



# Intra-Country Bank Networking System Using Cisco **Networking Project**

**A.K.M. Atiqur Rahman**  
**Student ID: 202002035**  
**Batch: 202**  
**Dept. of CSE**  
**Green University of Bangladesh**

# Table of Contents

## Contents

<b>Chapter 1: Introduction .....</b>	<b>4</b>
Introduction .....	4
Statement of the Problem .....	4
Scope of the Work .....	4
Design Goals .....	5
Outline   5	
 <b>Chapter 2: The Design Methods and Procedures .....</b>	<b>6</b>
Introduction .....	6
Mind Mapping for Intra-Country Bank Networking System .....	6
Methodology of Intra-Country Bank Networking System .....	6
Architectual Design of Intra-Country Bank Networking System .....	8
Working Procedure of the Project .....	9
Summary10	
 <b>Chapter 3: Configuration of Different Devices .....</b>	<b>11</b>
Introduction .....	11
Mind Mapping for all staff's Mail ID with Password .....	11
Configuration of a PC .....	12
Mail Configuration .....	13
DNS Server Configuration .....	13
Routing Configuration .....	14
Static Router Configuration .....	14
Dynamically Router Configuration .....	14
IOT Devices Configuration .....	15
Air Condition Configuration .....	15
Siren Configuration .....	17
WebCam Configuration .....	19
IOT SystemConfiguration .....	20
IOT System(Server) Configuration .....	20
IOT System(HomeGateway) Configuration .....	22
Summary23	
 <b>Chapter 4: Performance Evaluation .....</b>	<b>24</b>
Introduction .....	24
Intra-Division Mail Transfer Checking .....	24
Intra-Branch under a Division Mail Transfer Checking .....	24
Inter-Branch under a Division Mail Transfer Checking .....	24
Division wise Head Office Capability Checking .....	25
Security Analysis .....	26
Mail Transferring Security System .....	26
IOT Devices Security System .....	26

**Chapter 5: Conclusion .....28**  
Introduction.....28  
Concluding Remarks .....28  
Practical Implications .....28  
Future Plan of the Work.....28  
Summary of the Project .....28

**References .....29**

# Chapter 1: Introduction

## 1.1-Introduction

The “Intra-Country Bank Networking System” is a communication-based project where implemented routing, smtp and IOT knowledge together. By implementing the mixture knowledge of smtp, routing and IOT, here controlled a banking network and also maintained security properly. Actually, this project has been developed in Cisco Packet Tracer. We all know that, Cisco Packet Tracer is a most popular software for Networking sector and Network Devices, End Devices, Components like-MCU Board, SBC Board, Thing, Different Types of Connecting wire like- Console, Copper Straight Through, Copper Cross-Over, Fiber, Phone, Coaxial, Serial DCE, Serial DTE, Octal, IOT Custom Cable, USB, Routers, Switches, Hubs, Different Types of Wireless Devices like- Meraki, Home Router, Home Gateay, Cell-Tower, Central-Office Server(CO Server), Cluster all are here. So, it was easy for us to develop this project by online meeting. To create an innovative project, we have planned this mixture knowledge implementation. Smtip, Routing with IOT, this 3 different knowledge implemented in a one project that’s why we have successfully controlled the banking network easily with security confirmation. The most interesting is that- we named Bank “T & A Bank Limited”, here- T indicates Tech and A indicates Atiqur (which is the nickname). In collaboration of us, we have successfully completed this project which performs very well and we think that, this type of Banking Network-based project is very much needed in our real life to maintain our bank and to save our national economy.

## 1.2-Statement of the Project:

The project title is “Intra-Country Bank Networking System”. This project is designed by maintained security. As it is a banking communication-based project so, there branches are connected with each other and finally connected with the Central Bank but they are sharing their information by maintain a protocol for security purposes. As here we have implemented IOT (Internet of Things) knowledge so all branches are getting some extra benefits, which helps to maintain privacy.

## 1.3-Scope of the Work:

This “Intra-Country Bank Networking System” project only just launched. It’s a demandable project nowadays and also an error free project. The opportunities which we already developed to communicate with different branches and the connection with the Central Bank by maintaining shortest path is very much helpful to control banking network with privacy. But we have already discussed with another team member to add more IOT devices for better controlling power. Like- we just used siren and connected it with door for

security purposes but we have enough option to add lamp and connect with them to ensure high security.

#### **1.4-Design Goals:**

We have already discussed in this Chapter (Chapter-1, part-3:1.3-Scope of the Work section) that, this project is error free and also a demandable project in this recent situation to control banking network with security but to create it more effective and more popular to our clients, it is very much important to develop this project and create an addition of more IOT devices for high security. We have also planned to increase some branches and create connection with outside of our country because when we have an opportunity to transaction remittance our country will be more benefitted in the economy section.

#### **1.5-Outline:**

This project is developed for banking network purpose. Nowadays, in economic sector, Bangladesh is developing. So, to save our economy, we should create more bank, more branches, create collaboration with different branches for fast transaction and should maintain some protocols for security purposes. To maintain good communication with security, this project knowledge is needed and we have to update networking system as public demand and situation bases. We should balance all sides as we can able to gain our security and make collaboration with different bank and can transfer money safely. This project is developed by balancing all sides and will be updated as current situation.

# **Chapter 2: The Design Methods and Procedures**

## **2.1-Introduction:**

In the previous Chapter (Chapter-1), we have discussed about the Project statement and the future scope of our project. We also discussed about the Design goals and at the last, we have gotten a short brief about our project. In this Chapter-2, we will discuss about the design methods, the architectural design which we have applied in this project and the working procedures-how this project works. We will discuss and describe the methodology and the map of this project that, how we pre-planned our project and how we implemented this.

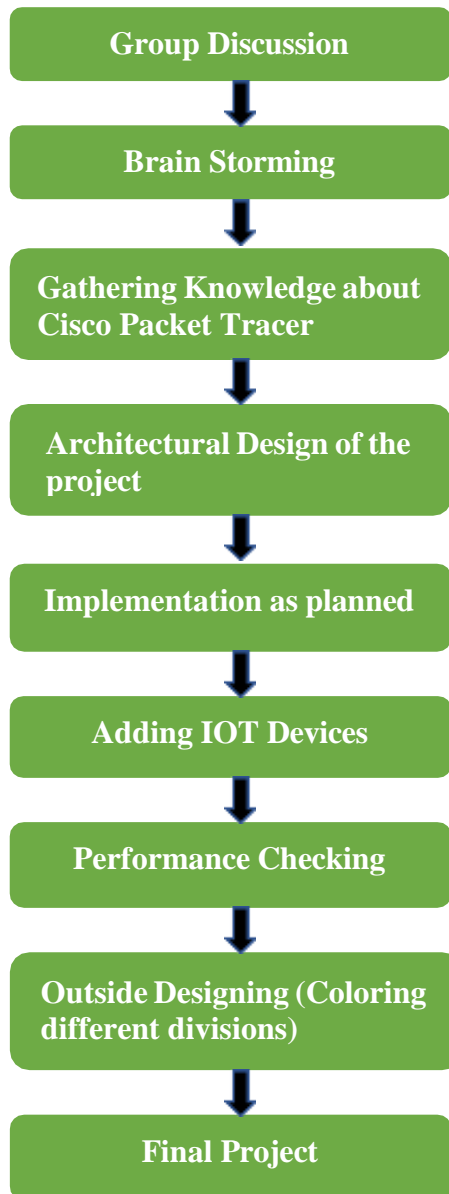
## **2.2-Mind Mapping for Intra-Country Bank Networking System:**

To implement this “Intra-Country Bank Networking System”, at first Mind Mapping is a must. Without a proper pre-planning, a project can’t be implemented perfectly. That’s why we (Team Members of Group) arranged an Online Meeting to discuss what will be our project, what will be the titled of our project, how we can draw the architectural design of our planned project, how we can implement perfectly this project and what kind of difficulties may arise and how we can resolve these and perfectly complete this project.

## **2.3-Methodology of Intra-Country Bank Networking System:**

After Online Meeting, we mind mapped about the project and have noted the methodology of our project. The Methodology of “Intra-Country Bank Networking System” can be described as a sequence because it’s a series procedure and it also implemented by satisfying some steps. If we

show the Methodology sequence by a flow-chart, we can realize the procedure. For a clear conception, our methodology is designed by a flow-chart which is given below:



**Figure-1:Flow chart for Methodology of Intra-Country Bank Networking System**



## 2.4-Architectural Design of Intra-Country Bank Networking System:

After Mind mapping, we have drawn an architectural design of our planned project which is given below for a clear conception about our project.

