP over users after networking build. Matching the user and IP.See more refer to the appendices in a real simulation.

5.Vlan Mismatch: This problem is happened during physical configuration process of network device like routers and switches. During configuration time if the administer miss the vlan, such problems are happened. In our internship time such vlan mismatch problem is happened. Which is the access switch at mechanical department in first floor student lab. The switch is in vlan 80 but the core switch which the fiber is connected is in vlan 90, because of this vlan mismatch problem is happened so we can't access the internet through this switch.

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Solution : in order to solve such problems we should reconfigure the switch by using computer through console cable at vlan 90 which is matched to core switch. After reconfiguration we can access an internet. See more refer to the appendices that to a real simulate.

6.Uplink Identification Problem: such problem is happened during installation time. Uplink cable means the cable that connect one switch to another in one building. That is the switch at ground take fiber cable from core switch. And the other switches in that building are connected to the switch which takes fiber thorough uplink. And it is difficult to easily identify the uplink in the patch panel because there is no any sign to identify the uplink.

Solution : to solve such type of problem we recommend if we gate the uplink after try and error make a sign at the uplink on the patch panel by colors in order to identify easily for future time.

7.Network device communication problem: this problem is encounter if we use the network device that are manufactured in different companies. This means network device that are produced in different companies can't communicate easily with each other. For example if the core switch at the data center is the product of cisco and the access switch in the office is the product of Alcatel or Huawei company, it can't easily communicate each other during troubleshooting.

Solution : To solve this problem it is recommended that to use the same devices produce in the same companies, otherwise it is difficult during troubleshooting. See more refer to the appendices in a real simulation.

8.Broken fiber and UTP cables: such type of problems are happened during reconstruction of buildings. As we know Dilla University buildings are re constructed for last two years up to now, In order to this reason during reconstruction time the workers broke some fiber cables and UTP cables as well as different nodes and racks.

Solution to this: in order to get internet access, those broken fibers and UTP cables should be spliced and re installed. In order to do this first we make projects then due to the project we can easily do the installation and fibers are spliced by using fusion techniques.

9.Backup problem: This problem is happened after networking installation and re-installation of network. Example during re-configuration of switch in zero-plan it forget the password that set first configure, during refresh D-link in DUICT it also forget the password to login.

Solution: To solve such problem by using Backup mechanism ,mean after finished the instillation write the password, security key either in PC or handbook using solve such type of incident.

10.The labeling problem: During installation of cables in some buildings the labeling is not sequential. That is the number which is attached at the wall out late is mismatched to that of the number attached on the patch panel. Because of this during troubleshooting it is difficult to identify the end user node easily.

Solution for such problem: in order to solve such type of problems remove the first number that are attached at end user node and rewrite by using packers or reattach the new identifier number that is matched to the number attached at the patch panel port number.

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2.6 How good I have been performing

I believe that I have been doing well at my projects and the adviser who I was going to present gave me an appreciation and he believes that I will back to the Organization. Since, DUICT has a strict rule that used to control the activities of each employee. Specially Our mentors Mr.Ambaye was strictly controlling our progress and status whether we are Accomplishing our task based on our schedule. Moreover, almost all employees of DUICT have a great motivation towards their job. This working environment made us work hard. The practices that I have performed are basic networking. Those starting's:

- General networking
- Computer maintenance
- Voice over internet protocol
- Server control

2.7 Challenges I faced

Everywhere there is a challenge even the reason why we students learn is to solve a problem (challenges) that come in our life, and also the word engineering by itself is a systematic way of solving a problem. Internship gives me an experience and as well as challenges, I faced challenges in my internship that I hadn't anticipated. When we get a obstacles in front of some situation we usually assume that it is a good chance to know about a new thing that have to run smoothly and that the overall experience will offer what I hoped for increasing my problem solving skills. In this case an opportunity to grow both personally and professionally, we found our self-faced with challenges that we don't feel able to handle before intern. But the two important things to remember is to maintain professionalism and always work to find that are mutually beneficial to all, which will help to solve the problems I have faced. Since we are a student, we were new for many things.

