INTERNSHIP ON COMPUTER NETWORKING IN STUDIO MASON LTD

BY

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

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APPROVAL

This Internship titled **"Internship on Computer Networking"**, submitted by **Hasan Mahmud, ID No 191-15-12501** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 5 January, 2022.

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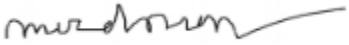

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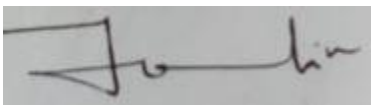

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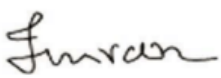

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DECLARATION

I hereby declare that, this report has been done by me under the supervision of **Md Azharul Islam Tazib, Lecturer, Department of CSE** Daffodil International University. I also declare that neither this report nor any part of this report has been submitted elsewhere for award of any degree or diploma.

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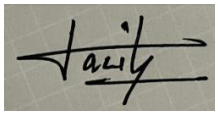

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I would like to express my heartiest gratitude to **Dr. Touhid Bhuiyan**, Professor and Head**,** Department of CSE, for his kind help to finish my internship and also to other faculty member and the staff of CSE department of Daffodil International University.

Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

In this report, I'm looking to highlight what I've done and what I've learned from doing an internship. In internship as a Computer Networking, my essential recognition become to growing my ability on networking and knowing about IP addressing, switching, different kind of routing and their protocols. At present, there are plenty of network administrators operating on new technology. I want to learn the difference routing and switching protocols also internet protocol. I could want to find out about actual lifestyles task. I want to find out how a real task will operate. I'm very curious to start my service as a network engineer. That's why I pick out the internship as "Computer Networking". Working in Studio Mason Limited delivered large reviews in my forthcoming careers. Working along the real troubles of the customers, changed into some other key factor to advantage reviews.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

The period of Information Technology is nowadays. Except the internet, we can no longer think about our future. Many people global make use of internet innovation, and networking is a fundamental a part of that all technology depends on networking. We can not do whatever without the internet. Today each business, each office, bank, and exchange are predominantly primarily based totally on correspondence and networking. Networking is critical for a workplace of an company and all ISP agencies for preserving the Internet. In this report, I have highlighted many topics which are essential for networking.

1.2 Motivation

At present internet is available in anywhere. Day through day its use is increasing due to the fact that it is prevalent everywhere in the network. Our whole life revolves around computer networks and there is so dependent on them it is useful to understand how this things work. Computer networking is vital for IT Area, to create myself I need to comprehend Computer networking.

1.3 Internship Objectives

- To gain the practical knowledge of what we have studied.
- To understand the fundamental concepts of networking values, protocols and technologies.
- To learn different methods of routing.
- To learn preface of protocols at various layers in the protocol stacks.

1.4 Introduction to the Company

Studio Mason Limited (SML) is an Information and Communication Technology company working within Bangladesh. Although SML was formed in 2015, company's key management personnel's are industry veteran and are well known in ICT market. SML team have successfully completed many solution projects and served satisfied customers both corporate and consumer with its highest class of product and services.

1.5 Report Layout

At the 1st chapter of this file speak approximately creation of my internship and speak approximately of my motivation, objectives. In 2nd chapter this is speak approximately my internship's organization. It's informed approximately function of my organization, product and goal group. In 3rd chapter it's in brief mentioned approximately my task, activities, initiatives and what I have learned from my internship period. In 4th chapter mentioned approximately competencies and smart plan. In the 5th chapter talk approximately the realization and approximately my destiny existence in this area.

CHAPTER 2

ORGANIZATION

2.1 Introduction

Studio Mason Limited (SML) wants to expand its current business to match the core strength of the team. To attain its goals SML has formulated the strategy and broken down to business plan.

In today's world, without information technology product and services, every business will cease to exist. 10 years back, IT in any organization was a support service, and within this short span of time, information technology has replaced manual processes with digitized processes. Understanding the core importance of IT, proposing the right solution to the specific needs of a customer at an effective and efficient way and maintaining the system to run to its desired capacity is the key to success for any ICT company.

Studio Mason Limited (SML) understands the dilemma that customers may be facing in choosing the right partner or solutions provider to fulfill their overall Information and Communication solutions requirements. Right from the outset, SML stands out itself as the potentially leading IT Company in Bangladesh and leveraging its best practices, unparalleled, skilled & certified resources pool and global partnerships, SML can be that trusted company that a potential corporate customer would be looking for to collaborate with.

2.2 Mission

The mission of Studio Mason Limited is to create happy and loyal customers base by providing highest level of quality ICT goods and services through our extremely experienced ICT professionals in a manner that help influence to build and maintain a healthy relationship with our valued customers, employees, business partners and all other relevant stakeholders.

2.3 Vision

The vision of Studio Mason Limited is to be the leading ICT solutions provider in the country that meets the growing Information and Communication Technology needs of Bangladesh and Global market and thus contributes positively towards country's overall economy.

2.4 Product

- APPLE
- HEADPHONE
- SPEAKER
- RAM
- UPS
- ACCESSORIES
- STORAGE
- SOFTWARE
- NETWORKING
- ENTERPRISE-PRODUCTS
- VIDEO.CONFERENCE
- Micro-Phone

2.5 Target Group

By speedy converting the world, every corporation and organization need to increase computer and era talent to stay aggressive and successful. Studio Mason Limited has worked out a special mixing of abilities sets that are requested most in the present business market. To meet their targets Studio Mason Limited moving forward with the right initiatives. Studio Mason Limited core business focus/segments:

- Solution Sales to Enterprise and Corporate groups.
- ICT System Integration according to corporates requirements.
- Distribution of ICT products.

CHAPTER 3

TASK, PROJECTS AND ACTIVITIES

3.1 IP Addressing

An IP address is a position employed to remarkably fete a contrivance on an IP association. The position is comprised of 32 double pieces, which can be divisible into an association part and host member with the assist of a subnet robe. The 32 paired pieces are broken into 4 woodwinds. One quintet = eight pieces. Each quintet is changed over to decimal and protected by a period (speck). Subsequently, an IP address should be conveyed in spotted decimal design (for instance: 172.16.83.10). The value in each quintet goes from zero to 255 decimal, or 00000000-11111111 binary.

Binary quartets convert to Decimal:

The exact most piece of a group of four holds a worth of 2^0. The bit exactly to the leftism of that holds a worth of 2^1. This proceeds until the left most piece which holds a worth of 2^7.

Still, the decimal worth will be 255, if all binary bits are a bone.

1 1 1 1 1 1 1 1

128 64 32 16 8 4 2 1 (128+64+32+16+8+4+2+1=255)

Here is a pattern octet conversion while now no longer all the bits are set to one.

0 1 1 0 0 0 0 1

0 64 32 0 0 0 0 1 (0+64+32+0+0+0+0+1=97)

Furthermore this sampler shows an IP address character in both binary and decimal.

128. 10. 32. 89 (Decimal)

10000000.00001010.00100000.01011001 (Binary)

5 different classes of networks. They are-

- Class A
- Class B
- Class C
- Class D
- Class E

Class D used for multicasting and E are reserved experimental and research purposes.

TABLE 1: RANGE OF IP ADDRESS

Class A	Class B	Class C	Class D	Class E
0-128	129-191	192-223	224-239	240-255

Class A: In Class A, network bit 8 and host bit 24.

TABLE 2: CLASS A NETWORK BIT AND HOST BIT

Octet 1 (8 bit)	Octet 2 (8 bit)	Octet 3 (8 bit)	Octet 4 (8 bit)
Network	Host	Host	Host

Class B: In Class B, network bit 16 and host bit 16.

TABLE 3: CLASS B NETWORK BIT AND HOST BIT

Octet 1 (8 bit)	Octet 2 (8 bit)	Octet 3 (8 bit)	Octet 4 (8 bit)
Network	Network	Host	Host

Class C: In Class C, network bit 24 and host bit 8.

TABLE 4: CLASS C NETWORK BIT AND HOST BIT

Octet 1 (8 bit)	Octet 2 (8 bit)	Octet 3 (8 bit)	Octet 4 (8 bit)
Network	Network	Network	Host

3.1.1 Public IP address

Public IP Address of a structure is the IP Address which is applied to bestow out of the entryways the organization. Public IP address is basically given out through the ISP.

Range:

Other than private IP Addresses, rest are Public.

3.1.2 Private IP Address

Private IP Address of a structure is the IP Address which is applied to bring interior a tantamount organization. Using Private IP records or information might be sent or gotten inside a tantamount organization.

Range:

10.0.0.0 – 10.255.255.255

172.16.0.0 – 172.31.255.255

192.168.0.0– 192.168.255.255

3.2 Subnetting

Subnetting is the technique used to parcel a solitary real enterprise into multiple greater modest practical sub-networks (subnets). An IP address with includes an enterprise phase and a host fragment. Subnets are deliberate through tolerating portions from the IP address host portion and utilizing these pieces to dole out diverse greater modest sub-networks in the first network. Sub network permits an association to add sub-networks without the need to gather another network number through the ISP. Subnetting assists with diminishing the organization traffic and hides network intricacy. Sub network is elemental when a solitary association number must be trusted over colorful sections of a LAN.

Example: Subnet the following networks with the network address 192.168.1.0.

The following figure 1 shows Subnetting Example.

