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# DESIGN AND IMPLEMENTATION OF A CAMPUS/UNIVERSITY SYSTEM NETWORK DESIGN

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2025  
SUBASH SUBEDI

## Table of Contents

1.	Creating a network topology using Cisco Packet Tracer.....	3
2.	Hierarchical Network Design.....	3
3.	Connecting Networking devices with Correct cabling.....	3
4.	Creating VLANs and assigning ports VLAN numbers.....	4
5.	Configure Link Aggregation Control Protocol EtherChannel {LACP (802.3ad)}.....	9
6.	Subnetting and IP Addressing.....	13
7.	Configuring Inter-VLAN Routing (Router on a stick).....	14
8.	Configuring DHCP Server (Router as the DHCP Server).....	17
9.	Configuring RIPv2 as the routing protocol.....	19
10.	Configuring SSH for secure Remote access.....	20
11.	Configuring switchport security or Port-Security on the switches.....	23

# Design and Implementation of a Campus/University System Network Design (Project #4)

## Project #4 Case Study and Requirements

Albion University is a large university which has two campuses situated 20 miles apart. The university's students and staff are distributed in 4 faculties; these include the faculties of Health and Sciences; Business; Engineering/Computing and Art/Design. Each member of staff has a PC and students have access to PCs in the labs. Create a network topology with the main components to support the following:

- University location.

### Main Campus

- Building A: Administrative staff in the departments of management, HR and finance. The admin staff PCs are distributed in the building offices and it is expected that they will share some networking equipment (Hint: use of VLANs is expected here). The Faculty of Business is also situated in this building
- Building B: Faculty of Engineering and Computing and Faculty of Art and Design.
- Building C: Students' labs and IT department. The IT department hosts the University Web server and other servers - There is also an email server hosted externally on the cloud.

### Smaller campus:

- Faculty of Health and Sciences (staff and students' labs are situated on separate floors)
- Each department/faculty is expected to be on its own separate IP network.
- The switches should be configured with appropriate VLANs and security settings.
- RIPv2 will be used to provide routing for the routers in the internal network and static routing for the external server.
- The devices in building A will be expected to acquire dynamic IP addresses from a router-based DHCP server.

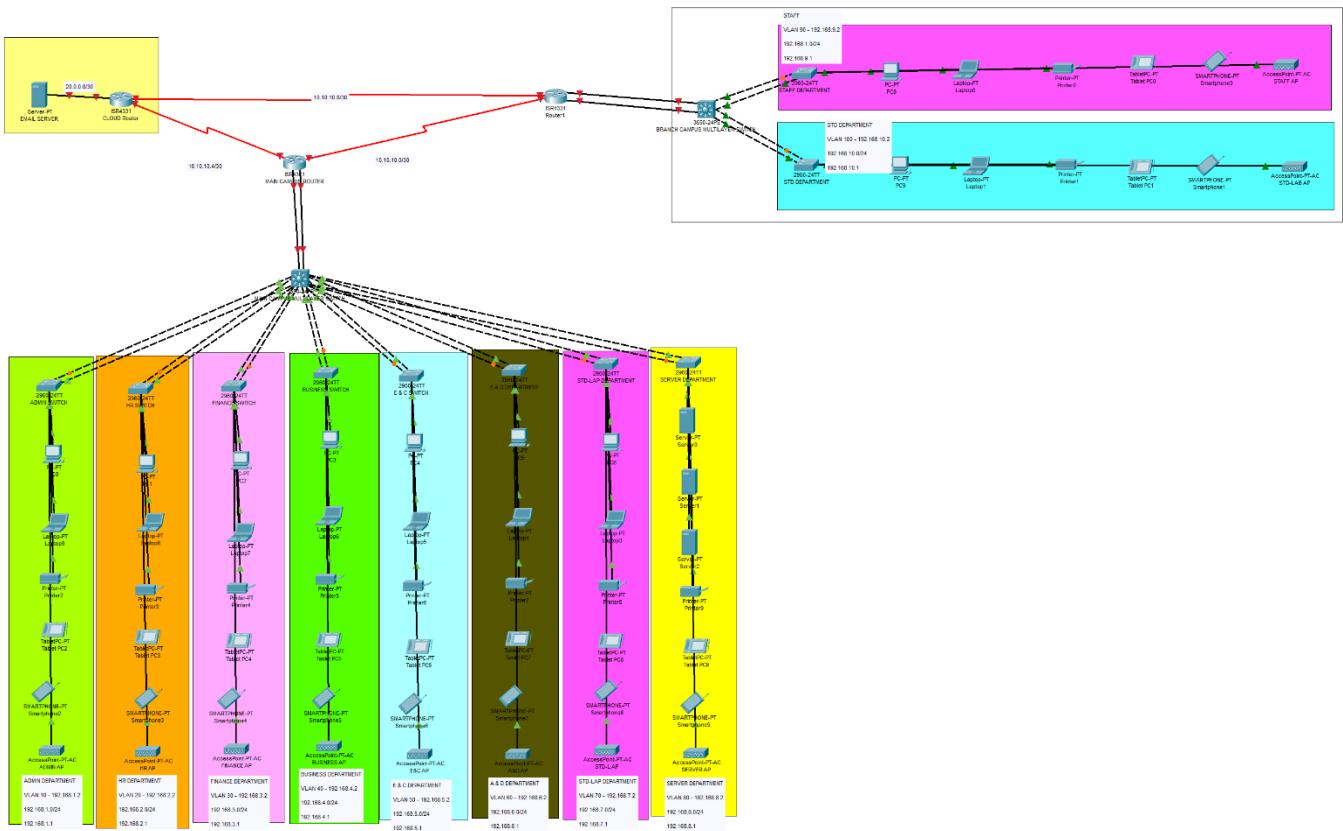
Configure in Packet Tracer the network with appropriate settings to achieve the connectivity and functionalities specified in the requirements.