Below we try to mention some of the challenge that we have faced:

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- ✓ Shortage of time
- ✓ Weather condition
- Financial problem:-I developer's were fully engaged to the argent projects, it was difficult to get full support. Examples:-
- ✓ Not Being new for practical works.
- ✓ Not Being new for Networking.
- ✓ Not Being new for Maintain of computer.

2.8 Measures that we have taken in order to overcome these challenge.

To overcome the above challenges we have studied hard day and night using the resources from the internet and from the networking manager,Maintenance Manager and we would like to thank our mentors especially Ambaye for his extreme support and the main reason we overcome our challenge is that we work together as a team.

No	Challenges	Measures Taken
1.	Punctuality of Employee :- they are not on time always.	We told to the head of the ICT officer and he told us that he will Lead our groups.
2.	Financial problem:-there no new technology updating,due to expensive of device.	I had taken the whole ,I worked the software after that I change the the hardware application.
3.	Weather condition:- Hot weather condition is the main challenge in DU.	I had to use an umbrella.

Table2.4Challenges and Measures Taken

CHAPTER THREE

3.OVER ALL BENEFIT I GAIN FROM INTERNSHIP PROGRAM

3.1 Internship and its benefits

The main aim of this internship program is changing the theoretical education we have learned to the practical one.

The main objective of this practical attachment is to make the graduating students to have sufficient practical experience that enables them to perform effectively on their appropriate profession after graduation. The practical attachment is very interesting and helpful for the student. It helps the students to observe the work environment and gain experience for their future career. It will also help the students to solve the real world problems by applying all their knowledge they gained in their learning time. However it is, from this internship program we have got different skills.

Skills we have got and improved in our internship program are list below:-

- Practical skills.
- Theoretical Knowledge.
- Interpersonal Communication skills.
- Team playing skills.
- Leadership skills.
- About Work ethics related issue.
- Entrepreneurship skills.

The major benefits that we get for the internship are classified and stated as below

3.1.1 Improving practical skill

These programs enable me to correlate the theoretical knowledge with practical skills. Work experience offers a really good opportunity to put into practice what you have learned in a real life work environment. As computer engineer the organization gives

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an opportunity to contribute in improvement the computer networking technological potential. Some of the personal skills we developed when we were in the organization can be listed as:-

- ❖ Networking section we were working with Troubleshooting Project to design the system and understanding the behavior of system. Example:-Network Installation ,Router and or Switch Configuration,Network Troubleshooting and wireless router (D-Link) setup Configuration.
- ❖ Maintenance section we were working with Troubleshooting Computer hardware and software and Printer Project to design the system and understanding the behavior of system.

3.1.2 Upgrading theoretical knowledge

Even if we have some vision in various courses learn in the class, briefly we know more while we saw really. We recall and relate the theoretical knowledge with practical. While you do something you force to refer about the subject this make you to remember and upgrade yourself. To improve my theoretical knowledge list below. Learn more about various courses like network design,computer maintenance and Printer maintenance we faced in the company, Apply class room theoretical part to real work situations ,Our design project in the company and Try to know how to configure and punch Network.

3.1.3 Developing interpersonal communication skills

In the company, I was working with all the staff members and any individual peacefully, by the experience I have gained from my internship program. In the internship period interpersonal communication skill is the best thing because one way of learning, mutual exchange of ideas, information and skill.

Furthermore I can establish mutual respect within the company, I were engaged during my internship period at DUICT team work. I tried to develop my interpersonal communication skill by different forms such as speaking, writing and listening.

It has the following advantages;

- To handle information
- Making productivity more fruitful.