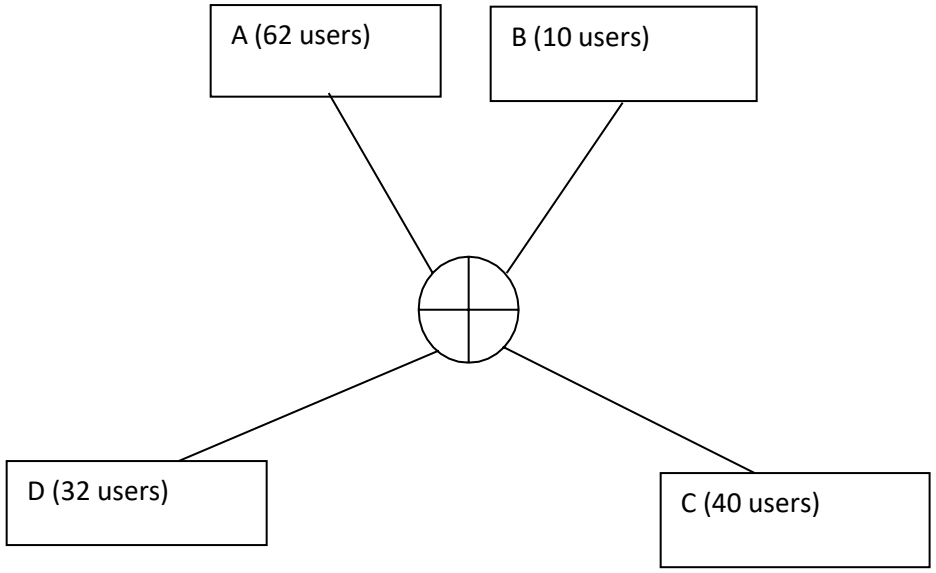

Figure 1: Subnetting Example

Solution:

This is a class C address

Here, we use subnet mask = 11000000

or 192 or /26 Number of subnets = 2^2 =

4 (Since 2 network bits)

Number of hosts per subnet = $2^6 - 2 = 64 - 2 = 62$ (Since 6 host bits)

TABLE 4: SUBNETTING EXAMPLE SOLUTION

Network	Subnet Address	First Host	Last Host	Broadcast Address	Address Range
A	00000000 or 0	1	62	63	00000000-00111111 or 0-63
B	01000000 or 64	65	126	127	01000000-01111111 or 64-127
C	10000000 or 128	129	190	191	10000000-10111111 or 128-191
D	11000000 or 192	193	254	255	11000000-11111111 or 192-255

3.3 Network Media

Network midpoints is the authentic route over which an electrical sign is going because it movements beginning with one quota additionally onto the coming. The normal feathers of net media are twisted brace string, coextensive string, fiber-optical cable, and wireless.

3.4 Twisted Pair Cable

Twisted Brace string is a sort of cabling that is utilized for telephone underpasses and utmost current ethernet networks. Two or three links outlines a circuit that can convey data. The sets are bent to give confirmation against crosstalk, the disturbance delivered by lining sets. At the point when electrical inflow policies through a line, it makes a little, round seductive field around the line. Right when two links in an electrical circuit are set close to each other, their charming fields are the particular antipode of each other. In this way, the two seductive fields annul one another. They also cancel any external seductive fields. Twisting the cables can upgrade this scrape-off collision. Exercising crossing out along with winding the cables, link designers can viably offer tone- securing to line sets inside the association media.

3.4.1 UTP Cable

UTP string is a middle ground that's made out of wings of cables. UTP string is employed in a multifariousness of nets. Every one of the 8 respective copper cables in UTP link is clothed by a guarding substance. Also, the cables in each brace are turned round one another.

The following figure 2 shows UTP cable.

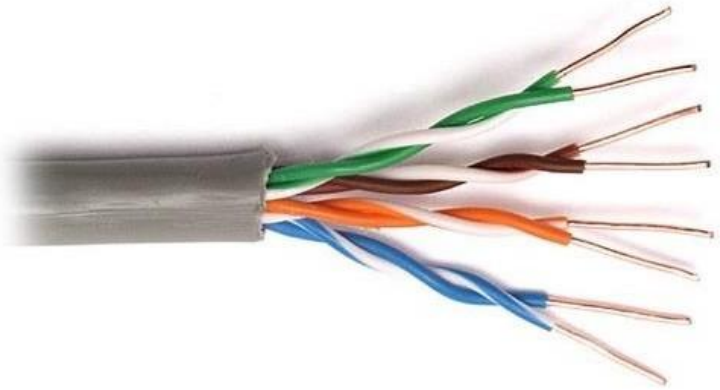

Figure 2: UTP Cable

UTP cable depends only on the invalidation influence delivered by the contorted line sets to circumscribe signal defilement brought about by EMI and RFI. To also drop crosstalk within the sets in UTP cable, the volume of turns in the line sets shifts. UTP cable should follow proper details overseeing the number of ranges or interlaced are permitted per cadence (3.28 bases) of cable.

3.4.2 STP Cable

STP string joins the styles of securing, throwing, and line coiling. Each couple of cables is enveloped by a metallic antipode. The four arrangements of links likewise, by then, are wrapped by an overall metallic turn or antipode, for the most part 150-ohm interface. As signified for utilization in Ethernet internet foundations, STP decreases electrical upheaval both inside the connection (crosstalk) and from outside the connection (EMI and RFI). STP usually is presented with STP information connector, which is made particularly for the STP string.

The following figure 3 shows STP cable.

Figure 3: STP Cable

3.5 Coaxial Cable

Coaxial string comprises of a blank external circle and concave conveyor that encompasses an alone inward line formed of two channeling factors. One of these variables, situated in the point of convergence of the connection, is a copper transmitter. Including the copper transmitter is a subcase of versatile insurance. Over this guarding material is a woven bobby interlace or metallic negative that acts both as the extra line in the circuit and as a safeguard for the inward channel. This posterior subcase, or safeguard, can help with dwindling the expedient of exterior impedance. Covering this shield is the link pelage. The following figure 4 shows Coaxial Cable.

Figure 4: Coaxial Cable

3.6 Fiber Optic Cable

A fiber optical wire is an organization hyperlink that consists of strands of glass filaments internal a covered packaging. They're supposed for widespread distance, advanced execution records structures administration, and media communications. Contrasted with stressed hyperlinks, fiber optic cables supply better transmission ability and ship records over longer distances. Fiber optic cables help a massive a part of the world's web, virtual TV and contact frame works.

The following figure 5 shows fiber optic cable.

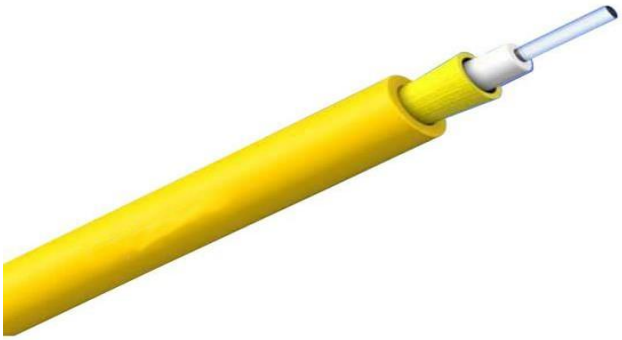

Figure **5**: Fiber-optic cable

3.7 Default Router

The following figure 6 shows Default Router.