## Technologies Implemented

## 1. Creating a network topology using Cisco Packet Tracer.

Currently, I am using a combination of Bus Topology and Star Topology.

## 2. Hierarchical Network Design.



## 3. Connecting Networking devices with Correct cabling.

Copper straight cable

Copper Cross Over

Serial cable

#### 4. Creating VLANs and assigning ports VLAN numbers.

<b>ADMIN DEPARTMENT</b>	<b>HR DEPARTMENT</b>
enable configure terminal	enable configure terminal
hostname ADMIN_SWITCH	hostname HR_SWITCH
vlan 10 name ADMIN_DEPARTMENT exit	vlan 20 name HR_DEPARTMENT exit
vlan 999 name NATIVE_VLAN exit	vlan 999 name NATIVE_VLAN exit
interface vlan 10 ip address 192.168.1.254 255.255.255.0 no shutdown exit	interface vlan 20 ip address 192.168.2.254 255.255.255.0 no shutdown exit
ip default-gateway 192.168.1.1	ip default-gateway 192.168.2.1
interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 10 no shutdown exit	interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 20 no shutdown exit
do wr	do wr
<b>FINANCE DEPARTMENT</b>	<b>BUSINESS DEPARTMENT</b>
enable configure terminal	enable configure terminal
hostname FINANCE_SWITCH	hostname BUSINESS_SWITCH
vlan 30 name FINANCE_DEPARTMENT exit	vlan 40 name BUSINESS_DEPARTMENT exit
vlan 999 name NATIVE_VLAN exit	vlan 999 name NATIVE_VLAN exit

# Design and Implementation of a Campus/University System Network Design

<pre> interface vlan 30 ip address 192.168.3.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.3.1  interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 30 no shutdown exit  do wr </pre>	<pre> interface vlan 40 ip address 192.168.4.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.4.1  interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 40 no shutdown exit  do wr </pre>
<p><b>E&amp;C DEPARTMENT</b></p> <pre> enable configure terminal  hostname E&amp;C_SWITCH  vlan 50 name E&amp;C_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit  interface vlan 50 ip address 192.168.5.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.5.1  interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 50 no shutdown exit  do wr </pre>	<p><b>E &amp; D DEPARTMENT</b></p> <pre> enable configure terminal  hostname A&amp;D_SWITCH  vlan 60 name A&amp;D_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit  interface vlan 60 ip address 192.168.6.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.6.1  interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 60 no shutdown exit  do wr </pre>
<p><b>STD-LAP DEPARTMENT</b></p> <pre> enable configure terminal </pre>	<p><b>SERVER DEPARTMENT</b></p> <pre> enable configure terminal </pre>