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- To become easier to work with
- To persuade people
- To improve relationship with others all the staff members peacefully and consideration for one another's opinions and input.
- To understand workers' attitude
- To know the work characteristics in the company

For various reasons interpersonal skills are crucial. One full system should work efficiently with union of so many professionals by collaborating with each other in order to make good and fantastic work. Finally, what I have observed was to communicate effectively, it is essential that you choose the suitable medium. Selecting the right communication channel is like shopping in the right store. If you are not unfamiliar with the terms it is essentially the communication that happens between a task giver and a task completer.

3.1.4 Improving team play skill

A team player is a person who plays or works well as a member of a team or group. Teams in an organization need strong team players to perform well to reach their goals. Team work is also needed to share different experience along side the work. During the internship period we were doing the project in group.

When we were doing the entire project we had a role and even if tasks are done individually by the respective person at different section of the project, there are times at which different individuals come together to communicate with each other in order to reach for the desired goals. And at times where everything becomes very complex team work plays an important role in solving the difficulties. The most important point in team playing skill is just reaching an agreement from different on the work to be done.

As mentioned above we divided in teams during the internship time and we have been working as a team in order to solve some problems and it helps us a lot in solving the problem easily and quickly. During our internship time we have massively improved our team work spirit. As we all in our campus life sometimes we study in group and sometimes individually. But during internship time there is no individual thing even if you are performing your own task because finally it is going

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to integrated as one project to do so you need to work as a team unless your work may be valueless.

3.1.5 Enhancing Leadership and Motivation

Leadership is a process of leading the careers of the company. Problems in the company come in all size, shape and colour in different period of time. Thus, a person who is in the position of leadership seeks optimal solution to problems and should be smart enough to manage those individuals whom he/she is leading. What was gained from the internship regarding improving leadership is that to inspire workers into higher levels of teamwork, There are:

- Know myself and seek self-improvement
- Be technically proficient
- Make sound and timely decision
- Know peoples and look out for their well-being
- Develop a sense of responsibility in workers

Finally, what I understand is becoming a leadership is not an easy task because it takes a conscious commitment, needs to be experienced and consistent effort to develop one's leadership skill. But on the positive side, anyone who is willing to make the effort can become a good leader.

3.1.6 Understanding work ethics and related issues

In today's complex world, Ethical conduct of workers is very important for developing healthy working environment and increasing productivity. The work ethic is a cultural norm that advocates being personally accountable and responsible for the work that one does and is based on a belief that work has intrinsic value. The term is often applied to characteristics of people, both at work and at play.

Work ethics include not only how one feels about their job, career or vocation, but also how one does his/her job or responsibilities. These involve attitude, behaviour, respect, communication, interaction, and how one gets along with others. Work ethics demonstrate many things about whom and how a person is. Thus employer expects employees to develop certain desirable traits that will help them to perform their jobs

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well so that the company can succeed. Ethical work conduct enables me in order to possess appropriate behaviors in the work and so i develop proper relationships with co-workers and it helps me to create good working environment. There are two common types of ethics. These are Personal ethics and Professional ethics.

Personal ethics

Personal ethics are values which are expected to be possessed by all individuals in their life, and contribute a lot for a smooth interaction among individuals and peaceful co-existence of a society.

What I gained in the company principles of personal ethics include:

- Concern for the well being of other
- Honesty
- Integrity
- Fairness
- Responsibility
- Possessing a Positive Attitude
- Compliant to the law
- Benevolence (doing well)

Professional ethics

Professional ethics refers to the standards or a set of moral principles for regulating behaviors of a certain defined profession. The following are some of the common professional ethical principles what i gained in the internship period.

- **Punctuality**- means keeping the companies work beginning and ending time and to complete a given task within the given period.
- **Reliability**- The worker should be qualified for the part he is supposed to be performing. He/she must have appropriate skill and knowledge for the task assigned.
- **Honesty**- Regarding this value each worker regardless of its status should abstain from bad behaviors such as cheating, bias, corruption etc.
- **Cooperation**- Each worker should interact and cooperate with each other while working. That is because it is through such system problems could be easily solved.
- Respect the rule and regulation the company

3.1.7 Entrepreneurship skill

Internship program allows me to gain a better perspective of post-graduation employment by applying the principles and theories I have developed in the classroom. This practical application creates an easier transition for me from the classroom to the working world. While practicing on job training I realize that creativity and problem solving is one of the starting points of entrepreneurs.