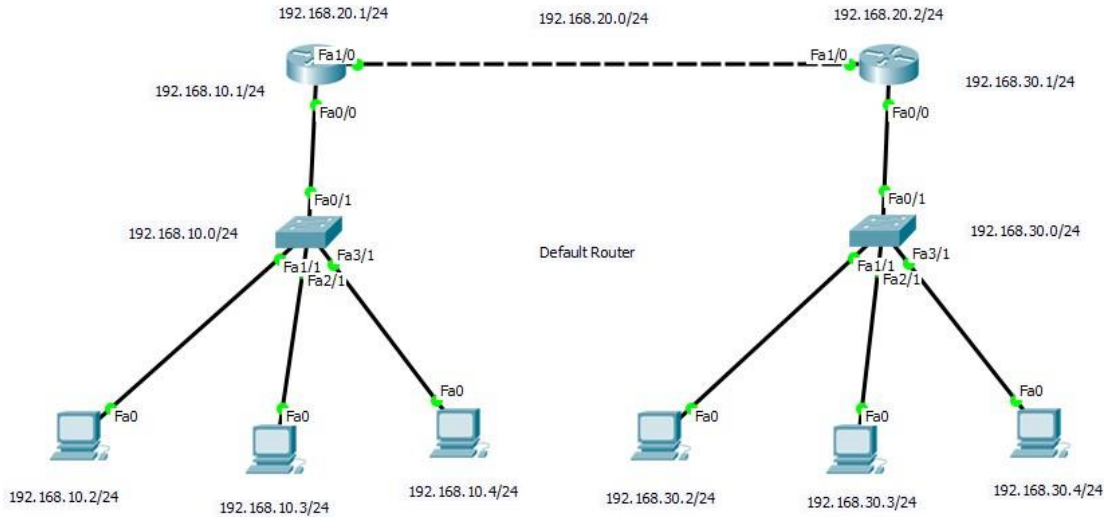

Figure 6: Default Router

The following figure 7 shows Default Routing router 1 configuration

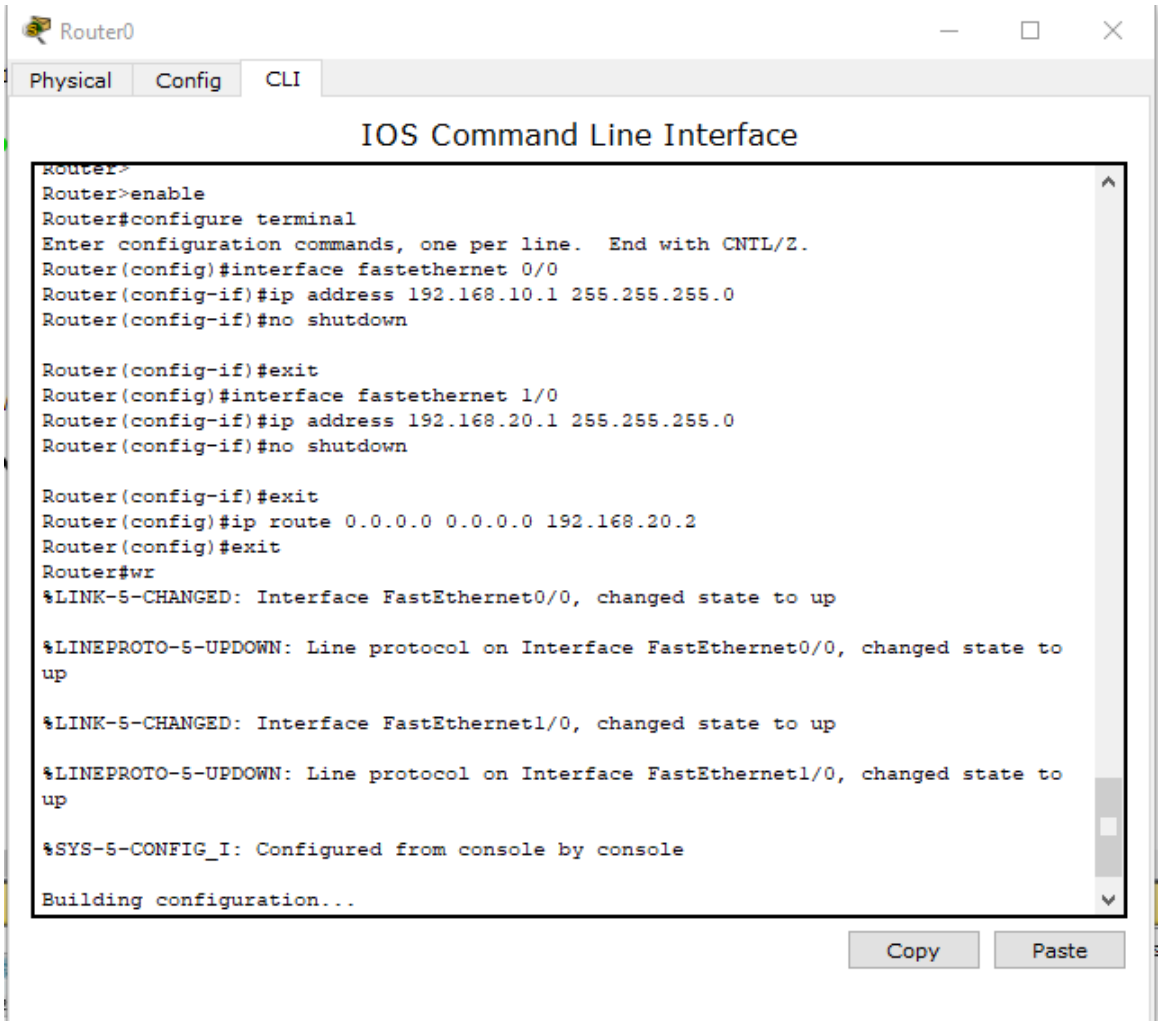

Figure 7: Default Routing router 1 configuration

The following figure 8 shows Default Routing router 2 configuration.

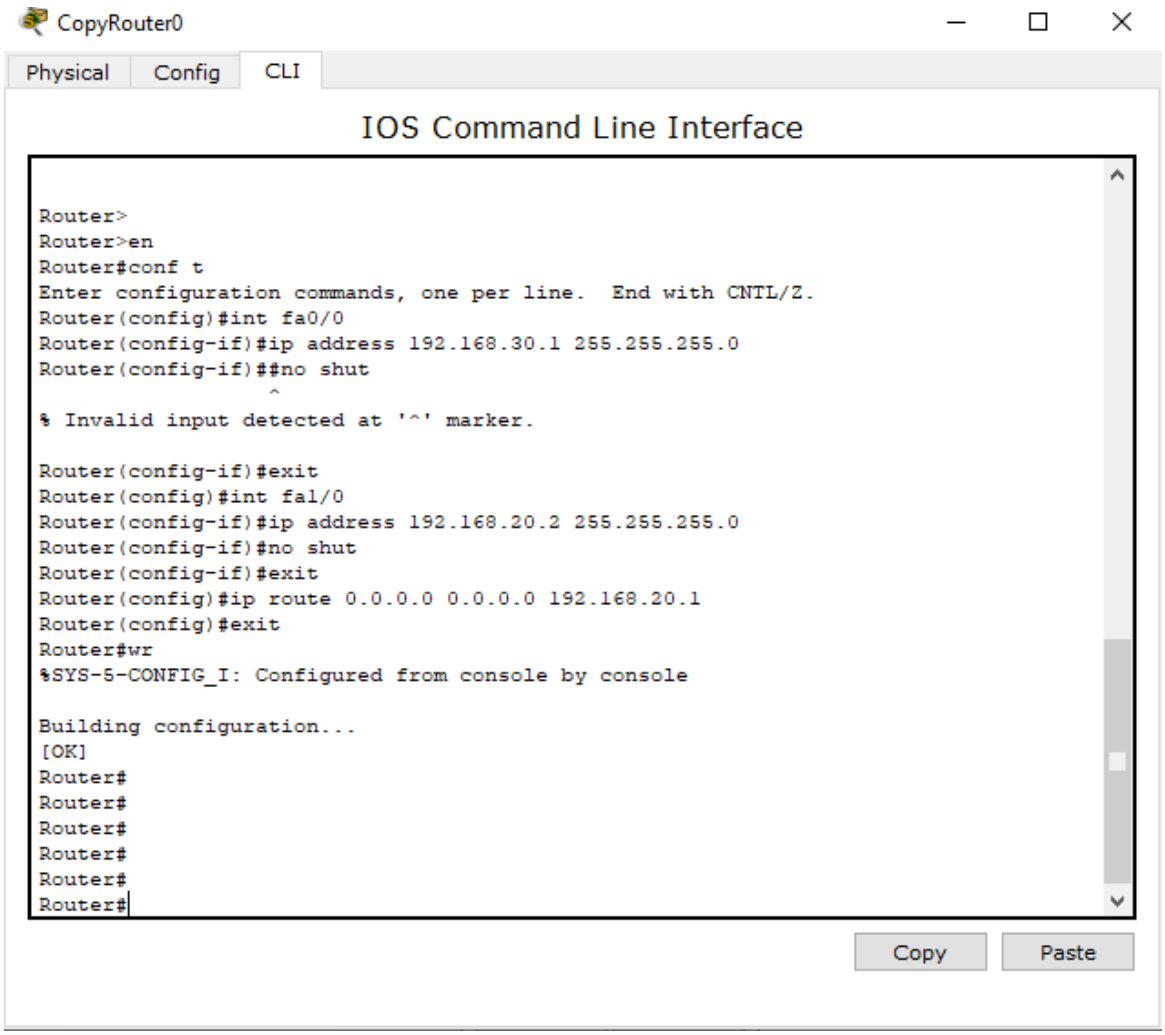

Figure 8: Default Routing router 2 configuration

3.8 Static Router

The following figure 9 shows Static Router.