<pre> hostname STD-LAP_SWITCH  vlan 70 name STD-LAP_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit  interface vlan 70 ip address 192.168.7.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.7.1  interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 70 no shutdown exit  do wr </pre>	<pre> hostname SERVER_SWITCH  vlan 80 name SERVER_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit  interface vlan 80 ip address 192.168.8.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.8.1  interface range fastEthernet 0/1-24 switchport mode access switchport access vlan 80 no shutdown exit  do wr </pre>
<p><b>STAFF DEPARTMENT</b></p> <pre> enable configure terminal  hostname STAFF_SWITCH  vlan 90 name STAFF_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit  interface vlan 90 ip address 192.168.9.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.9.1  interface range fastEthernet 0/1-24 switchport mode access </pre>	<p><b>STD DEPARTMENT</b></p> <pre> enable configure terminal  hostname STD_SWITCH  vlan 100 name STD_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit  interface vlan 100 ip address 192.168.10.254 255.255.255.0 no shutdown exit  ip default-gateway 192.168.10.1  interface range fastEthernet 0/1-24 switchport mode access </pre>

switchport access vlan 90 no shutdown exit  do wr	switchport access vlan 100 no shutdown exit  do wr
---	--

<b>MAIN-MULTILAYER-SWITCH</b>	<b>BRANCH - CAMPUS</b>
enable configure terminal	enable configure terminal
hostname MAIN_CAMPUS_MULTILAYER_SWITCH	hostname BRANCH_CAMPUS_MULTILAYER_SWITCH
vlan 10 name ADMIN_DEPARTMENT exit	vlan 10 name ADMIN_DEPARTMENT exit
vlan 20 name HR_DEPARTMENT exit	vlan 20 name HR_DEPARTMENT exit
vlan 30 name FINANCE_DEPARTMENT exit	vlan 30 name FINANCE_DEPARTMENT exit
vlan 40 name BUSINESS_DEPARTMENT exit	vlan 40 name BUSINESS_DEPARTMENT exit
vlan 50 name E&C_DEPARTMENT exit	vlan 50 name E&C_DEPARTMENT exit
vlan 60 name A&D_DEPARTMENT exit	vlan 60 name A&D_DEPARTMENT exit
vlan 70 name STD_LAP_DEPARTMENT exit	vlan 70 name STD_LAP_DEPARTMENT exit
vlan 80 name SERVER_DEPARTMENT exit	vlan 80 name SERVER_DEPARTMENT exit
vlan 90 name STAFF_DEPARTMENT	vlan 90 name STAFF_DEPARTMENT

exit  vlan 100 name STD-PC_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit	exit  vlan 100 name STD-PC_DEPARTMENT exit  vlan 999 name NATIVE_VLAN exit
--	--

## 5. Configure Link Aggregation Control Protocol EtherChannel {LACP (802.3ad)}.

### REMINDER

**PASSIVE + PASSIVE = NO ETHERCHANNEL**

**ACTIVE + PASSIVE = ETHERCHANNEL**

**ACTIVE + ACTIVE = ETHERCHANNEL**

**WHILE CONFIGURATION LACP FIRST CONIFGRATION L2 SWITCH THEN CONFIGURE ON L3 SWITCH**

```
show etherchannel load-balance
show etherchannel summary
show interfaces status
show etherchannel port-channel
show interfaces GigabitEthernet1/0/2-3 counters
```

<b>ADMIN DEPARTMENT</b>	<b>HR DEPARTMENT</b>
<pre>enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 10 switchport nonegotiate exit  do wr</pre>	<pre>enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 20 switchport nonegotiate exit  do wr</pre>
<b>FINANCE DEPARTMENT</b>	<b>BUSINESS DEPARTMENT</b>
<pre>enable configure terminal</pre>	<pre>enable configure terminal</pre>