This internship motivates me not to be employee because it enables me to know more about my career, the real challenges, and way of business establishment in my profession. A wide range of skills are seen as entrepreneurial and useful to entrepreneurs, these include both personal traits and skills:

- Management skills - the ability to manage time and people (both yourself and others) successfully.
- Communication skills and the ability to sell ideas and persuade others.
- The ability to work both as part of a team and independently.
- Able to plan, coordinate and organize effectively.
- Able to research effectively, for example available markets, suppliers, customers and the competition.
- Self- motivated, Innovative thinking, creative and disciplined.
- Able to take responsibility, make decisions and work under pressure.
- Perseverance, Competitiveness and Willingness to take risks.
- Ability to network and make contacts.

CHAPTER FOUR

4.SYSTEM DESIGN AND GENERAL OVERVIEW OF THE PROJECT

4.1 Background of the project

As the time changes and technologies are updating day-to-day its suggestive that using new and appropriate technologies.I updating the voice over internet protocol(VoIP) to networking technology it used effective use cost and times in the company.There are also many advantages in using new technologies to deal with different types of problems in companies especially industrial areas.As it's known that it has economic,networking,social, environmental and other advantages. In most industrial areas there are problems regarding failure in different types of devices, switch, quality product,security, cost effectiveness, environmental aspects, fulfilling the needs of the customer and the likes. So in dealing with such kinds of problem it is a must for the companies to use up-to-date technologies. As you know networking is the back bone of all over the world that intercommunicate to peoples. So this network can be failure by different reason but I can reuse this network by troubleshooting the network, I also re-maintenance the device. In the company I engaged during my internship program DUICT,I observe the problem with their network troubleshooting process which has big role in different parts of the computer's in the company.

4.2 Goals And Objective

4.2.1 Goal

Lower Costs of Service – Since it is at the top of most lists, let's start with saving money! Many offer all distance calling programs, so if you have a high amount of long distance calls, your savings will be higher.

ALL AT ONE -- Since social networking has become very common now a days I-Talk provide one platform for all social networking sites.

4.2.2 Objectives of the project

4.2.2.1 General objectives

Users will be able to communicate effectively, speedily and most importantly, securely there by enhancing the privacy and confidentiality of mobile communication. The objective of this project is to integrate voice over internet protocol using DHCP Server phone devices ,also I used advanced security technology. I also excluded Implementing voice encryption on third generation GSM data or GPRS servers which would in turn result in a better encrypted voice speed and clarity company.

4.2.2.2 Specific objectives

- To deal with the problem that the company is facing
- It will enable the users to communicate with each other in an encrypted fashion.
- The configuration and usage of proxy server through defining call routing and handset registration mechanisms.
- To study and analyze the design of network mechanism
- To analyze how to integrate voice over internet protocol the DHCP Server phone devices,counter and using different networking device.
- To make it easy and fast
- To reduce the cost re-maintain

4.3 Statement of the problem

During my internship program at DUICT have problem with network technology. This let the factory spend money or pay for other nearby factories to advance network technology their troubleshooting,security and re-maintenance to device manually this costs the company more time and reduce a product.

4.4 Solution suggested

I have suggested my project as solution, because my project change the real world.and manual troubleshooting or going to other nearby company to troubleshoot their network, into automatic networking this reduce the cost of money to re-maintain their network and the cost of time by using my project they can improve the knowledge related to networking at their company of DUICT.