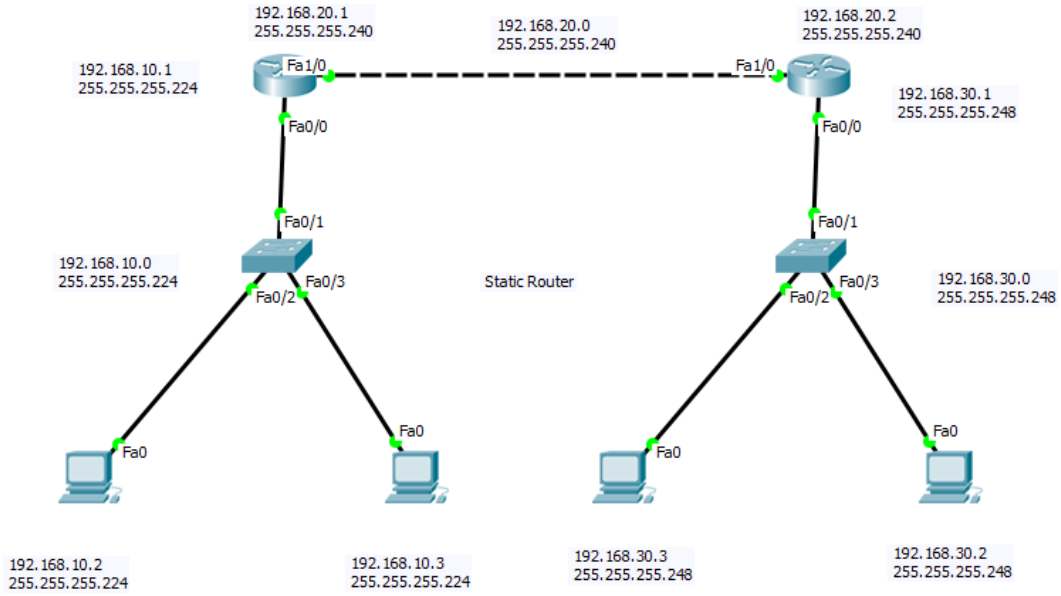

Figure 9: Static Router

The following figure 10 shows Static Routing router 1 configuration

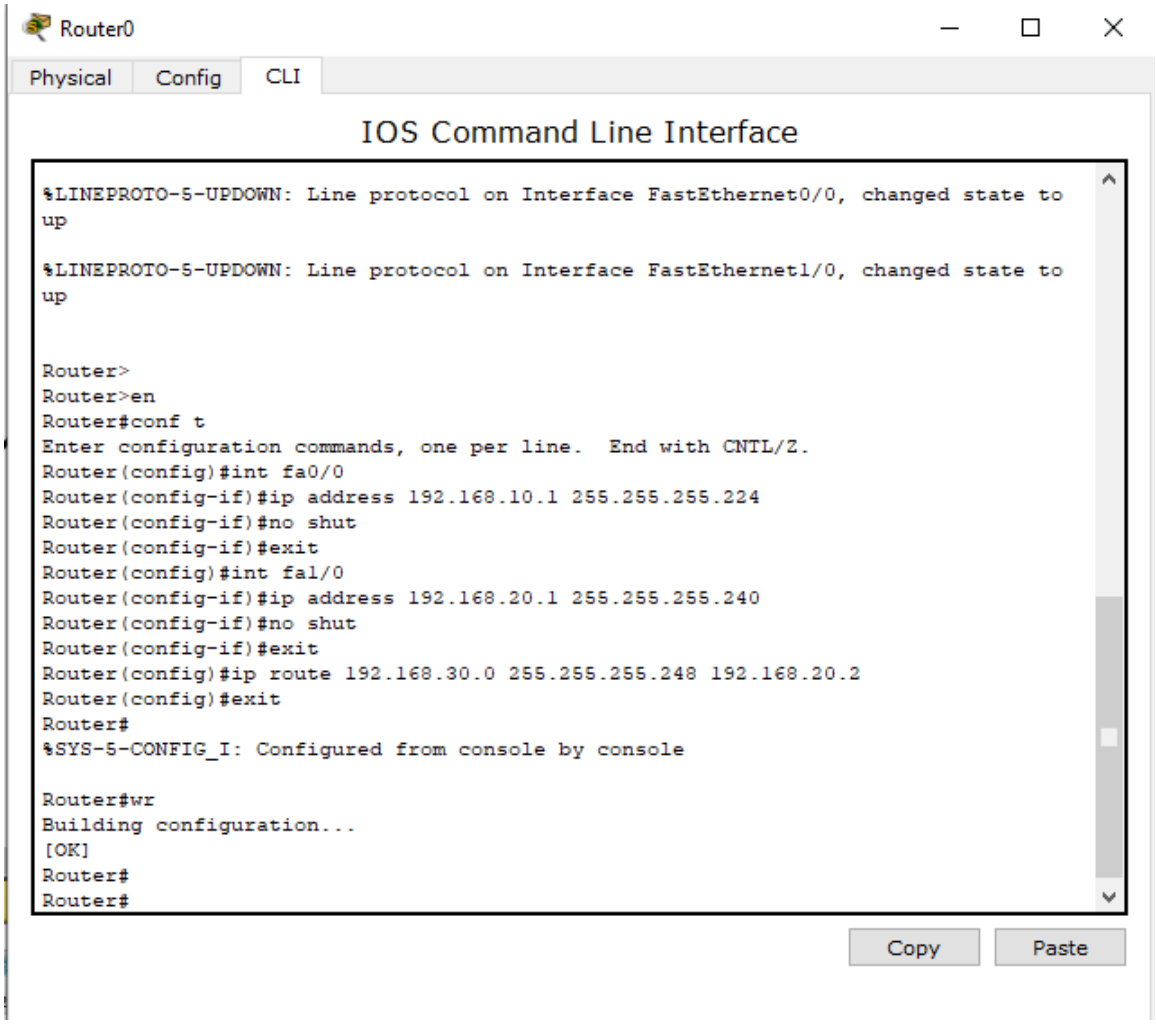

Figure 10: Static Routing router 1 configuration

The following figure 11 shows Static Routing router 1 configuration

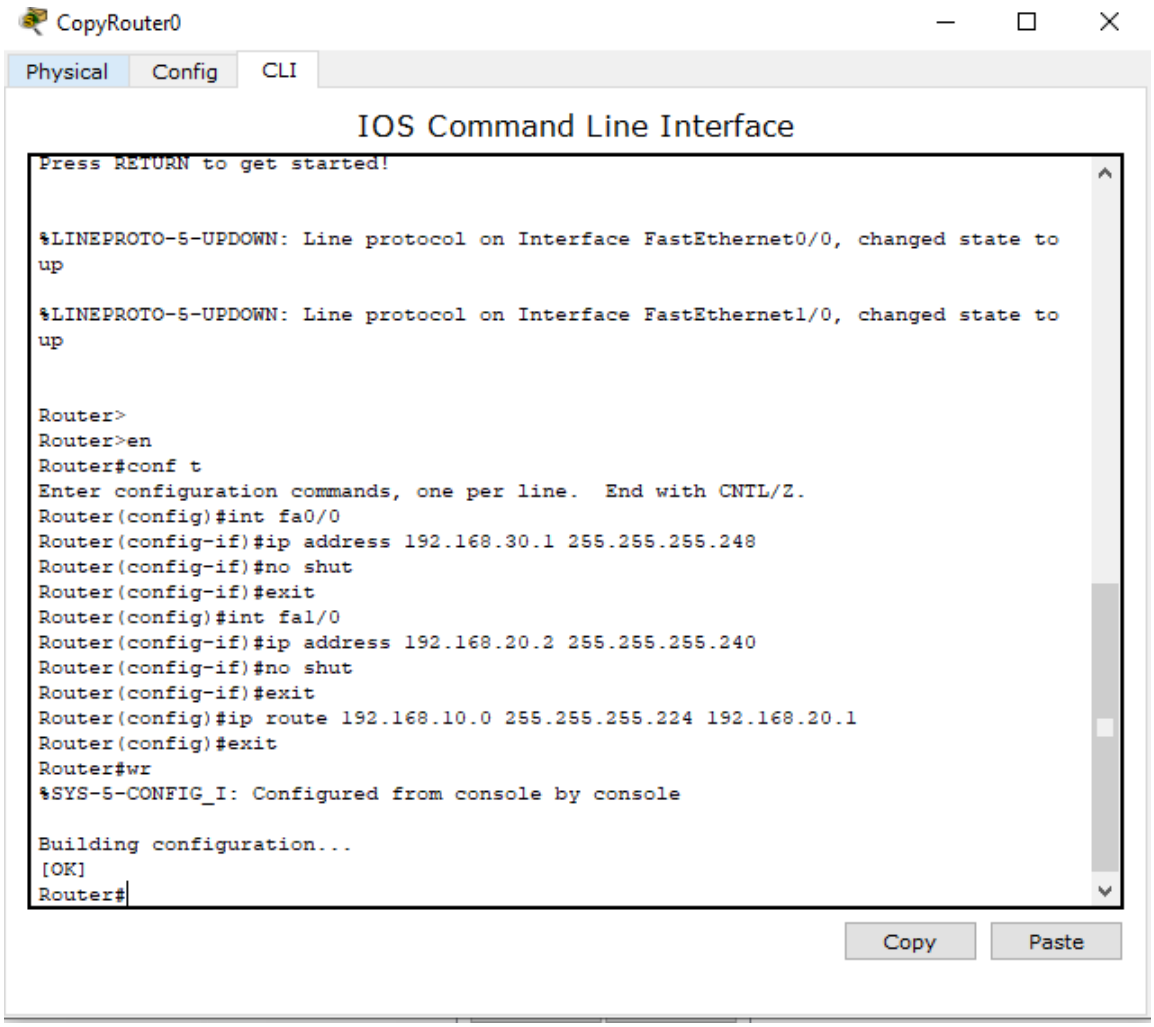

Figure 11: Static Routing router 2 configuration

3.9 RIP Version 1

The following figure 12 shows RIP Version 1.