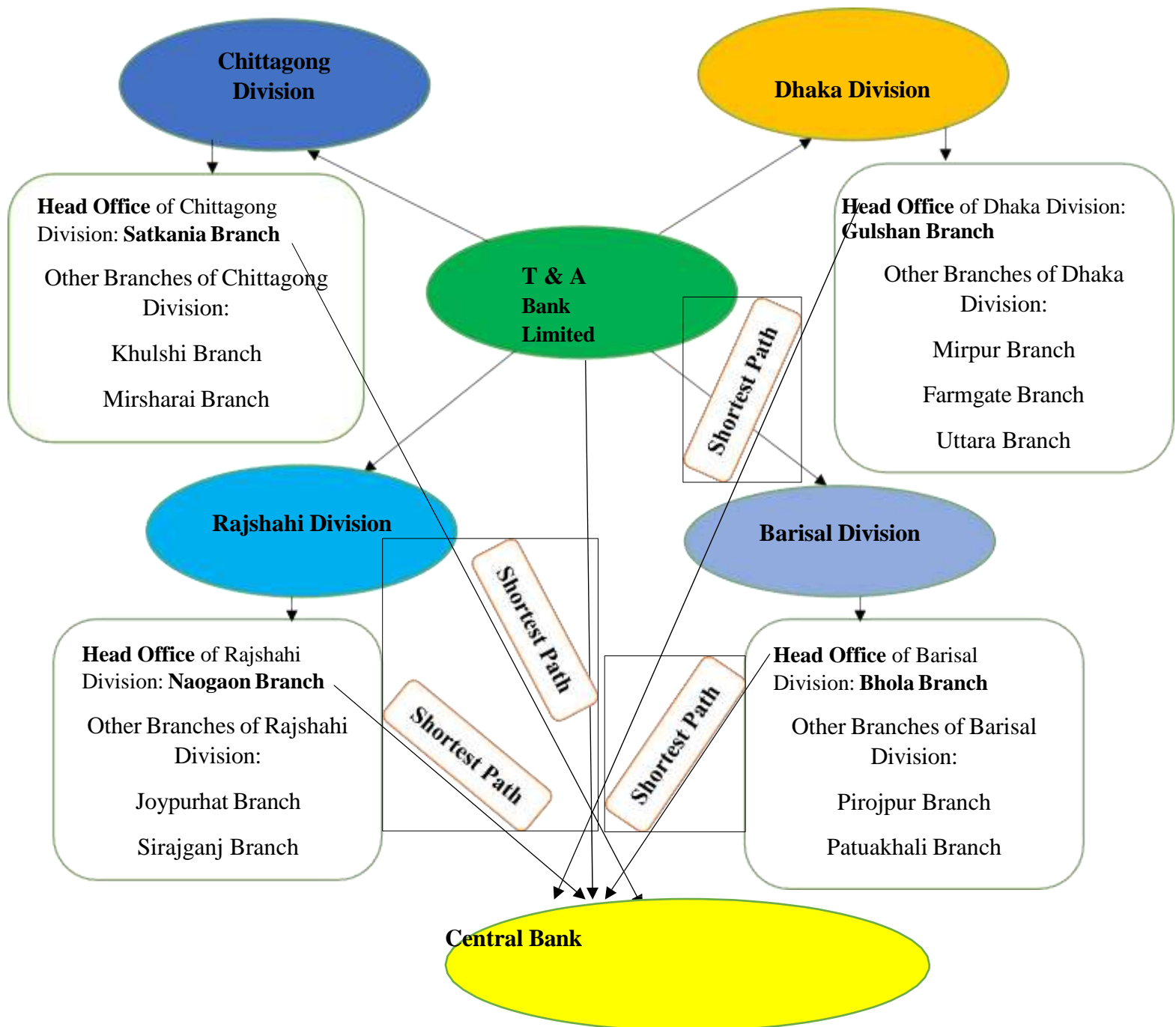


Figure-2: Architectural Design of Intra-Country Bank Networking System

## 2.5-Working Procedure of the Project:

In this project, our main target was to control a bank network with proper security. For this, at first, we have made a bank named “T & A Bank Limited” then create its branches based on the division. As it’s an Inter-Country Bank that’s why we have focused branches based on divisions of our country. After that, we have selected Head office for each Division and make connection with area basis branches with the Divisional Head Office. We have created this network such as- Inter- Division Branches are connected with each other but they can’t share their information, this privacy is for security purposes. All branches of a division also connected with their divisional head office and they can share their all information with the divisional head office (it’s designed by static routing knowledge) and all Divisional Head offices are connected with the Central Bank by maintaining shortest path (this designed by dynamic routing knowledge for ensure shortest path).

The working process is described by a diagram below:

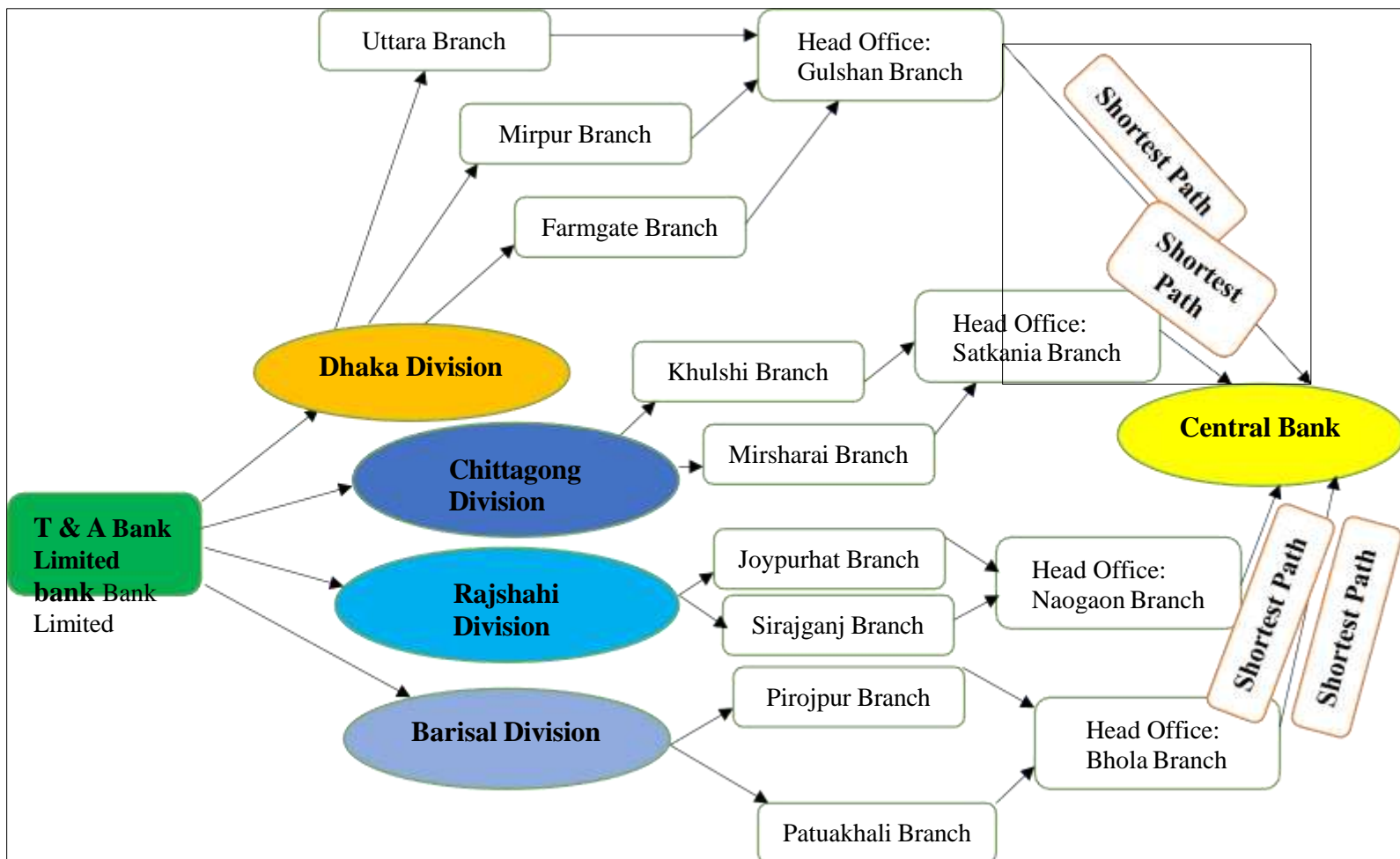


Figure-3: Working Procedure of Inter-Country Bank Networking System

## **2.6-Summary:**

In this Chapter, we have described what's the Mind Mapping of "Intra-Country Bank Networking System", which knowledge we have used here to create it and the Methodology of this project that, how we design our total work and implemented the full project. This chapter is the heart of this Project Report. If anyone readout this chapter and try to realize our Methodology, anyone can understand the main theme and be able to gain a clear conception about this project that, how to design this networking system using routing knowledge and how to maintain security and how to use the shortest path by using dynamic routing.

# Chapter 3: Configuration of Different Devices

## 3.1-Introduction:

Our project is totally networking based. In this chapter, we will configure our whole network.

## 3.2-Mind Mapping for all staff's Mail ID with Password:

To configure the full networking system, at first, we have rough that- How much branch will be added in different divisions and which will be the divisional head office and how much PC will be needed for the full network and what will be the name of our staffs of different branches and what will be their Email ID & Password.

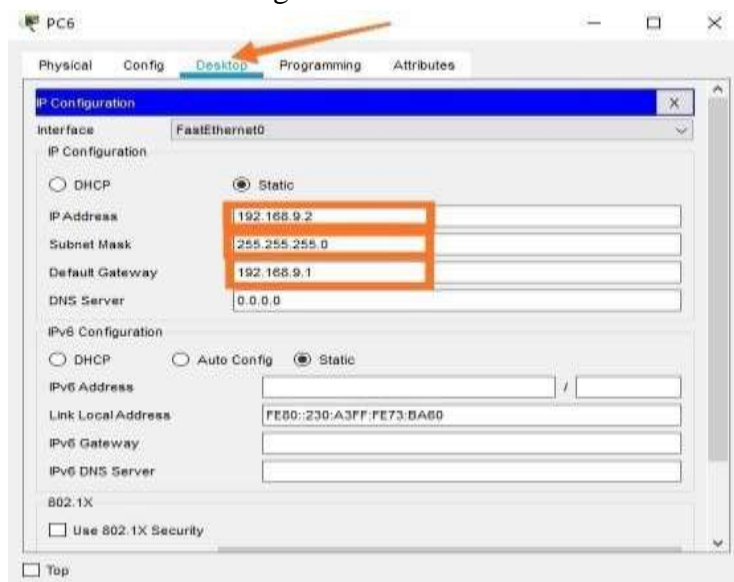
That plan is added here for a mind map of our networking system.