4.5 Methodology of the project

Because of this project needs direct skill manipulation it was a must to refer to some references which are factory network manuals, internet access, high level programming language such as html, javascript code,computer maintenance book some electrical engineering books and also gathering data from the name server voice over internet site. I have use Router, PC,Server to control in bounding/LAN and out bounding/WAN of the internet service provider,I also done upload and download file.to get the site first fulfill the requirement(e-mail).the project are mainly focus on server control that permitted the internet to the tel-communication that argumentation the two company I integrate to voice over internet.so my methodology of this project is design wide area network ,I control the server by using high level programming language and I use secure hash algorithm security to access authorized person only.

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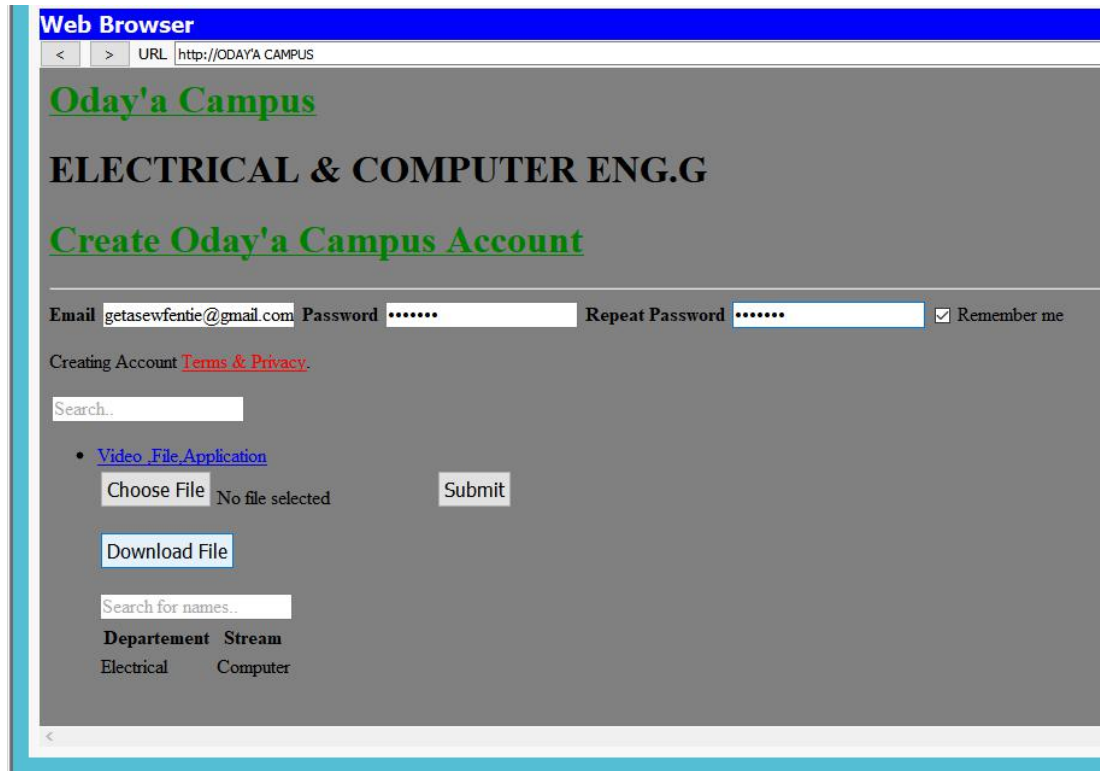


Figure4.1Server control voice over internet protocol screen shoot

4.6 Material Requirement

There are different hardware and software material require to use I worked in duict. During I worked the company to use different:
Software device:-putty,tera term and packet trace,html code.
Hardware device:-console cable, PC.
Computer device :- PC and printer .