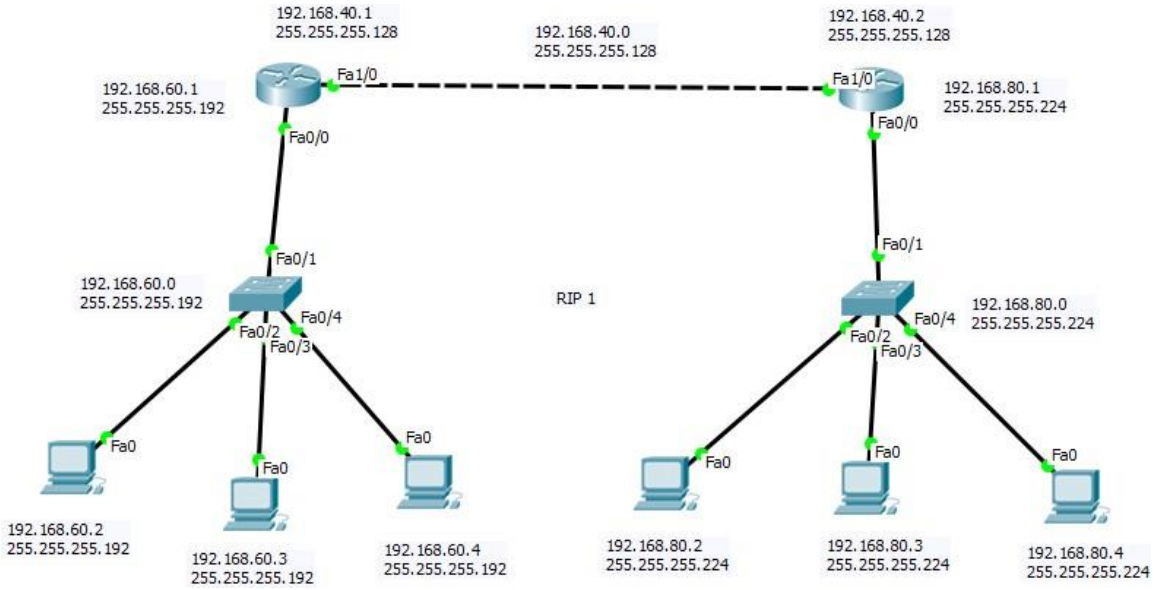

Figure 12: RIP Version 1

The following figure 13 shows RIP v1 router 1 configuration

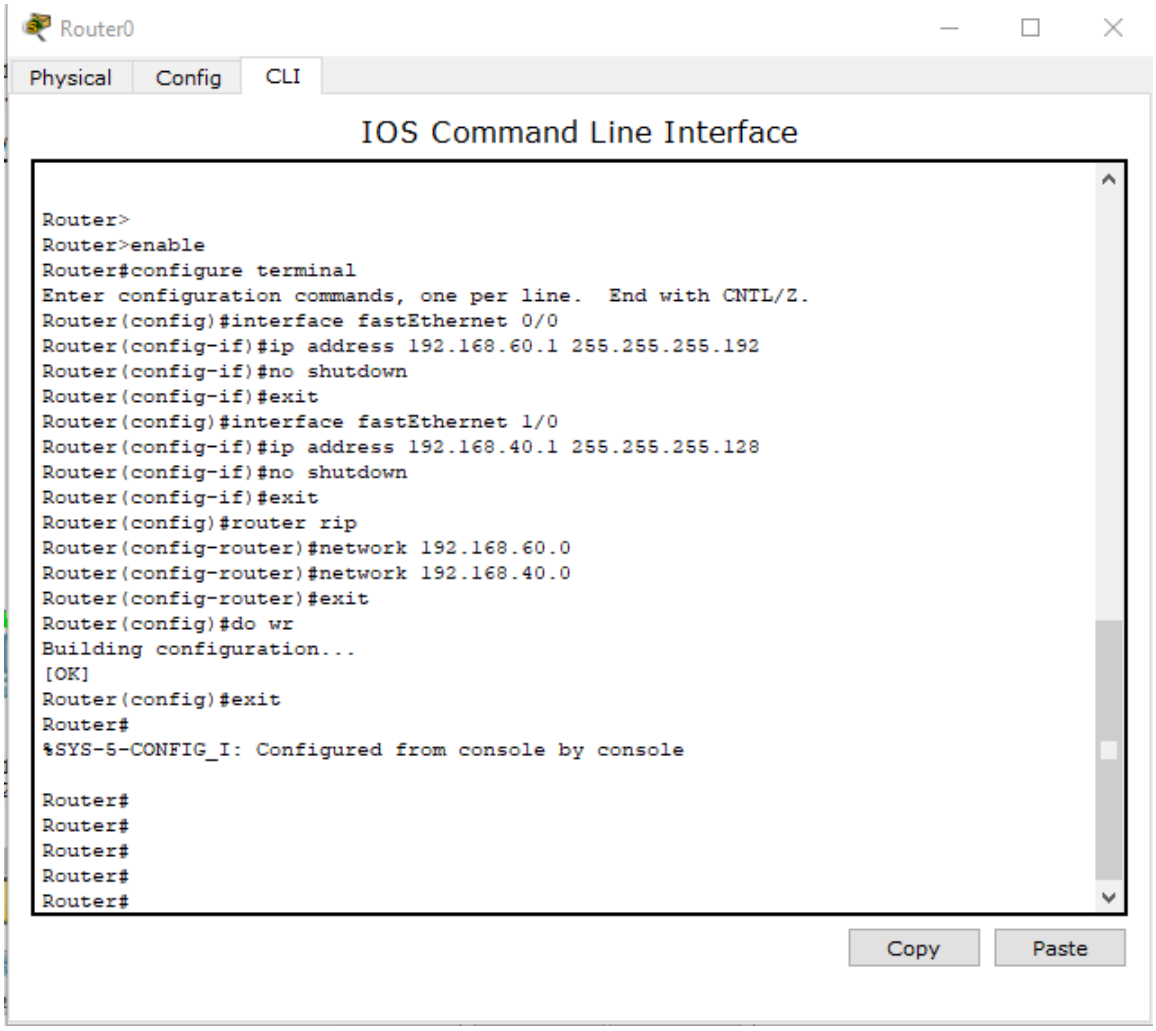

Figure 13: RIP v1 router 1 configuration

The following figure 14 shows RIP v1 router 2 configuration

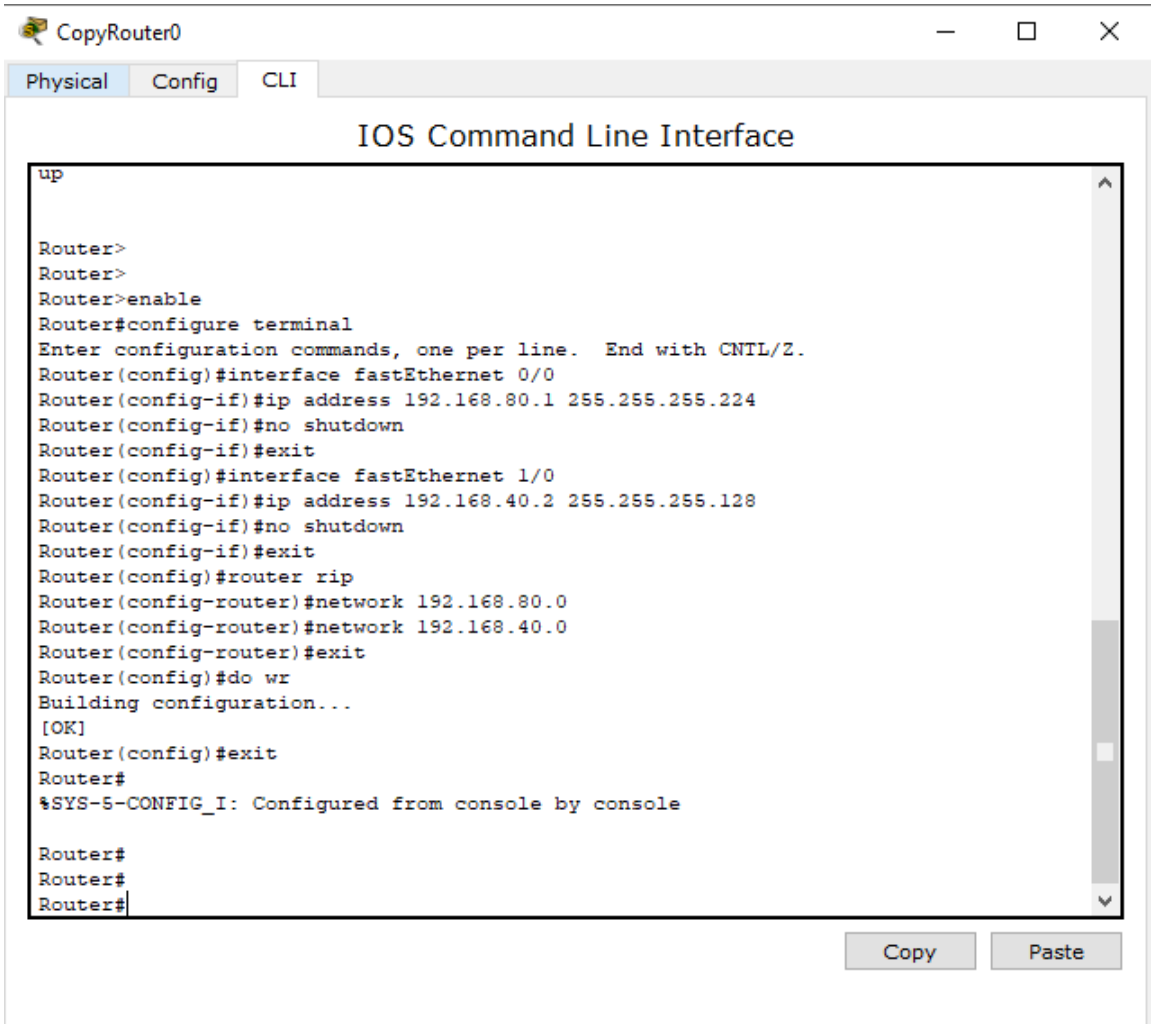

Figure 14: RIP v1 router 2 configuration

3.10 RIP Version 2

The following figure 15 shows RIP Version 2.