F & S Bank Limited					
Division Name	Branch Name	Staff No.	Staff Name	Email ID	Password
Dhaka Division	Gulshan Branch (Head office of Dhaka Division)	01.	Mamun	mamun@gb.db.fsbl.com.bd	mgbdb
		02.	Rajib	rajib@gb.db.fsbl.com.bd	rgbdb
		03.	Sadia	sadia@gb.db.fsbl.com.bd	sgbdb
	Mirpur Branch	04.	Sumon	sumon@mb.db.fsbl.com.bd	smbdb
		05.	Sanjana	sanjana@mb.db.fsbl.com.bd	sambdb
		06.	Rupa	rupa@mb.db.fsbl.com.bd	rmbdb
	Farmgate Branch	07.	Sabbir	sabbir@fb.db.fsbl.com.bd	sfbdb
		08.	Anika	anika@fb.db.fsbl.com.bd	afbdb
		09.	Rasel	rasel@fb.db.fsbl.com.bd	rfbdb
	Uttara Branch	10.	Jannat	jannat@ub.db.fsbl.com.bd	jubdb
		11.	Esha	esha@ub.db.fsbl.com.bd	eubdb
		12.	Nusrat	nusrat@ub.db.fsbl.com.bd	nubdb
Chittagong Division	Satkania Branch(Head Office)	13.	Torikul	torikul@sb.cb.fsbl.com.bd	tsbcb
		14.	Shamim	shamim@sb.cb.fsbl.com.bd	ssbcb
		15.	Rifat	rifat@sb.cb.fsbl.com.bd	rsbcb
	Khulshi Branch	16.	Ratri	ratri@kb.cb.fsbl.com.bd	rkbc
		17.	Sajib	sajib@kb.cb.fsbl.com.bd	skbc
		18.	Anik	anik@kb.cb.fsbl.com.bd	akbc
	Mirsharai Branch	19.	Arefin	arefin@mb.cb.fsbl.com.bd	ambcb
		20.	Sakib	sakib@mb.cb.fsbl.com.bd	smbcb
		21.	Asif	asif@mb.cb.fsbl.com.bd	asmbcb

Rajshahi Division	Naogaon Branch(Head Office)	22.	Asha	asha@nb.rb.fsbl.com.bd	anbrb
		23.	Shihav	shihav@nb.rb.fsbl.com.bd	snbrb
		24.	Saiful	saiful@nb.rb.fsbl.com.bd	sanbrb
	Joypurhat Branch	25.	Nila	nila@jb.rb.fsbl.com.bd	njbrb
		26.	Nadia	nadia@jb.rb.fsbl.com.bd	najbrb
		27.	Farzana	farzana@jb.rb.fsbl.com.bd	fjbrb
	Sirajganj Branch	28.	Lamia	lamia@sb.rb.fsbl.com.bd	lsbrb
		29.	Rabbi	rabbi@sb.rb.fsbl.com.bd	rsbrb
		30.	Tamanna	tamanna@sb.rb.fsbl.com.bd	tsbrb
Barisal Division	Bhola Branch(Head Office)	31.	Kaniz	kaniz@bb.bb.fsbl.com.bd	kbbbb
		32.	Israt	israt@bb.bb.fsbl.com.bd	ibbbb
		33.	Nishat	nishat@bb.bb.fsbl.com.bd	nbbbb
	Pirojpur Branch	34.	Faruk	faruk@pb.bb.fsbl.com.bd	fpbbb
		35.	Shahriar	shahriar@pb.bb.fsbl.com.bd	spbbb
		36.	Sumaiya	sumaiya@pb.bb.fsbl.com.bd	supbbb
	Patuakhali Branch	37.	Soniya	soniya@pab.bb.fsbl.com.bd	spabbb
		38.	Sanjida	sanjida@pab.bb.fsbl.com.bd	sapabbb
		39.	Mehedi	mehedi@pab.bb.fsbl.com.bd	mpabbb
Central Bank					
Central Bank		40.	Kabir	kabir@bb.cb.gmail.com.bd	kbbcb
		41.	Azad	azad@bb.cb.gmail.com.bd	abbc
		42.	Sohidul	sohidul@bb.cb.gmail.com.bd	sbbcb

### 3.3-Configuration of a PC:

In this section, we will see how we configured our staff's PC.



**Figure-4: PC Configuration**

### 3.4-Mail Configuration:

In this section, we will see how we configured mail in our staffs PC.

faruk

Physical Config **Desktop** Programming Attributes

**Configure Mail** X

User Information

Your Name: [ ]

Email Address: [ ]@pb.bb.fsbl.com.bd

Server Information

Incoming Mail Server: 192.168.13.5

Outgoing Mail Server: 192.168.13.5

Logon Information

User Name: [ ]

Password: [ ]

Save Clear Reset

☐ Top

Figure-5: Mail Configuration in Staffs PC

### 3.5-DNS Server Configuration:

In this section, we will see how we configured DNS Server.

DnS 51

Physical Config **Services** Desktop Programming Attributes

**SERVICES**

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS**
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DNS Service ☒ On ☐ Off

Resource Records

Name: [ ] Type: A Record

Address: [ ]

Add Save Remove

No.	Name	Type	Detail
0	bb.bb.fsbl.com.bd	A Record	192.168.12.5
1	bb.cb.gmail.com.bd	A Record	192.168.20.13
2	pab.bb.fsbl.com.bd	A Record	192.168.14.5
3	pb.bb.fsbl.com.bd	A Record	192.168.13.5

DNS Cache

☐ Top

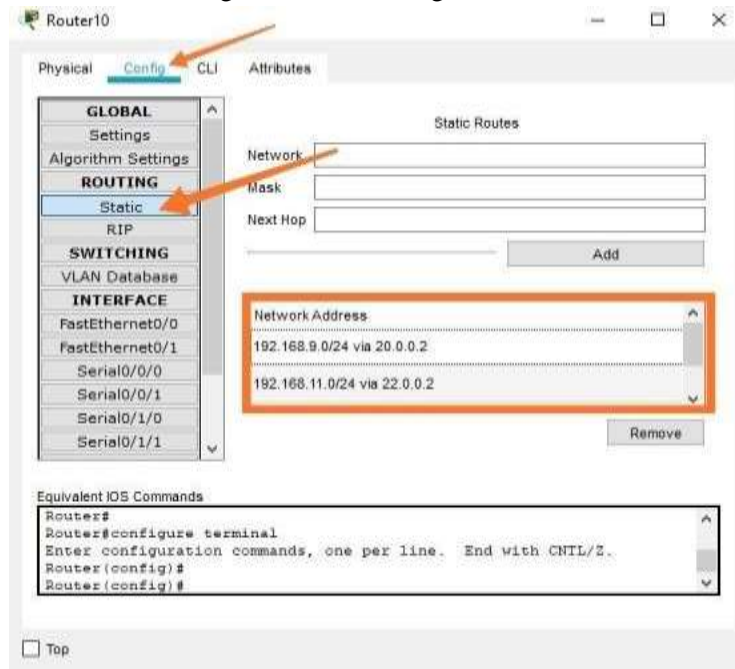
**Figure-6: DNS Server Configuration**

### 3.6-Router Configuration:

In this section (Chapter-3, part-6: 3.6) we will see router configuration system. In this Bank Network, we have configured Router in two system. One- Static Routing for connecting Branches with the Divisional Head Office and another system is- Dynamic Routing, for connecting Head Office with Central Bank by maintaining shortest path.

#### 3.6.1-Static Router Configuration:

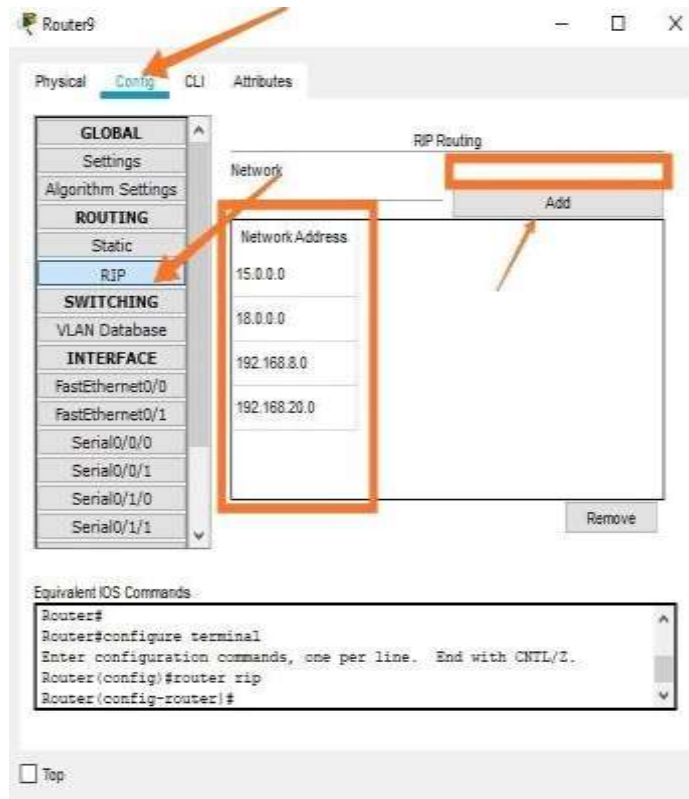
In this section, we will see how to configure Static Routing.



**Figure-7: Static Routing Configuration**

#### 3.6.2-Dynamically Router Configuration:

In this section, we will show how we configured router dynamically for shortest path from Divisional Head Office to Central Bank.