4.7 System Design and block diagram

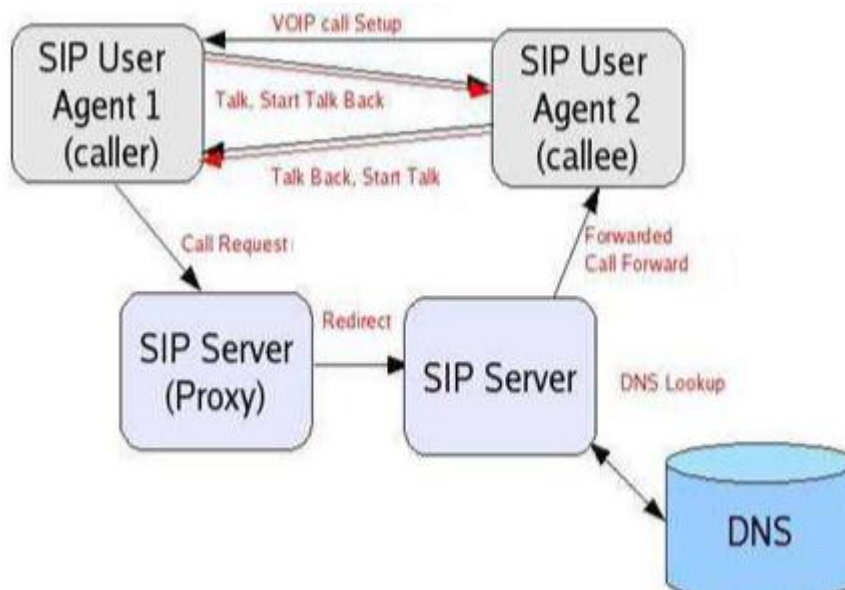


Figure4.2Block diagram of the project

Principle of operation

The Session Initiation Protocol (SIP) is defined signaling protocol widely used for controlling communication sessions such as voice and video calls over Internet Protocol (IP). The protocol can be used for creating, modifying and terminating two-party (unicast) or multiparty (multicast) sessions. Sessions may consist of one or several media streams.

SIP can be regarded as the enabler protocol for telephony and voice over IP (VoIP) services. The

following features of SIP play a major role in the enablement of IP telephony and VoIP:

Name Translation and User Location.

Feature Negotiation.

Call Participant Management.

Call feature changes.

Media negotiation.

Proxy, Proxy Server: An intermediary entity that acts as both a server and a client for the purpose of making requests on behalf of other clients. A proxy server primarily plays the role of routing, which means its job is to ensure that a request is sent to another entity "closer" to the targeted user. Proxies are also useful for enforcing policy (for example, making sure a user is allowed to make a call). A proxy interprets, and, if necessary, rewrites specific parts of a request message before forwarding it.

Recursion: A client recurses on a response when it generates a new request to one or more of the URI in the Contact header field in the response.

Redirect Server: A redirect server is a user agent server that generates responses to requests it receives, directing the client to contact an alternate set of URI.

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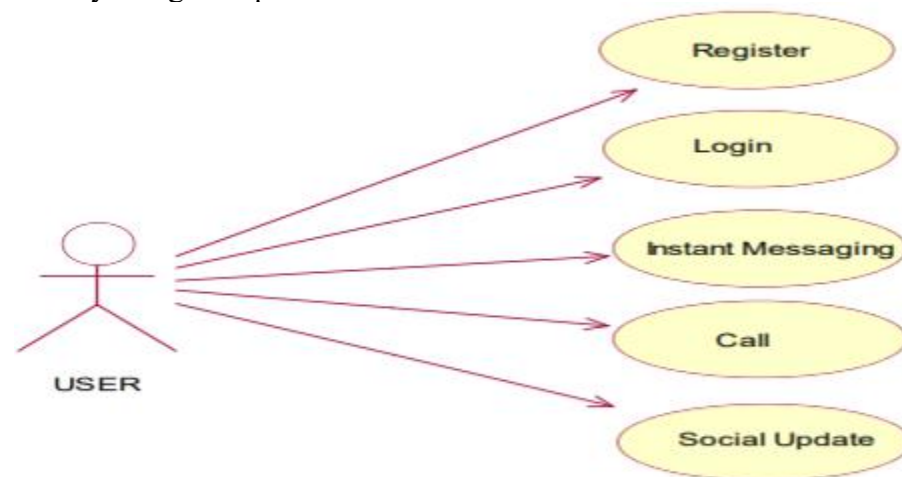
Name Translation and User Location(DNS):Ensuring that the call reaches the called party wherever they are located.