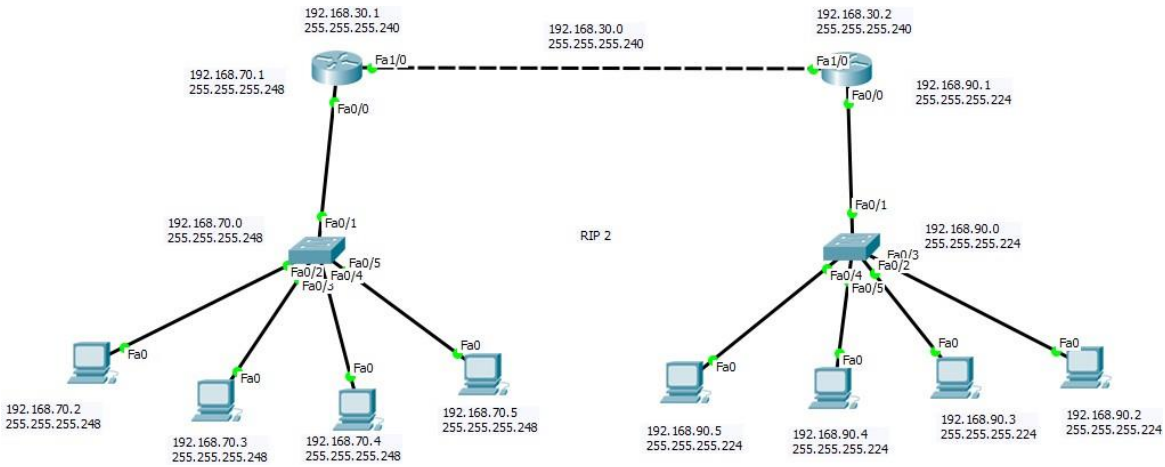

Figure 15: RIP Version 2

The following figure 16 shows RIP v2 router 1 configuration

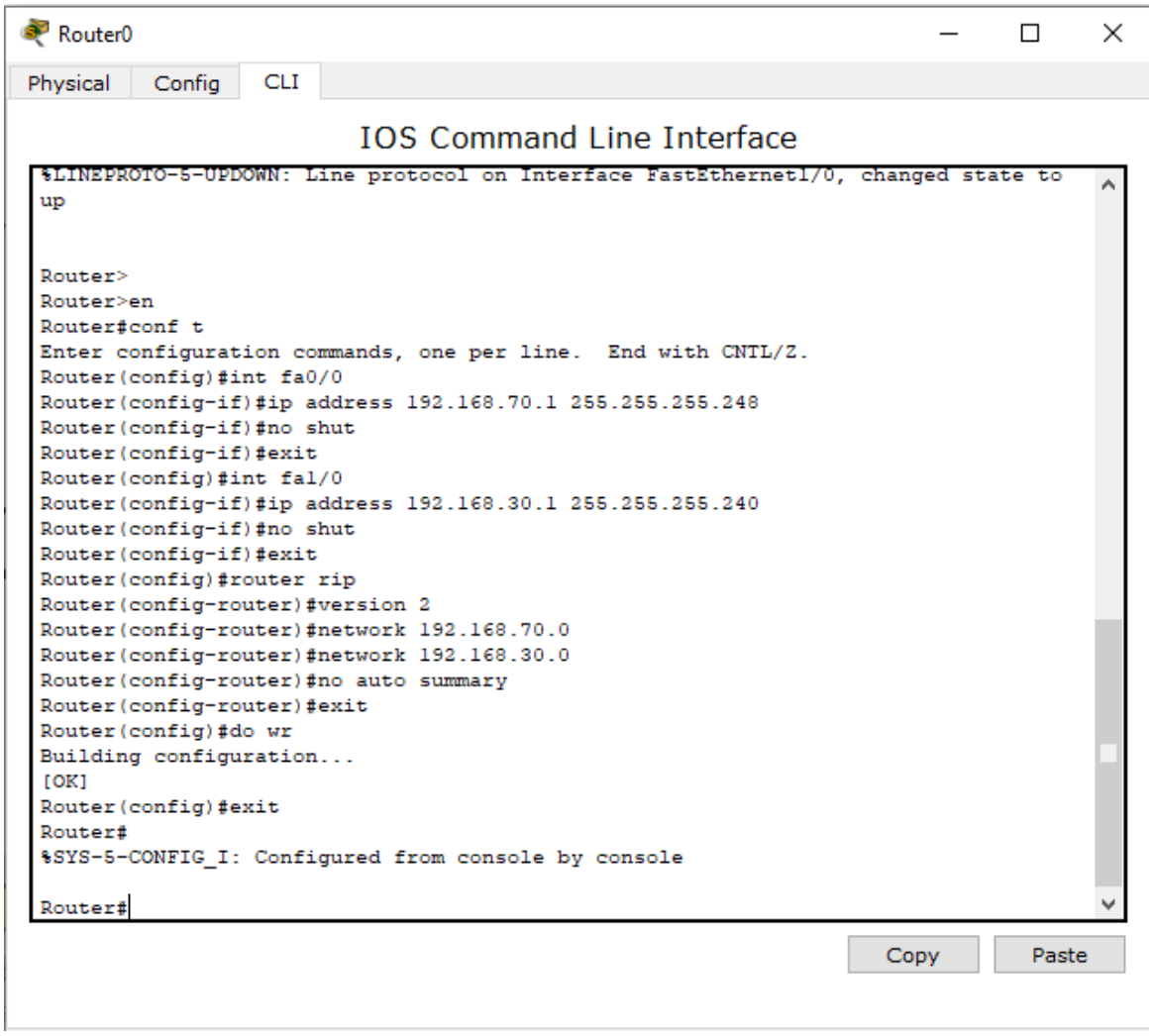

Figure 16: RIP v2 router 1 configuration

The following figure 17 shows RIP v2 router 2 configuration

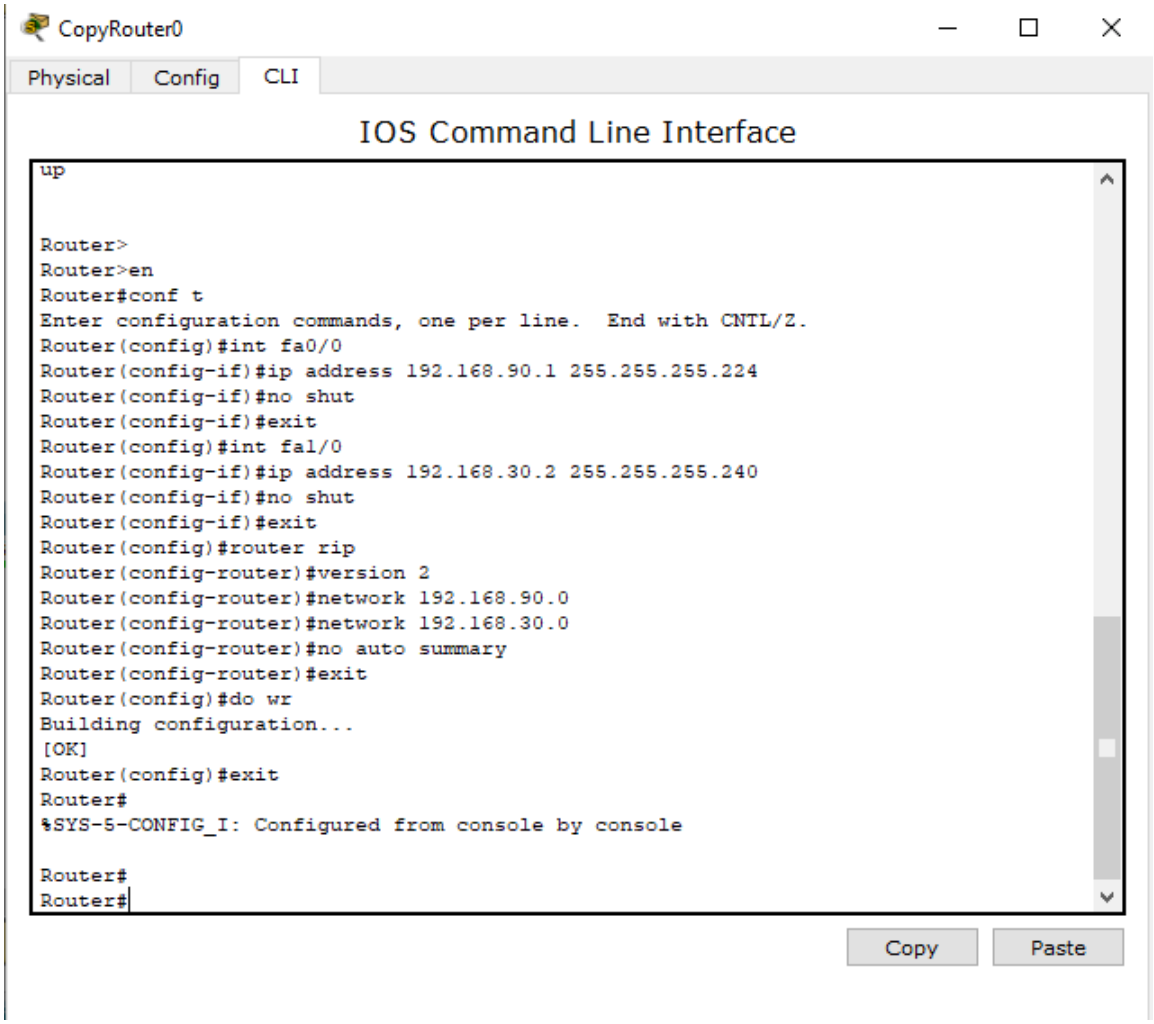

Figure 17: RIP v2 router 2 configuration

3.11 OSPF

The following figure 18 shows OSPF

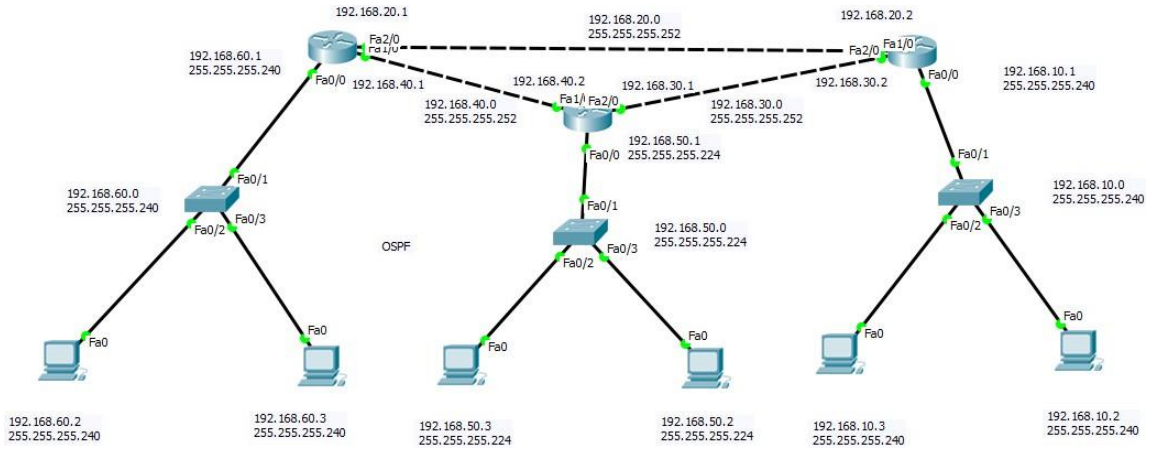

Figure 18: OSPF

The following figure 19 shows OSPF router 1 configuration