**Figure-8: Dynamic Routing Configuration**

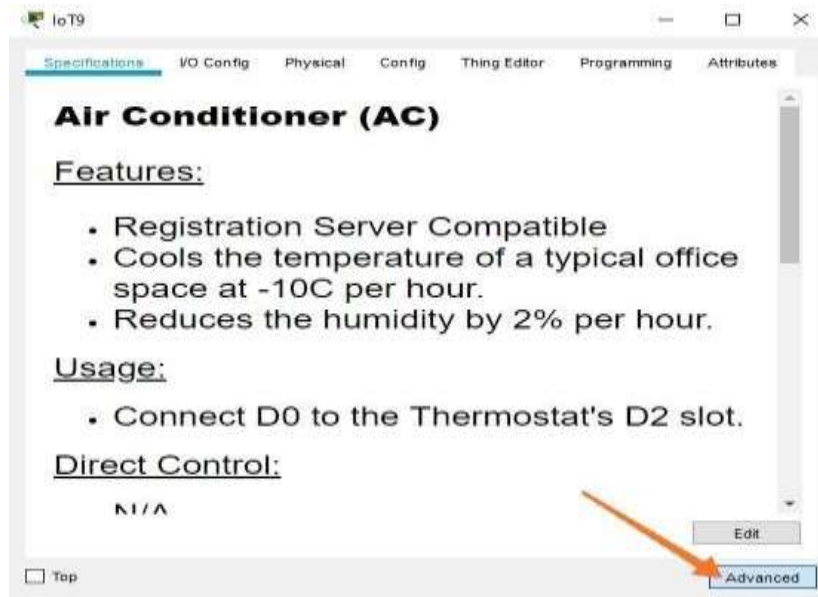
### 3.7-IOT Devices Configuration:

In this section, we will see how we configured IOT Devices. In 3.7.1, we will see the Air Condition Configuration after that, In 3.7.2, we will see the Door Configuration then 3.7.3, Siren Configuration and at last 3.7.4, WebCam Configuration.

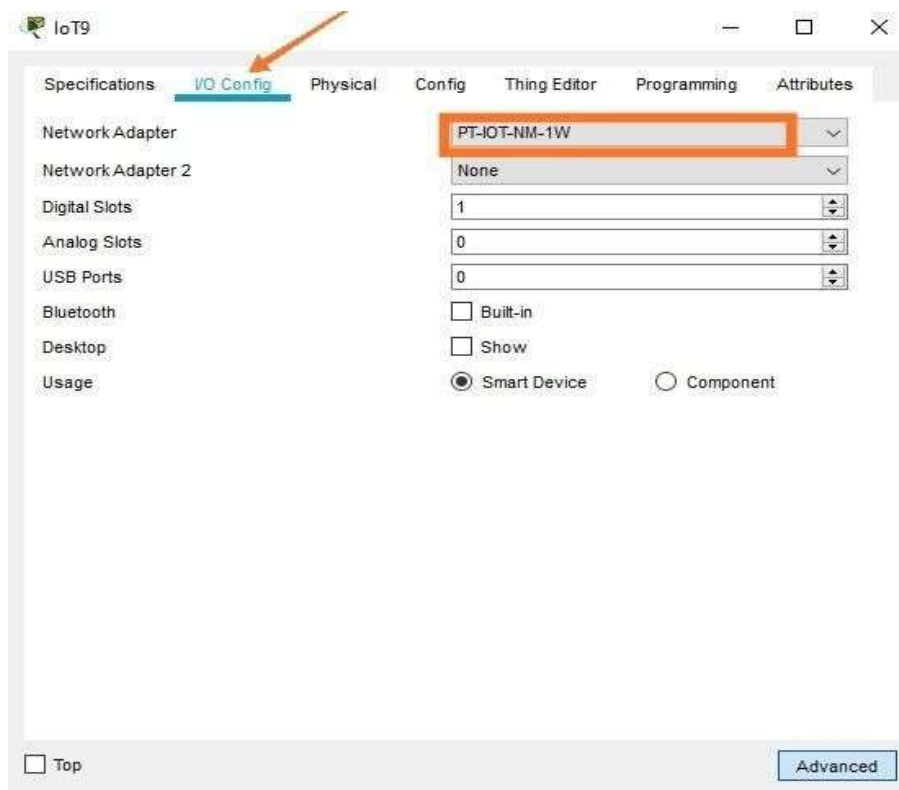
#### 3.7.1-Air Condition Configuration:

In this section, we will see the Air Condition Configuration system.

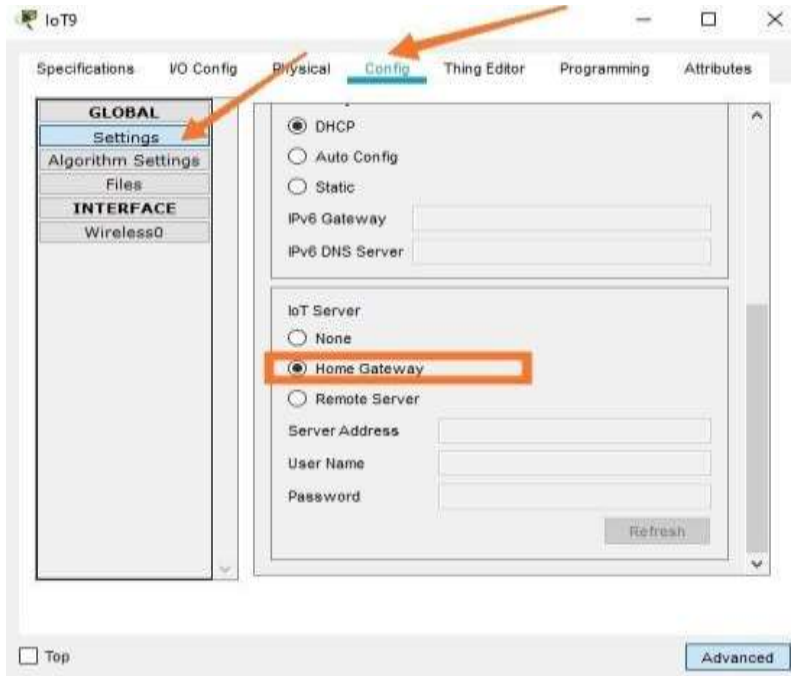




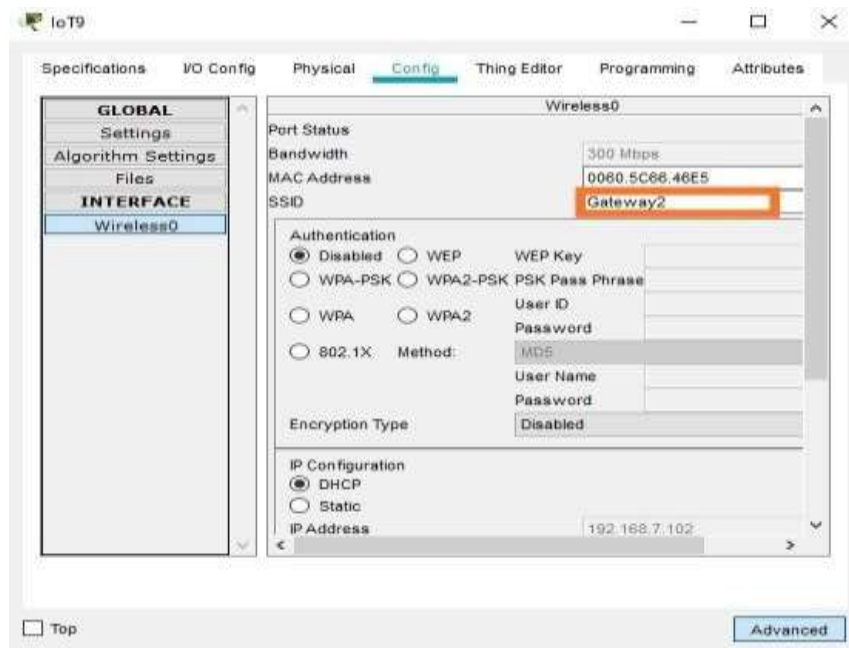
**Figure-9: Air Condition Configuration (1)**



**Figure-10: Air Condition Configuration (2)**



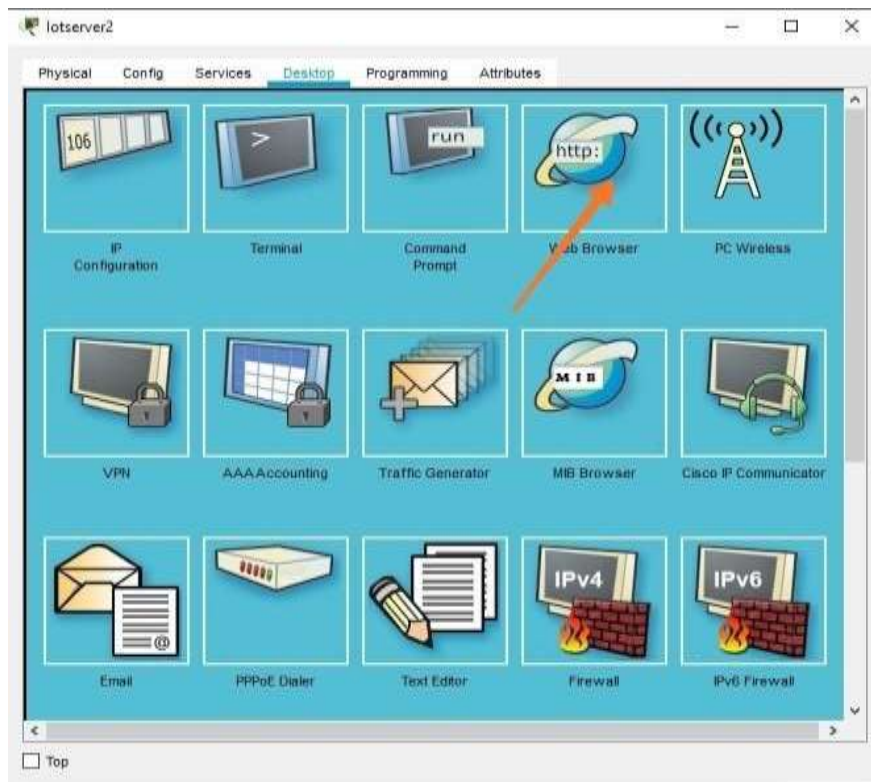
**Figure-11: Air Condition Configuration (3)**