# Design and Implementation of a Campus/University System Network Design

<pre> interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 30 switchport nonegotiate exit  do wr </pre>	<pre> interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 40 switchport nonegotiate exit  do wr </pre>
<p><b>E&amp;C DEPARTMENT</b></p> <pre> enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 50 switchport nonegotiate exit  do wr </pre>	<p><b>E &amp; D DEPARTMENT</b></p> <pre> enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 60 switchport nonegotiate exit  do wr </pre>
<p><b>STD-LAP DEPARTMENT</b></p> <pre> enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown </pre>	<p><b>SERVER DEPARTMENT</b></p> <pre> enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown </pre>

# Design and Implementation of a Campus/University System Network Design

<pre> channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 70 switchport nonegotiate exit  do wr </pre>	<pre> channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 80 switchport nonegotiate exit  do wr </pre>
<p><b>STAFF DEPARTMENT</b></p> <pre> enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 90 switchport nonegotiate exit  do wr </pre>	<p><b>STD DEPARTMENT</b></p> <pre> enable configure terminal  interface range GigabitEthernet 0/1-2 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 1 mode active no shutdown exit  interface port-channel 1 switchport mode trunk switchport trunk native vlan 999 switchport trunk allowed vlan 10 switchport nonegotiate exit  do wr </pre>

<p><b>MAIN-MULTILAYER-SWITCH</b></p> <pre> enable configure terminal  interface range GigabitEthernet 1/0/3-18 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 2 mode active no shutdown exit </pre>	<p><b>BRANCH CAMPUS</b></p> <pre> enable configure terminal  interface range GigabitEthernet 1/0/3-18 description ** THIS TRUNK INTERFACE IS A LACP ETHERCHANNEL ** shutdown channel-protocol lacp channel-group 2 mode active no shutdown exit </pre>
---	--

```
interface port-channel 2
```

```
switchport mode trunk
```

```
switchport trunk native vlan 999
```

```
switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,100
```

```
switchport nonegotiate
```

```
no shutdown
```

```
exit
```

```
do wr
```

```
interface port-channel 2
```

```
switchport mode trunk
```

```
switchport trunk native vlan 999
```

```
switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,100
```

```
switchport nonegotiate
```

```
no shutdown
```

```
exit
```

```
do wr
```

## 6. Subnetting and IP Addressing.

DEPARTMENT	NETWORK ID	GATEWAYS / STARTING IP	LAST IP / VLAN IP	BROADCAST ID	SUBNET MASK
ADMIN DEPARTMENT	192.168.1.0 /24	192.168.1.1	192.168.1.254	192.168.1.255	255.255.255.0
HR DEPARTMENT	192.168.2.0 /24	192.168.2.1	192.168.2.254	192.168.2.255	255.255.255.0
FINANCE DEPARTMENT	192.168.3.0 /24	192.168.3.1	192.168.3.254	192.168.3.255	255.255.255.0
BUSINESS DEPARTMENT	192.168.4.0 /24	192.168.4.1	192.168.4.254	192.168.4.255	255.255.255.0
E & C DEPARTMENT	192.168.5.0 /24	192.168.5.1	192.168.5.254	192.168.5.255	255.255.255.0
A & DEPARTMENT	192.168.6.0 /24	192.168.6.1	192.168.6.254	192.168.6.255	255.255.255.0
STD-LAB DEPARTMENT	192.168.7.0 /24	192.168.7.1	192.168.7.254	192.168.7.255	255.255.255.0
SERVER DEPARTMENT	192.168.8.0 /24	192.168.8.1	192.168.8.254	192.168.8.255	255.255.255.0
STAFF DEPARTMENT	192.168.9.0 /24	192.168.9.1	192.168.9.254	192.168.9.255	255.255.255.0
STD DEPARTMENT	192.168.10.0 /24	192.168.10.1	192.168.10.254	192.168.10.255	255.255.255.0

EMAIL SERVER	20.0.0.0/30	20.0.0.2	20.0.0.1 {GATEWAYS}		255.255.255.252
CLOUD ROUTER	10.10.10.8/30	10.10.10.9	10.10.10.10	10.10.10.11	255.255.255.252
MAIN CAMPUS ROUTER	10.10.10.0/30	10.10.10.1	10.10.10.2	10.10.10.3	255.255.255.252
BRANCH CAMPUS ROUTER	10.10.10.4/30	10.10.10.5	10.10.10.6	10.10.10.7	255.255.255.252