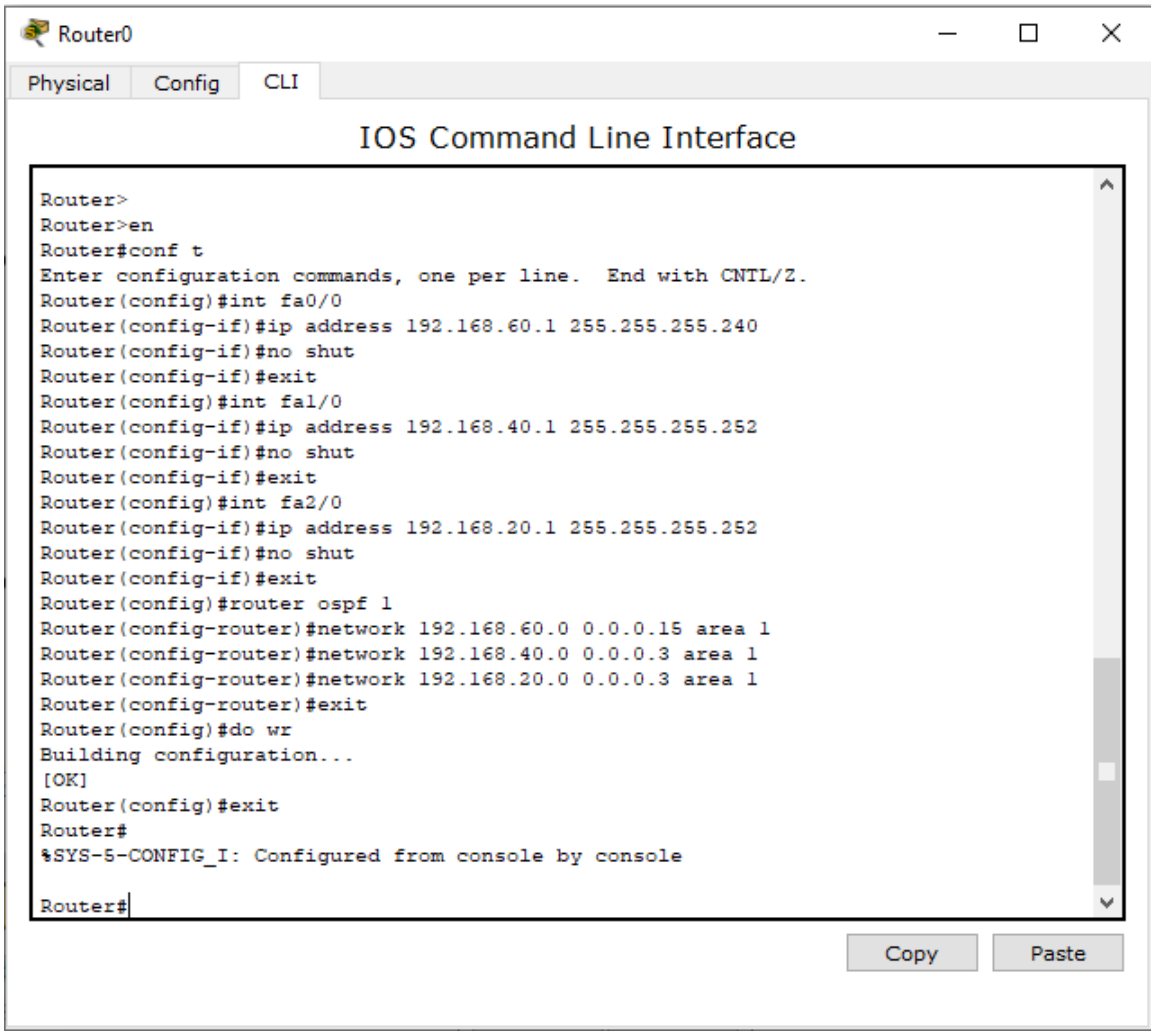

Figure 19: OSPF router 1 configuration

The following figure 20 shows OSPF router 2 configuration

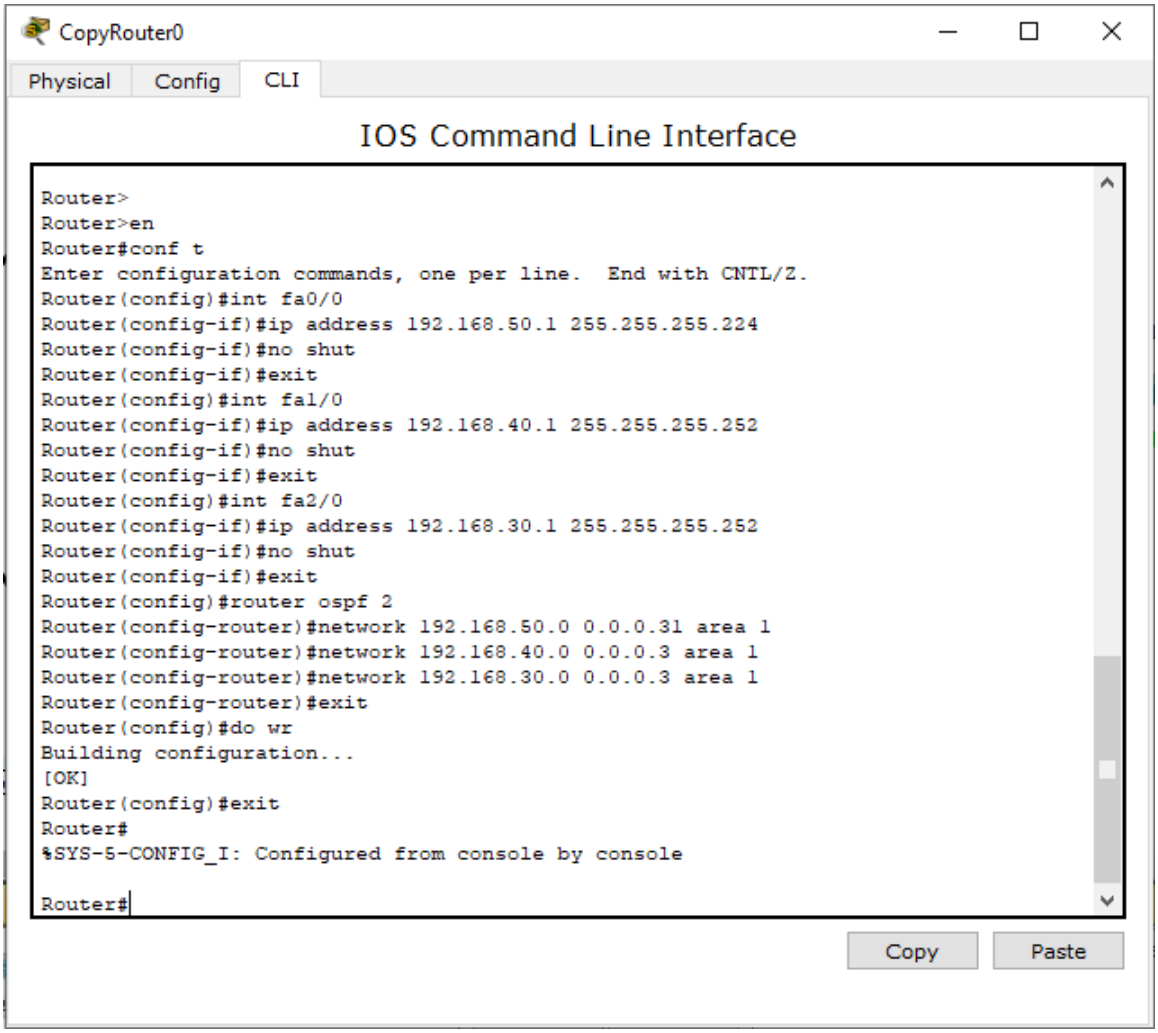

Figure 20: OSPF router 2 configuration

The following figure 21 shows OSPF router 3 configuration

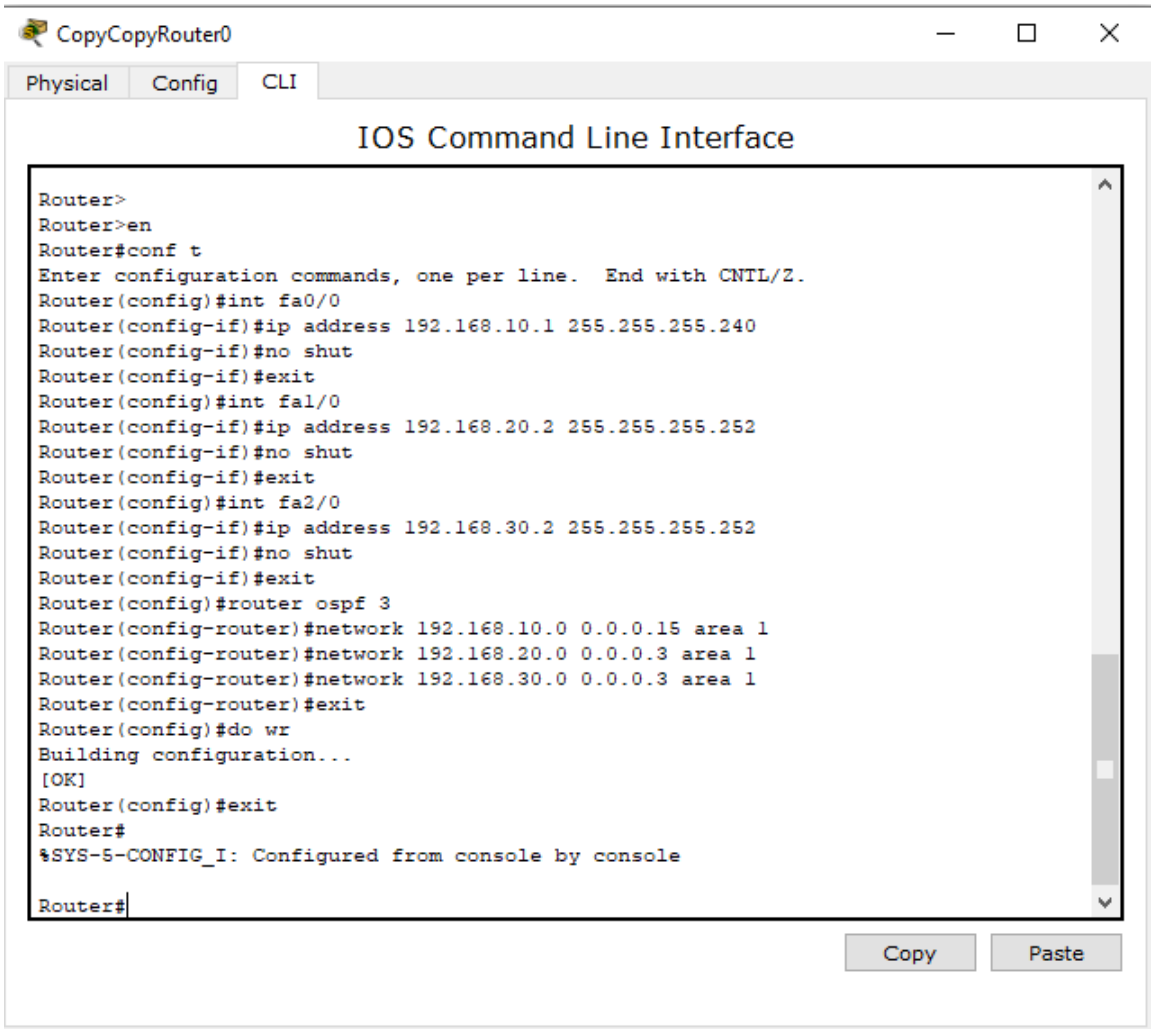

Figure 21: OSPF router 3 configuration

3.12 VLAN

The following figure 22 shows VLAN

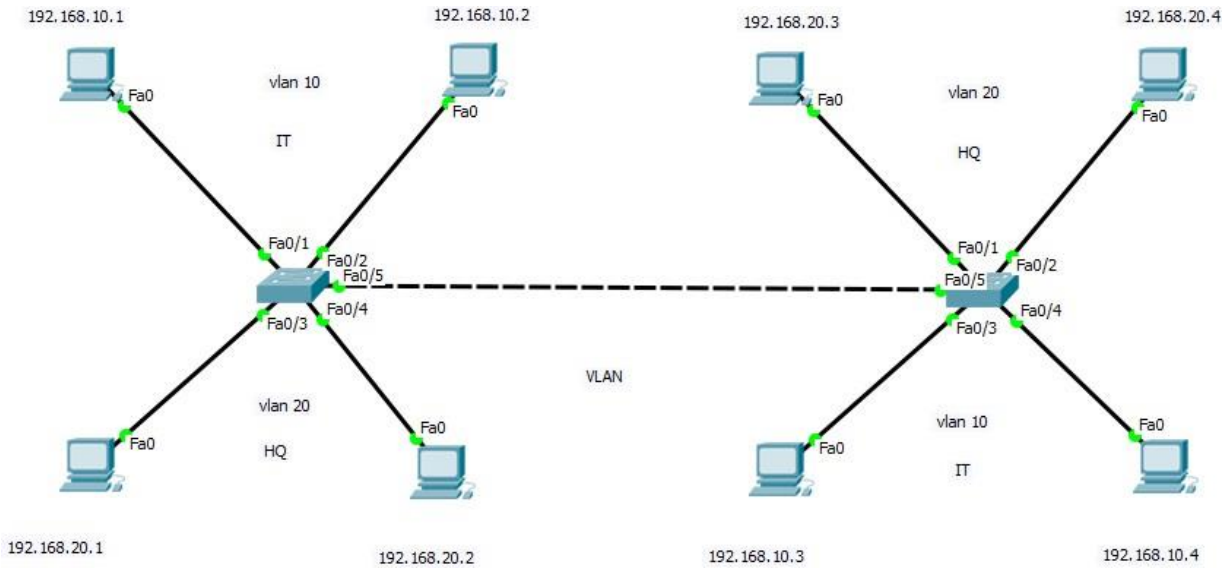

Figure 22: VLAN

The following figure 23 shows VLAN (switch 1 configuration)