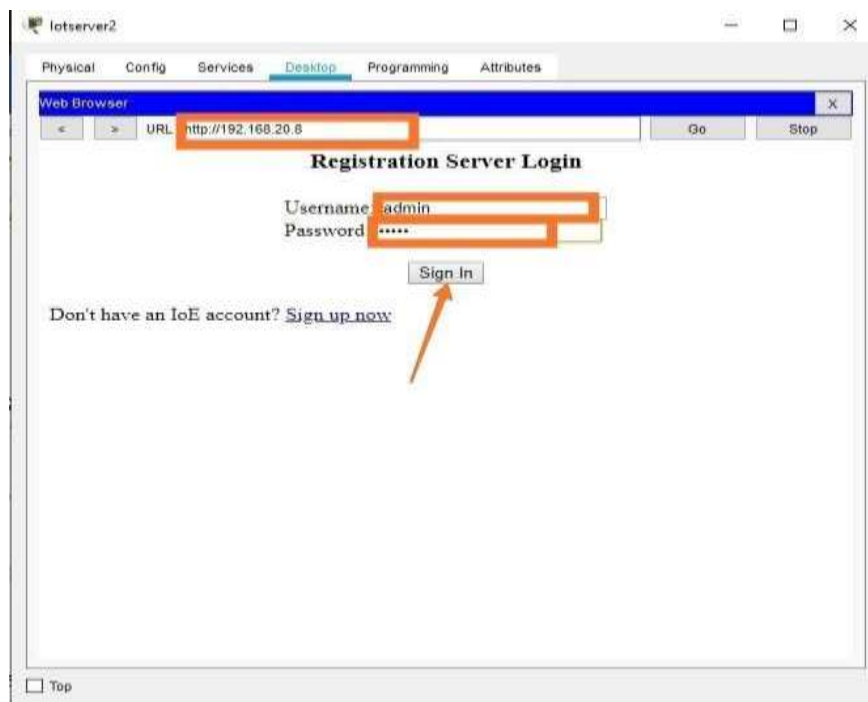
**Figure-12: Air Condition Configuration (4)**

### 3.7.2-Siren Configuration:

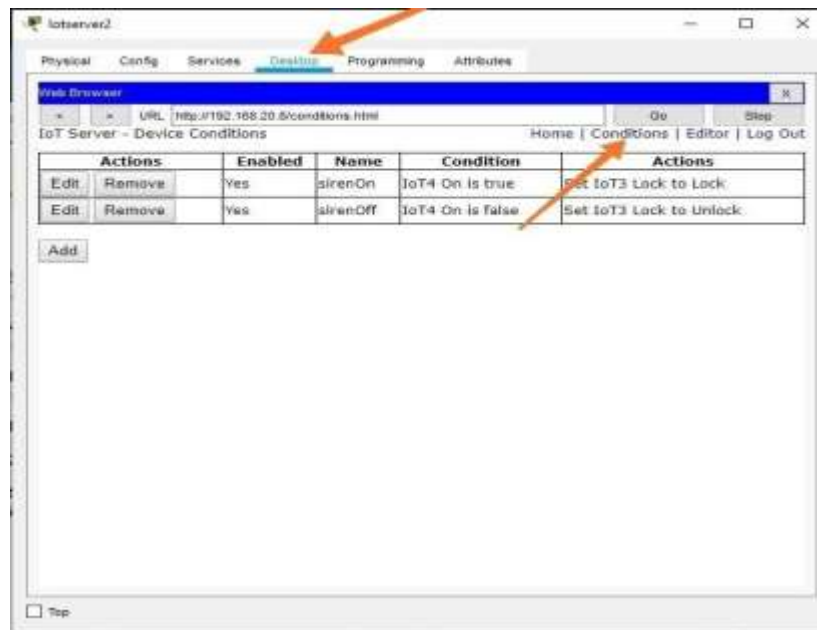
In this section, we will see how we configured the siren for security purposes.



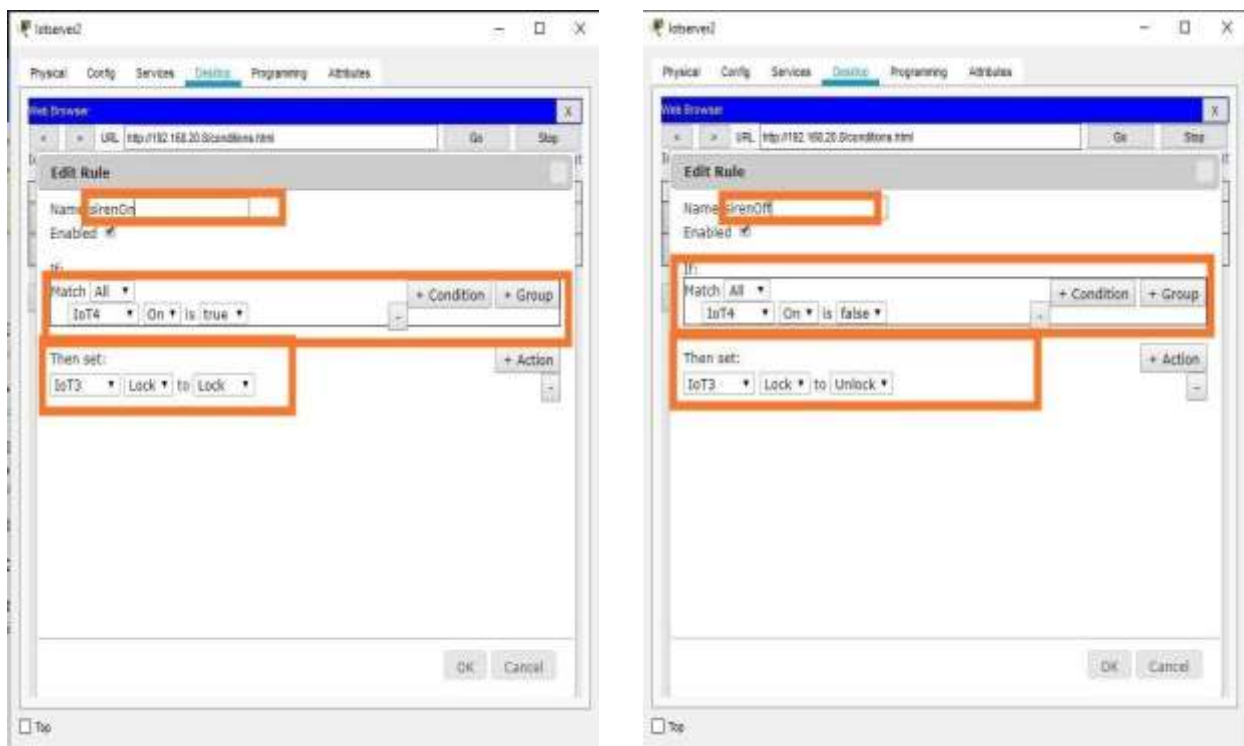
**Figure-13: Siren Configuration (1)**



**Figure-14: Siren Configuration (2)**



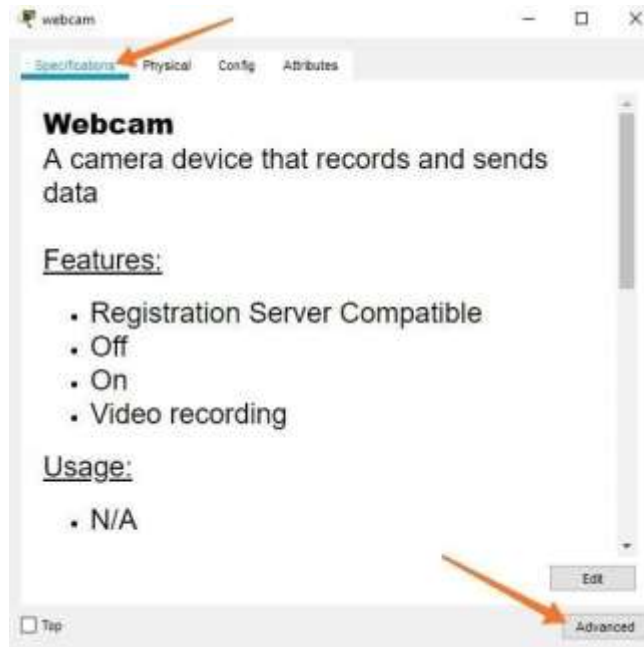
**Figure-15: Siren Configuration (3)**



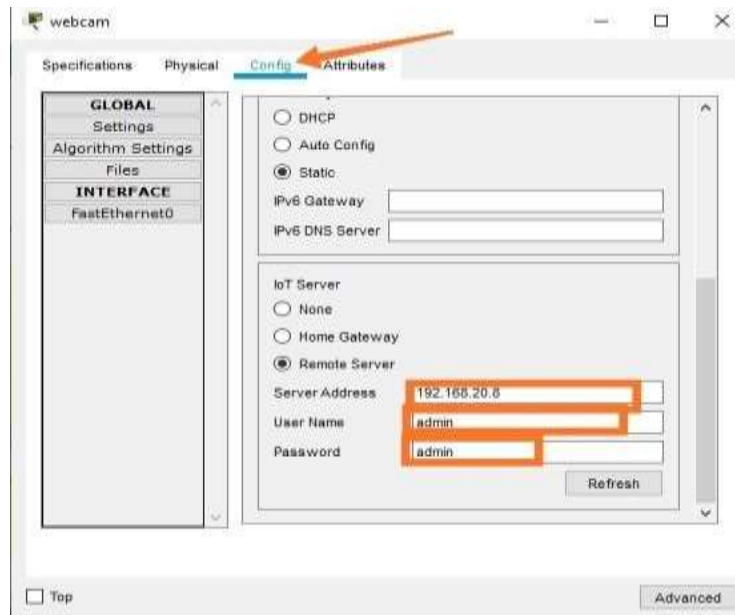
**Figure-16: Siren Configuration (Condition setting)**

### 3.7.3-WebCam Configuration:

In this section, we will see the WebCam Configuration system.