## 7. Configuring Inter-VLAN Routing (Router on a stick).

<b>MAIN-MULTILAYER-SWITCH</b>	<b>BRANCH - CAMPUS</b>
<pre>interface gigabitEthernet 0/0/0.10 encapsulation dot1Q 10 ip address 192.168.1.1 255.255.255.0 exit</pre>	<pre>interface gigabitEthernet 0/0/0.90 encapsulation dot1Q 90 ip address 192.168.9.1 255.255.255.0 exit</pre>
<pre>interface gigabitEthernet 0/0/0.20 encapsulation dot1Q 20 ip address 192.168.2.1 255.255.255.0 exit</pre>	<pre>interface gigabitEthernet 0/0/0.100 encapsulation dot1Q 100 ip address 192.168.10.1 255.255.255.0 exit</pre>
<pre>interface gigabitEthernet 0/0/0.30 encapsulation dot1Q 30 ip address 192.168.3.1 255.255.255.0 exit</pre>	<pre>interface gigabitEthernet 0/0/1.90 encapsulation dot1Q 90 ip address 192.168.9.1 255.255.255.0 exit</pre>
<pre>interface gigabitEthernet 0/0/0.40 encapsulation dot1Q 40 ip address 192.168.4.1 255.255.255.0 exit</pre>	<pre>interface gigabitEthernet 0/0/1.100 encapsulation dot1Q 100 ip address 192.168.10.1 255.255.255.0 exit</pre>
<pre>interface gigabitEthernet 0/0/0.50 encapsulation dot1Q 50 ip address 192.168.5.1 255.255.255.0 exit</pre>	
<pre>interface gigabitEthernet 0/0/0.60 encapsulation dot1Q 60 ip address 192.168.6.1 255.255.255.0 exit</pre>	
<pre>interface gigabitEthernet 0/0/0.70 encapsulation dot1Q 70 ip address 192.168.7.1 255.255.255.0 exit</pre>	
<pre>interface gigabitEthernet 0/0/0.80 encapsulation dot1Q 80 ip address 192.168.8.1 255.255.255.0 exit</pre>	
<pre>interface gigabitEthernet 0/0/0.90 encapsulation dot1Q 90 ip address 192.168.9.1 255.255.255.0</pre>	

```
exit

interface gigabitEthernet 0/0/0.100
encapsulation dot1Q 100
ip address 192.168.100.1 255.255.255.0
exit

interface gigabitEthernet 0/0/1.10
encapsulation dot1Q 10
ip address 192.168.1.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.20
encapsulation dot1Q 20
ip address 192.168.2.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.30
encapsulation dot1Q 30
ip address 192.168.3.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.40
encapsulation dot1Q 40
ip address 192.168.4.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.50
encapsulation dot1Q 50
ip address 192.168.5.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.60
encapsulation dot1Q 60
ip address 192.168.6.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.70
encapsulation dot1Q 70
ip address 192.168.7.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.80
encapsulation dot1Q 80
ip address 192.168.8.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.90
```

```
encapsulation dot1Q 90
ip address 192.168.9.2 255.255.255.0
exit

interface gigabitEthernet 0/0/1.100
encapsulation dot1Q 100
ip address 192.168.100.2 255.255.255.0
exit
```

## 8. Configuring DHCP Server (Router as the DHCP Server).

MAIN-MULTILAYER-SWITCH	BRANCH - CAMPUS
<pre>enable configure terminal  service dhcp  ip dhcp pool Admin-pool network 192.168.1.0 255.255.255.0 default-router 192.168.1.1 dns-server 192.168.1.1 domain-name admin.com exit  ip dhcp pool HR-pool network 192.168.2.0 255.255.255.0 default-router 192.168.2.1 dns-server 192.168.2.1 domain-name hr.com exit  ip dhcp pool Finance-pool network 192.168.3.0 255.255.255.0 default-router 192.168.3.1 dns-server 192.168.3.1 domain-name finance.com exit  ip dhcp pool Business-pool network 192.168.4.0 255.255.255.0 default-router 192.168.4.1 dns-server 192.168.4.1 domain-name business.com exit  ip dhcp pool E-C-pool network 192.168.5.0 255.255.255.0 default-router 192.168.5.1 dns-server 192.168.5.1 domain-name eandc.com exit  ip dhcp pool A-D-pool network 192.168.6.0 255.255.255.0 default-router 192.168.6.1 dns-server 192.168.6.1 domain-name aand.com</pre>	<pre>enable configure terminal  service dhcp  ip dhcp pool Staff-pool network 192.168.9.0 255.255.255.0 default-router 192.168.9.1 dns-server 192.168.9.1 domain-name staff.com exit  ip dhcp pool Studentlab-pool network 192.168.10.0 255.255.255.0 default-router 192.168.10.1 dns-server 192.168.10.1 domain-name studentlab.com exit  do wr</pre>