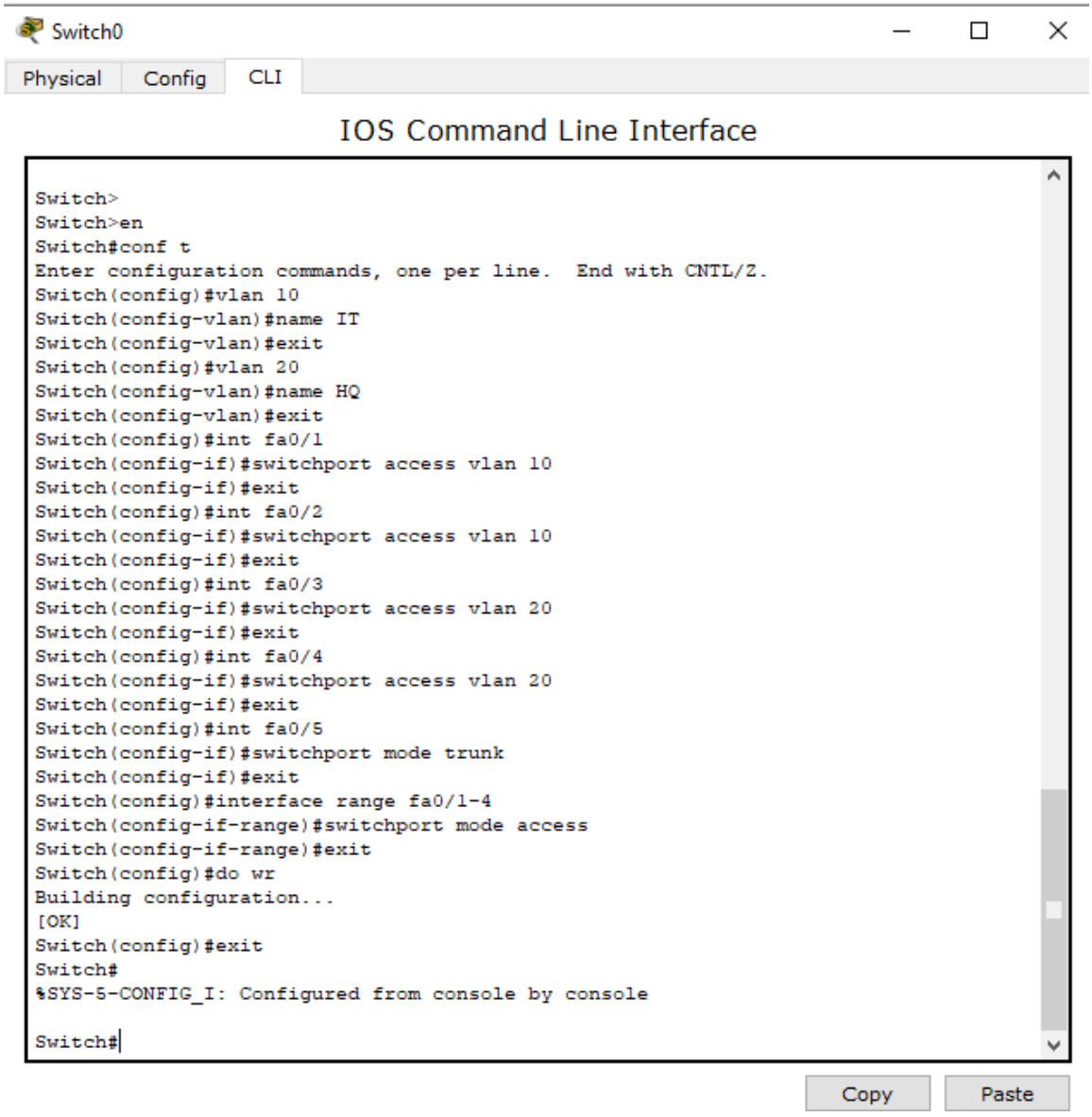

Figure 23: VLAN (switch 1 configuration)

The following figure 24 shows VLAN (switch 2 configuration)

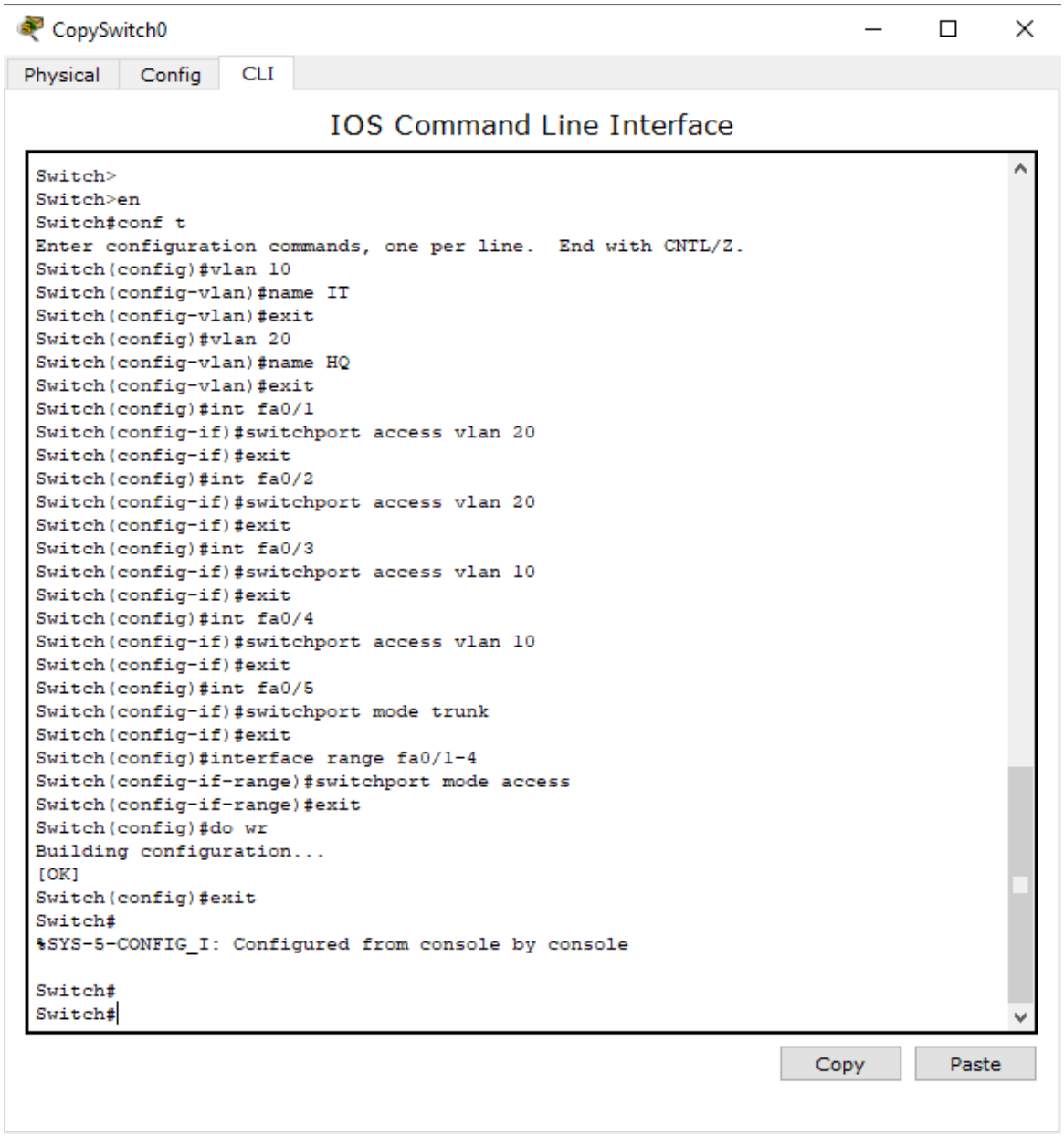

Figure 24: VLAN (switch 2 configuration)

CHAPTER 4

COMPETENCIES EARNED AND SMART PLAN

4.1 Competencies Earned

Currently, job market is teeming with opportunities to gain new skills. This internship has taught me essential learning about my degree-related topics and several skills needed for my future career. It helps me keep a calm mind when the work pressure piles on.
In this internship, I have found out how to introduce and configure routers and switches, configure RIP, OSPF, VLAN.

4.2 Smart Plan

Doing this internship application has increased my networking know how and I am becoming confident and hopeful that I could job in the field of networking. After learning the basic ideas of this course, it will help me to establish myself in the field of employment. The things I learned earlier will help me a lot when I learn more about networking in the future. The reason I chose networking is because it is in great demand all over the world including Bangladesh. In the future I will develop myself as a networking engineer.

CHAPTER 5

CONCLUSION AND FUTURE CAREER

5.1 Discussion and Conclusion

I have gained a good knowledge of networking companies, their working methods and networking through this internship program. This internship taught me how to get through eight, nine hours in an office. I worked daily for eight to nine hours and five to six days a week. Hence, I have built up work habits through this internship. The main challenges are to maintain self-inspiration and motivation to work. Understanding time is crucial for a professional career, which I tried to uphold in this training period. Working as a team with team members and solving various problems, always thinking well and gaining knowledge about how to prioritize work. By finishing this internship and in work as a group, my group-based work skills have improved and I have learned to respect the planning and advice of teammates.

5.2 Scope for Further Career

Nowadays, computer networking is a region that is too much demandable for work placement. There are different zones of IT regions. Computer networking is one of the valuable sector. In each office, bank, or any commercial enterprise organization need one or greater IT specialist. So that is some other effective information for a network engineer. A skillful employee is preferred in each place. A skillful career will take me to a higher place in life. I want to build up my career in that section.

APPENDICES

APPENDIX

Appendix A: Internship Reflection

It is easy for me to identify the internship as a learning experience. However, more work will be needed to identify the positive and negative aspects of the experience. Understanding our workplace preferences clarifies what I want more and what I want to avoid next time, and my chances of finding out what is next are significantly higher. One way to evaluate an internship is first to break it down into its key components. Then consider each element's value.

Appendix B: Company Details

Studio Mason Limited.

Address: Alpana Plaza, Shop No.-422, 3rd Floor, 51 Mirpur Road, Dhaka-1205, Bangladesh.

Operating hours: Saturday to Friday, from 10 AM to 8 PM (Day Off: Tuesday)

Corporate Office: House-11/B, Road-12 (New), 31 (Old), Dhanmondi, Dhaka-1209, Bangladesh.

Operating hours: Saturday to Thursday, from 9:30 AM to 6:30 PM

Phone: +8809666-779900

Email: info@studiomasonbd.com

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References:

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