**Figure-17: WebCam Configuration (1)**



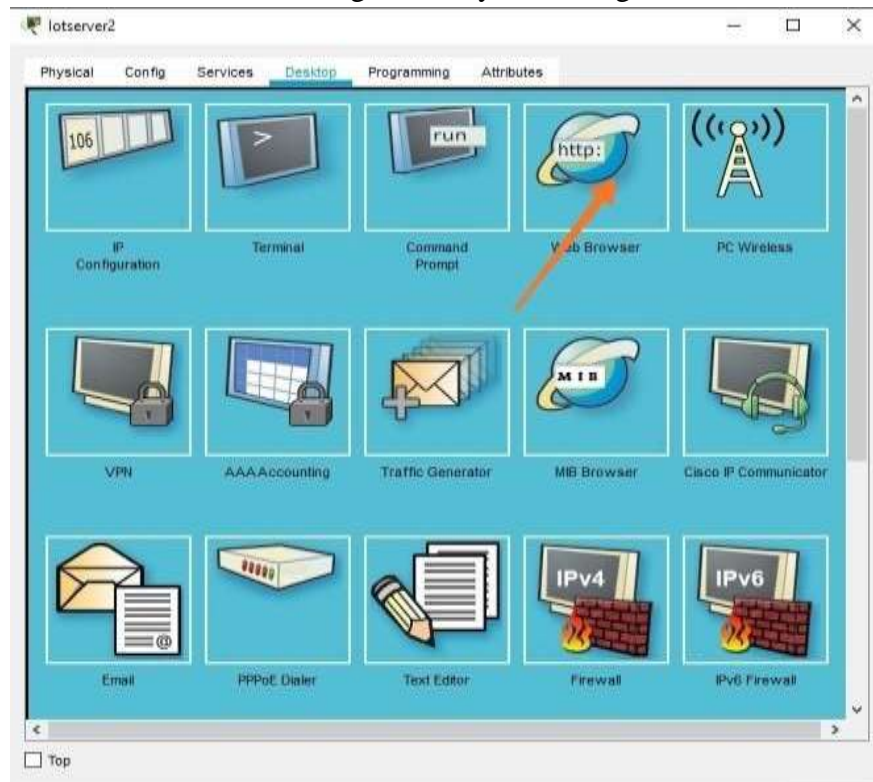
**Figure-18: WebCam Configuration (2)**

### **3.8-IOT System Configuration:**

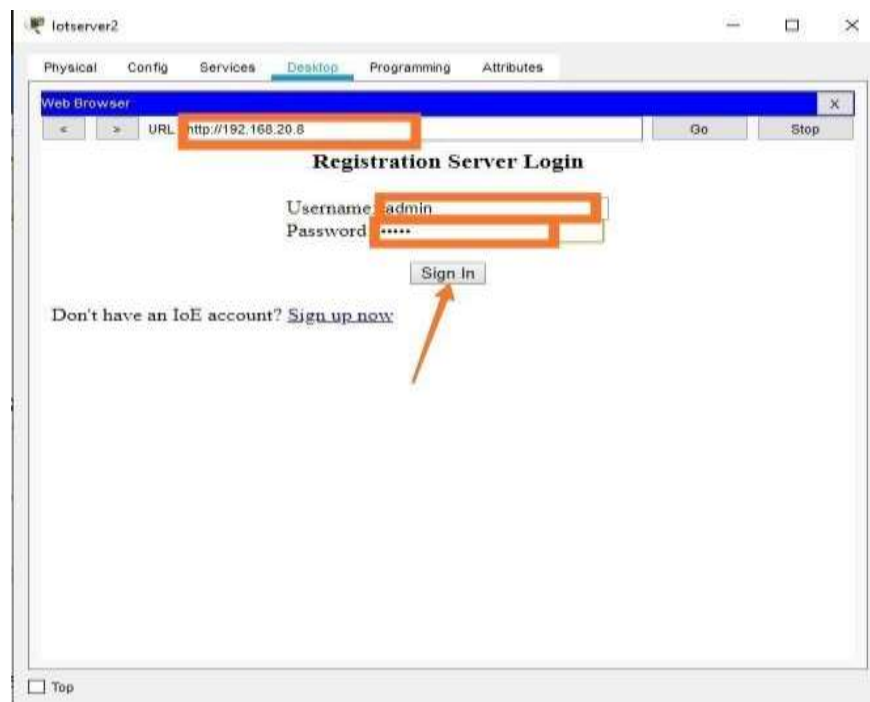
We have configured IOT system in 2 ways. Like- one configuration system was used server and another was used HomeGateway. In this section we will see these two-configuration system. In 3.8.1, we will see the IOT System configuration by server and in 3.8.2, we will see the IOT System configuration by HomeGateway.

#### **3.8.1-IOT System (Server) Configuration:**

In this section, we will see the IOT configuration system using Server.



**Figure-19: IOT Configuration (Server-1)**



**Figure-20: IOT Configuration (Server-2)**

### 3.8.2-IOT System (HomeGateway) Configuration:

In this section, we will see the IOT configuration system using HomeGateway.

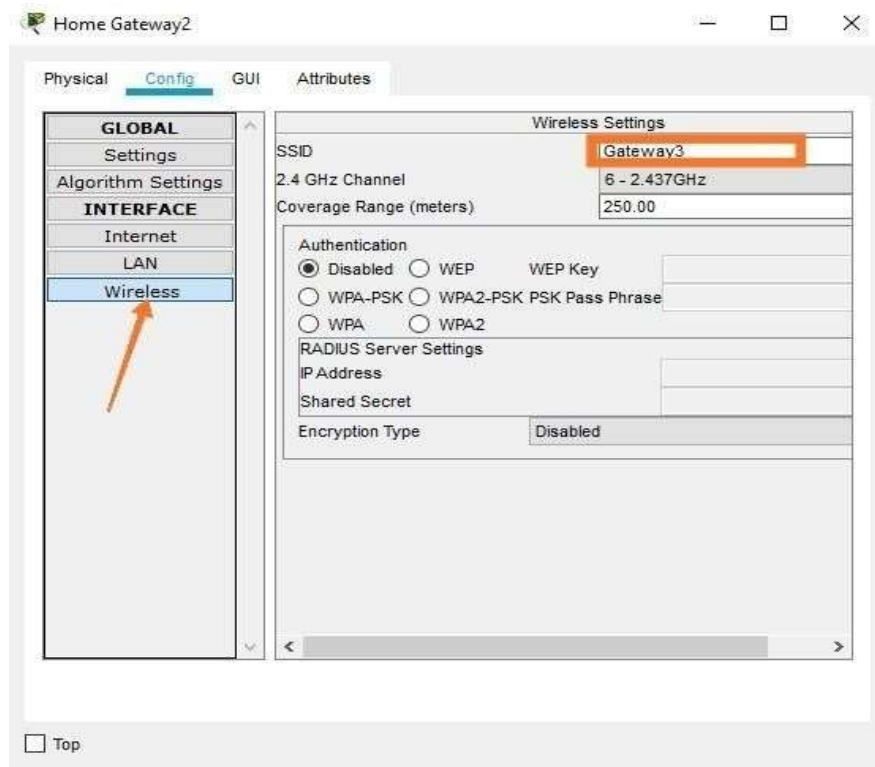


Figure-21: IOT System (Home Gateway Configuration-1)

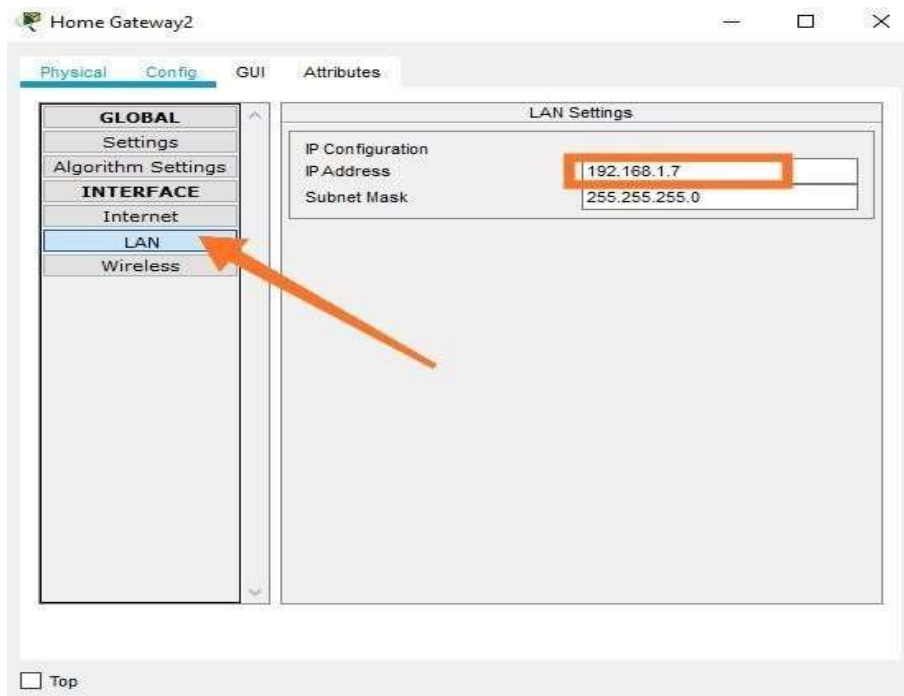


Figure-22: IOT System (Home Gateway Configuration-2)





**Figure-23: IOT System (Home Gateway Configuration-3)**

### **3.9-Summary:**

In this chapter (Chapter-3), we discussed different types of configuration system like- how to configured a PC, how to configured a Mail Server, configured a DNS Server, how to routing statically and dynamically, how to configured IOT devices like- Air Condition, Door, Siren etc.