Carrying out any mapping of descriptive information to location information. Ensuring that details of the nature of the call (Session) are supported.

DNS lookup : resolve the dns problem.

4.7.1 APPLICATION WORKS

Hit the settings/options button on your Android device. Select 'Settings' and then 'Call settings'. Scroll down to the bottom of this menu and you will see 'Internet call settings'. Select 'Accounts'. You will see the option to "add accounts" here. Again you will need your SIP account credentials, which you can find in the email we sent you when you signed up.



4.7.2 DESCRIPTION OF STEPS

Step1: Voice communication can occur in 2 ways namely:

- ✓ Wi-Fi (without the SIM card in Android handsets)
- ✓ GPRS (with SIM card in Android handsets)

Step2: There would be server and minimum Android handsets. The handsets need to be registered at ISP server.

Step3: The ISP server of duict.com is used. ISP client is configured on both the Android handsets.

Step4: The Android application which will be developed needs to be installed on all the handsets which are registered in the ISP server and wish to communicate with each other using encrypted IP voice communication.

Step 5: The dialler will launch the Android application on his/her handset and dial the receiver's number.

The dialing interface will be developed for the Android application. Once the call is made, the request will go the SIP server wherein the recipient's number will be checked and the call will be routed on its handset.

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Step 6: Once the recipient receives the call through the same Android application and the dialler starts the conversation, all the digitized voice data will first be encrypted on the dialler handset by the application and then sent to the SIP server for routing to the recipient's handset. Logically, every handset will be assigned a numeric no. in the ISP server during configuration through which it will become identifiable.

Step7: The digitized voice data will travel in an encrypted fashion through the GPRS medium.

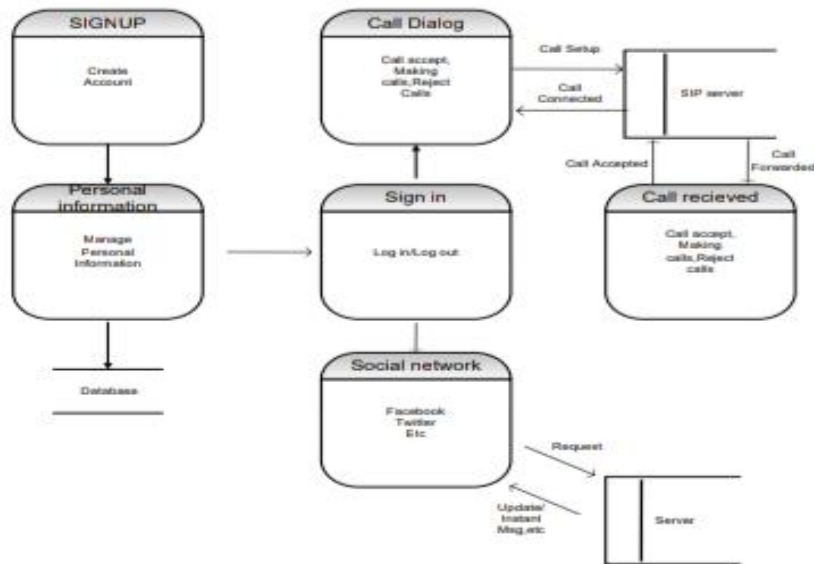


Figure4.3Data flow diagram

Screen shoot of application



Figure4.4Voice over Internet Protocol or "VoIP "Screen shoot

CHAPTER FIVE

5.CONCLUSION AND RECOMENDATION

5.1 Conclusion

The internship program is the best program for university students because I changed the theoretical knowledge in to practical. During the internship period in DUCT networking and computer maintenance, I observe different types of computer programming knowing, the basic principle operation and application area that was used for measuring different physical phenomena.