<pre>exit  ip dhcp pool StdLab-pool network 192.168.7.0 255.255.255.0 default-router 192.168.7.1 dns-server 192.168.7.1 domain-name stdlab.com exit  ip dhcp pool Server-pool network 192.168.8.0 255.255.255.0 default-router 192.168.8.1 dns-server 192.168.8.1 domain-name server.com exit</pre>	
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CAMPUS/UNIVERSITY SYSTEM NETWORK DESIGN BY SUBASH SUBEDI

## 9. Configuring RIPv2 as the routing protocol.

<b>MAIN-MULTILAYER-SWITCH</b>	<b>BRANCH CAMPUS</b>
<pre> enable configure terminal  router rip version 2 no auto-summary  network 10.10.10.0 network 10.10.10.4 network 192.168.1.0 network 192.168.2.0 network 192.168.3.0 network 192.168.4.0 network 192.168.5.0 network 192.168.6.0 network 192.168.7.0 network 192.168.8.0  do wr </pre>	<pre> enable configure terminal  router rip version 2 no auto-summary  network 10.10.10.0 network 10.10.10.8 network 192.168.9.0 network 192.168.10.0 exit  do wr </pre>
<b>MAIN-MULTILAYER-SWITCH</b>	
<pre> enable configure terminal  router rip version 2 no auto-summary  network 20.0.0.0 network 10.10.10.4 network 10.10.10.8 exit  do wr </pre>	

## 10. Configuring SSH for secure Remote access.

<b>ADMIN DEPARTMENT</b>	<b>HR DEPARTMENT</b>
<pre>enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name admin.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr</pre>	<pre>enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name hr.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr</pre>
<b>FINANCE DEPARTMENT</b>	<b>BUSINESS DEPARTMENT</b>
<pre>enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name finance.com crypto key generate rsa  1024  ip ssh version 2</pre>	<pre>enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name business.com crypto key generate rsa  1024  ip ssh version 2</pre>

<pre> line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>	<pre> line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>
<p><b>E&amp;C DEPARTMENT</b></p> <pre> enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name eandc.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>	<p><b>E &amp; D DEPARTMENT</b></p> <pre> enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name eandd.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>
<p><b>STD-LAP DEPARTMENT</b></p> <pre> enable </pre>	<p><b>SERVERT DEPARTMENT</b></p> <pre> enable </pre>

<pre> configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name stdlab.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>	<pre> configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name server.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>
<p><b>STAFF DEPARTMENT</b></p> <pre> enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name staff.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 </pre>	<p><b>STD DEPARTMENT</b></p> <pre> enable configure terminal  username admin privilege 1 secret admin username cisco privilege 5 secret cisco username subash privilege 15 secret subash  ip domain-name std.com crypto key generate rsa  1024  ip ssh version 2  line con 0 login local exit  line vty 0 4 </pre>

<pre> login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>	<pre> login local transport input ssh exit  ip ssh time-out 60 ip ssh authentication-retries 3 exit  wr </pre>
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## 11. Configuring switchport security or Port-Security on the switches.

<pre> interface range fastEthernet 0/1-23, gigabitEthernet 0/1-2 switchport port-security switchport port-security maximum 1 switchport port-security violation shutdown switchport port-security mac-address sticky exit </pre>	<pre> interface range gigabitEthernet 1/0/1-23 switchport port-security switchport port-security maximum 1 switchport port-security violation shutdown switchport port-security mac-address sticky exit </pre>
--	--