# Chapter 4: Performance Evaluation

## 4.1-Introduction:

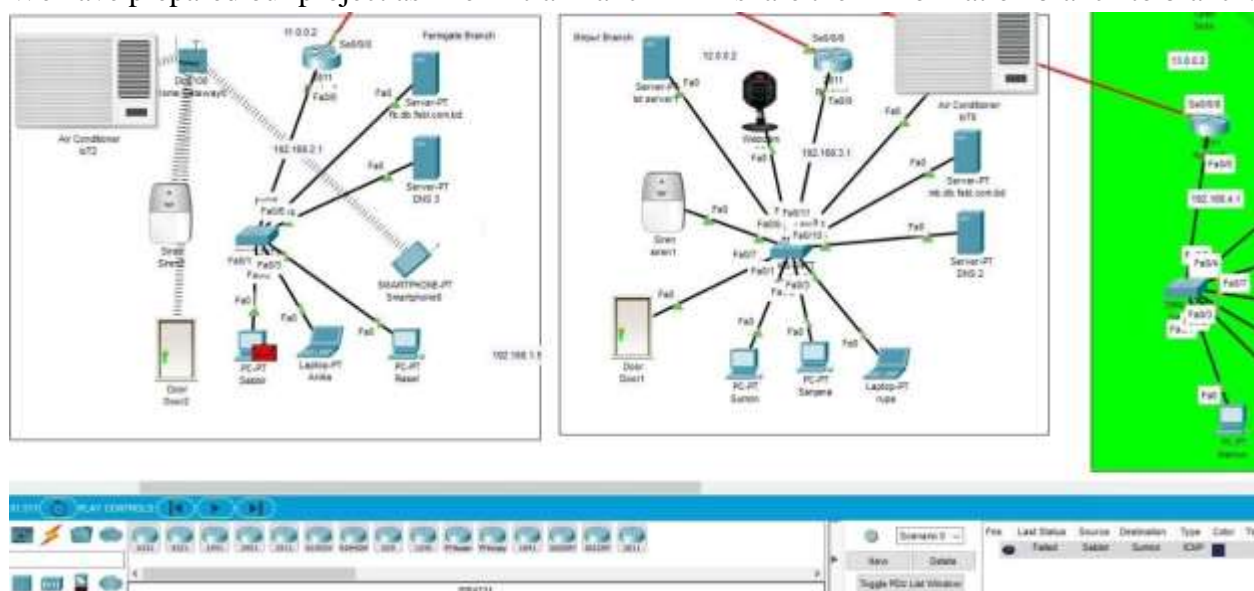
In this Chapter (Chapter-4) we will evaluate our project performance.

## 4.2-Intra-Division Mail Transfer Checking:

In this section, we will show the performance of Intra-Division Mail Transfer. Here we will send email and then where and how mail goes on and then we can decide that our project performance is excellent or not.

### 4.2.1-Intra-Branch under a Division Mail Transfer Checking:

We have prepared our project as like- Intra Branch can't share their information branch to branch.

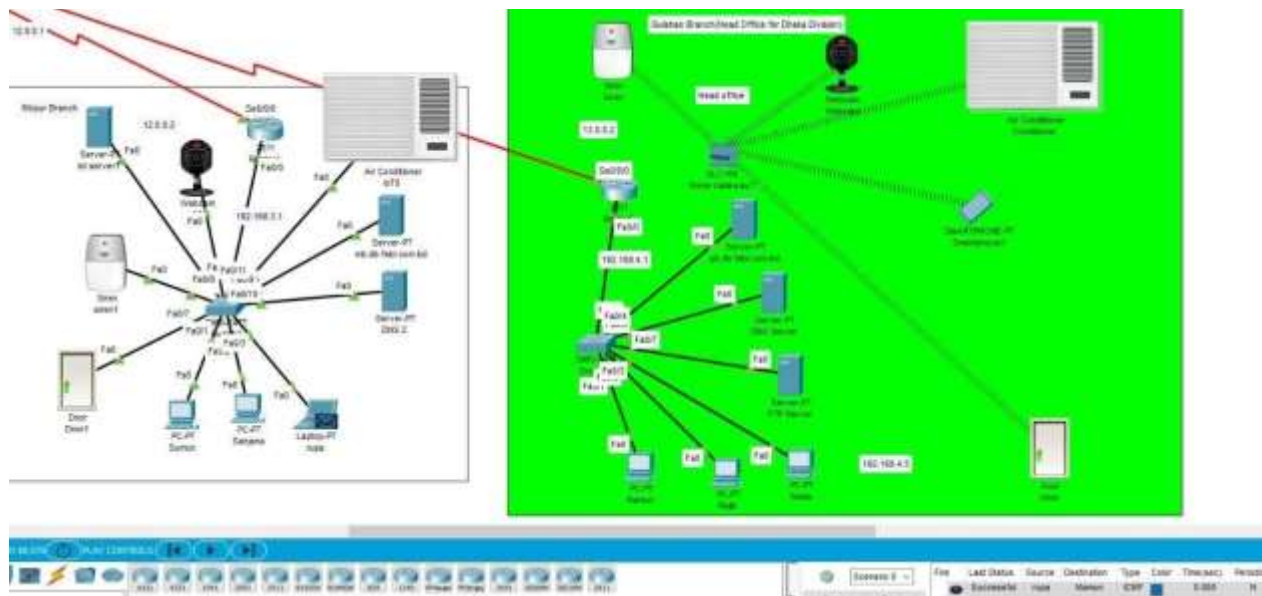


**Figure-24: Intra-Branch information sharing failed**

Here in figure-24, we can see that, information is not shared with branch to branch under a division so this sector is perfectly working.

### 4.2.2-Inter-Branch under a Division Mail Transfer Checking:

In this project, our plan was that, Inter-Branch under a division such like- Under a division under a branch, staffs will be able to share their information with their divisional head office. Now we are checking by mail transferring, The figure is given below:

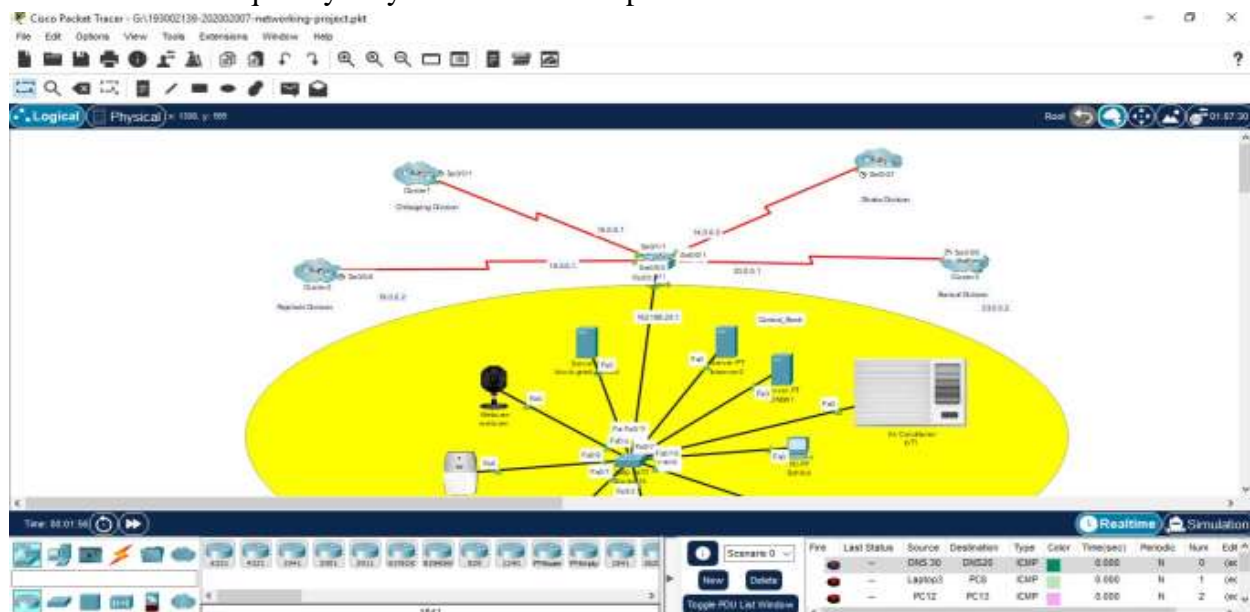


**Figure-25: Inter-Branch under a division mail transferred successfully**

In the figure-25, we can see that, PC under a branch can share information with their divisional head office so our pre-planned target is working perfectly.

#### **4.2.3-Division wise Head Office Capability Checking:**

In this project, our plan was to design such a networking which will be able to maintain security and the divisional office will be able to share their information with Central bank very fast and to share information quickly they will use shortest path.



**Figure-27: Information sharing from divisional head office to central bank successfully**

In the figure-27, we can see that, Dhaka divisional central office is sharing their information with Central Bank and the information shared with Central bank successfully and also maintained shortest path so our dynamic routing knowledge works here perfectly as we expected.