For my four months in internship program, I have concluded that it gives real practical skills and make students being familiar to the outside industries world. Truly, it prepared me to pay special attention in all practical activities that will be carried out in the company. Because, of little error or mistake can leads to large failure in the programming process if it is not carried in the correct procedure. Also this program allows me to make and develop professional contacts for my future time and it helps me to know maintenance terms and working standards. Most the theoretical things I have been learned got illustrated here in this program, which develops more my confidence in the theoretical knowledge. Some of the benefits I gained from the internship program are listed below as: -

- I Know how to face the real world
- Know about different programming languages to control the company.
- Team working skill and seeking for help in case of difficulties without any shame.
- Work ethics and Entrepreneurship skill gain.
- Identify different problem occur in the company and give the solution by communicating with the formal and technician of the company.

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- Communication skills with electricians
- Upgrading my theoretical knowledge
- Design, repair and maintenance of electrical equipment's and its programmable system.
- Team working and leadership skills
- I know how to networking devices that are installed in the dynamical system of the company.

General overview of raw materials, computer added utilities needed and overall process produce to required information technology.

5.2 Recommendation

During my internship time I observe different problem standing from my observation as an internship student I would to give some recommendation to my hosting company DUICT and to my university.

5.2.1 Recommendation to the hosting company

As a student I would like to give some recommendation to my hosting company DUICT. Some of the recommendations suggested to the company that I have seen for the last four month main problems of a company those are as follows:

- The company do not have full full networking materials like electronic resource, I recommend the company that fulfill the material.
- A company is use SSH,Telnet ,firewall security mechanisms this cause security failure.I recommend to the company it use high level programming security mechanism,like secure hash algorithm (Sha-512) to use the company.
- The electrical power is burn the wireless route, two switch's and computers during my fourth internship period. I recommend the company's to use power divider and plug-up the charging cable after that finish the task.
- the company should improve the man power educational level and give for them full training capability of the networking ,maintenance and they should focused

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to enhance the maintenance before the failures occur rather than expend time and money after the huge Problem.

- The company use different company fabricated device it lead to not configure exactly.so I recommend the company that have use the same device in usually.

5.2.2 Recommendation to the university

I would like to recommend to my university:

The university needs to give special attention to the course that given in the class and upgrading the knowledge of some teachers about that course.

As my university mainly concerns about programming it need to have a course about what industries are need and the real world's activities like the programming languages and other computer systems.

The university should arrange some practical visit in some courses before and after the internship program. Because it helps the student to easily understand what they learn in their laboratory and lecture class session.

- And also the university has to take the responsibility of placing the students with appropriate companies because it is difficult for the students to communicate with the hosting companies.
- Finally, the budget allocation for this internship program is not enough for the students to in this program.

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References

Previous Works

The company website

WWW.Google.com

WWW.CBS.ET

Networking books

Wikipedia

The company Documentation

W3school.com

World's Largest Web Development Site

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Appendices

Problem-Solving Project, Web Browser(URL) Server Control to Integration With VOIP Project code .

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  <hr>

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  <input type="text" placeholder="Enter Email" name="email" required>

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  <li><a href="#">JavaScript</a></li> <li><a href="#">PHP</a></li>
  <li><a href="#">Python</a></li><li><a href="#">jQuery</a></li>
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  <li><a href="#">Node.js</a></li> <form action="/action_page.php">
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<a href="#" class="fa fa-twitter"></a>
<!-- Add icon library -->
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/font-awesome@4.7.0/css/font-awesome.min.css">
<!-- Auto width -->
<button class="btn"><i class="fa fa-download"></i> Download</button>
<!-- Full width -->
```

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</form>
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    <h1>Dilla Tel<tr class="header">

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INTERNSHIP- REPORT

☒ Remember me

</label>

<p>By creating an account you agree to our Terms & Privacy.</p>

<div class="clearfix">

<button type="button" class="cancelbtn">Cancel</button>

<button type="submit" class="signupbtn">Sign Up</button>

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<!-- Add icon library -->

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<!-- Add icon library -->

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