### 4.3-Security Analysis:

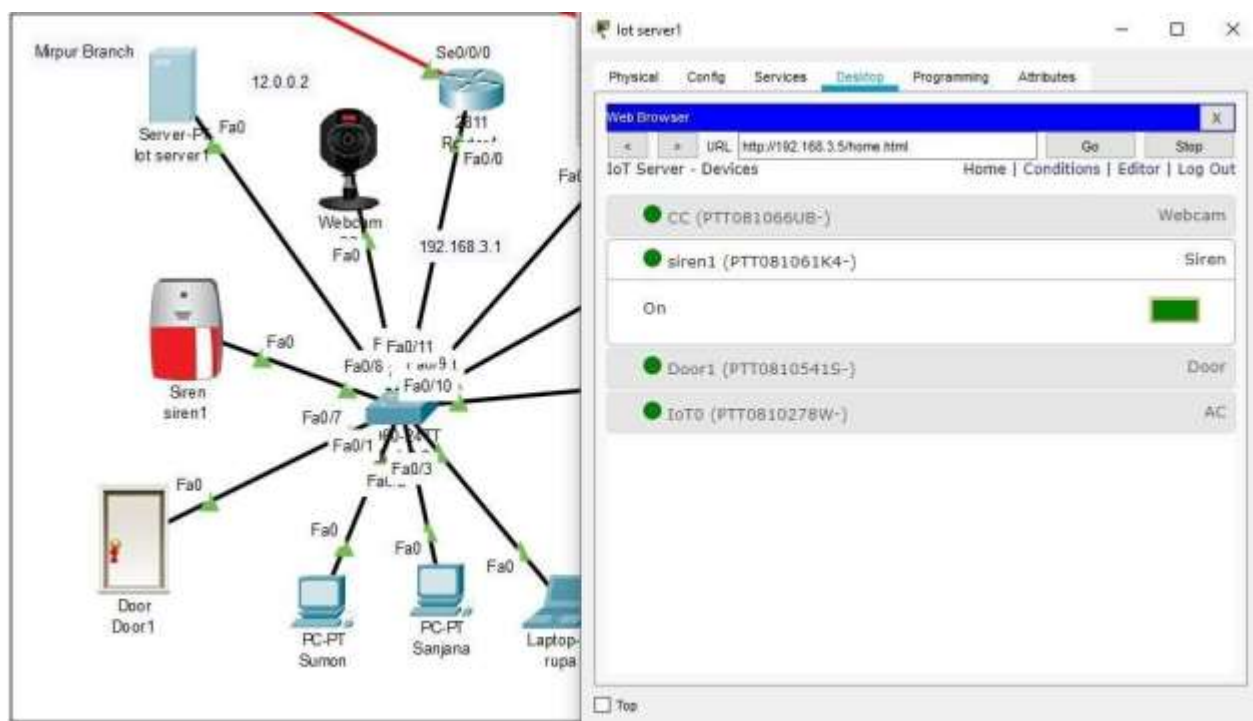
In this project, we have maintained security. Our target was to information will be transferred under a branch such like- In a branch they can't share their information. Branches will be able to share their information with their divisional head office only. Divisional head office will be able to share all branches information under that division with Central Bank. This security is maintained or not will be checked by transferring mail in 4.3.1 section and IOT devices helps us to maintain security easily that will be shown in 4.3.2 section.

#### 4.3.1-Mail Transferring Security System:

In this chapter 4, from 4.2.1 to 4.2.3 we have seen that, a staff under a branch in a same division but that aren't able to share information and a branch is also unable to share its information with others branch without head office approval so we can ensure that, our mail transferring system has secured our privacy.

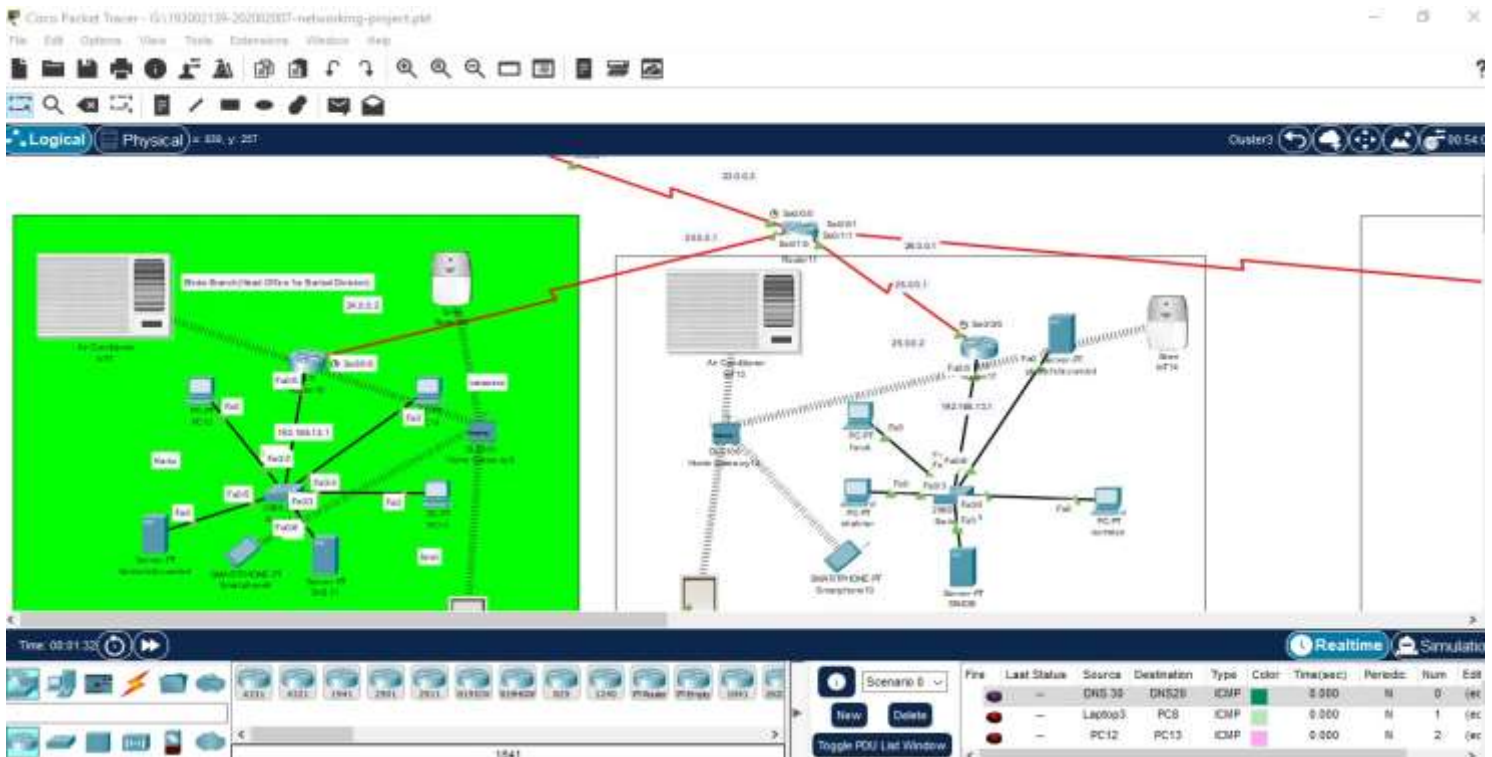
#### 4.3.2-IOT Devices Security System:

In this project, we have used IOT devices that's why our security has stronger like- we have connected door with siren so when banker's feel unsafe they play siren and door will be automatically locked as thief can't leave the place. This scene is represented in picture below:



**Figure-28: Siren is connect with door for security purposes**

In this Chapter (Chapter-4), we have evaluated our project performance and judge our project from different criteria. From the above evaluation it is clear to us that, our project is error free and working perfectly as we have planned and also maintained security as our expectation so we can say that, our project is okay.



# Chapter 5: Conclusion

## 5.1-Introduction:

This project is “Intra-Country Bank Networking System”. So, from the project title it is clear to everyone that, it’s a network-based project. Here we just not only created just communication but but also, we have maintained a strong security by two system, which have done by routing technique and by using IOT devices. Routing have maintained security by maintaining a protocol (information don’t share with anyone without divisional head office).

## 5.2-Concluding Remarks:

In this project, as we have completed our project without any error and In the Performance Evaluation section (Chapter-4), we have checked our security and our project performance and already seen that, our project is working perfectly. So, we can say that, our project is perfect.

## 5.3-Practical Implications:

In this project, we have seen that, mail transferring system is working perfectly. In the Intra-Branch, information doesn’t share for security purposes but if we notice, Inter-Branch networking here we can see that, information sharing system is perfectly working by sharing information with divisional head office. Here also an important thing is that, Inter-Branch communication is less important so there doesn’t maintain any condition but in Central Bank communication, Divisional Head office maintain shortest path for quick communication and to implement this technique we have used Dynamic Routing knowledge.

## 5.4-Future Plan of the Work:

Our this project perform Intra-Country networking but here is a lacking of transaction outside of our country so we have enough plan to increase our branches Inter-Country and we have planned to add some IOT devices like Cell Tower and Central Office Server. By adding Cell Tower and Central Office Server we will be more benefitted like- Central office will be acts like Police Station and if any of our branch face any kind of insecurity then Police Station will be informed and they will be able to take necessary actions to safe our Bank branch.

## 5.5-Summary of the Project:

Our project was about banking network-based project and in this project report in different sections we have discussed about the mind mapping, methodology, configuration system, security analyzed and also added our future plan about this project. Actually we have tried our best to develop a good project and to secured our banking system. In future we will develop our project and will try to develop it as our project will be more effective in our real life and the most important thing is that, by securing banking system we can also save our economy so it’s not a simple project it also one kind of research analysis about security system to develop our country.

# References

- [1] [https://www.youtube.com/watch?v=OL7TNx9RquE&ab\\_channel=ViralScience-ThehomeofCreativity](https://www.youtube.com/watch?v=OL7TNx9RquE&ab_channel=ViralScience-ThehomeofCreativity)
- [2] [https://www.youtube.com/watch?v=uJnveEz8sFI&ab\\_channel=RKiLAB](https://www.youtube.com/watch?v=uJnveEz8sFI&ab_channel=RKiLAB)
- [3] [https://www.youtube.com/watch?v=x3K-HfkgcoA&t=126s&ab\\_channel=AshikurRahman](https://www.youtube.com/watch?v=x3K-HfkgcoA&t=126s&ab_channel=AshikurRahman)
- [4] <https://www.upgrad.com/blog/cyber-security-project-ideas-topics/>
- [5] <https://elysiumpro.in/network-security-projects/>