

SELF-LEARNING ASSIGNMENT
EC 4060 – COMPUTER AND DATA
NETWORKS

UZAIR U.M

2020/E/201

GROUP C

SEMESTER 04

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THE REQUIRMENTS FOR EACH BUILDINGS

Facility	No of Computers	No of Projectors	No of Printers	No of Wi-Fi Routers
IT Centre Block: (Data Points - 164)				
Director Office	2			
Network Manager Room	1			
2 Technical Office Room	1			
Staff Office	5			
Meeting Room	2	1		1
Lobby Area				1
Computer Lab 01	60			1
Computer Lab 02	60			
Digital Learning and Media Centre	30		1	
Printing Room			2	
Department Block (Data Points - 203)				
Lecture Halls	4	4		
Staff Rooms	14			
Technical Officers Room	4			
Department Meeting Room	2	1		1
Computer Lab – 1	60			
Computer Lab – 2	60			
Network Engineering Lab	10			
Microprocessor Lab	12			
Computer Vision and Machine Learning Lab	50			
Department Office	2		1	

IP ADDERSS ALLOCATION FOR EACH BLOCK

Facility	VLAN No	Needed size	Allocated size	IP Address	Mask	Subnet mask
IT Centre Block: (Data Points - 164)						
Computer Lab 01	10	60	62	10.20.0.0	/26	255.255.255.192
Computer Lab 02	11	60	62	10.20.0.64	/26	255.255.255.192
Digital Learning and Media Centre	12	30	30	10.20.0.128	/27	255.255.255.224
Staff Office	13	5	6	10.20.0.160	/28	255.255.255.240
Director Office	14	2	2	10.20.0.168	/30	255.255.255.252
Meeting Room	15	3	6	10.20.0.176	/29	255.255.255.248
Network Manager Room	16	1	2	10.20.0.180	/30	255.255.255.252
Technical Office Room	17	1	2	10.20.0.184	/30	255.255.255.252
Printer Room	18					
Department Block (Data Points - 203)						
Computer Lab – 2	19	60	62	10.20.1.0	/26	255.255.255.192
Computer Lab – 1	20	60	62	10.20.1.64	/26	255.255.255.192
CV and ML Lab	21	50	62	10.20.1.128	/26	255.255.255.192
Staff Rooms	22	14	14	10.20.1.192	/28	255.255.255.240
Microprocessor Lab	23	12	14	10.20.1.208	/28	255.255.255.240
Network Engineering Lab	24	10	14	10.20.1.224	/28	255.255.255.240
Lecture Halls	25	8	14	10.20.1.240	/28	255.255.255.240
Technical Officers Room	26	4	6	10.20.1.248	/29	255.255.255.248
Department Meeting Room	27	3	6	10.20.2.0	/29	255.255.255.248
Department Office	28	2	2	10.20.2.8	/30	255.255.255.252

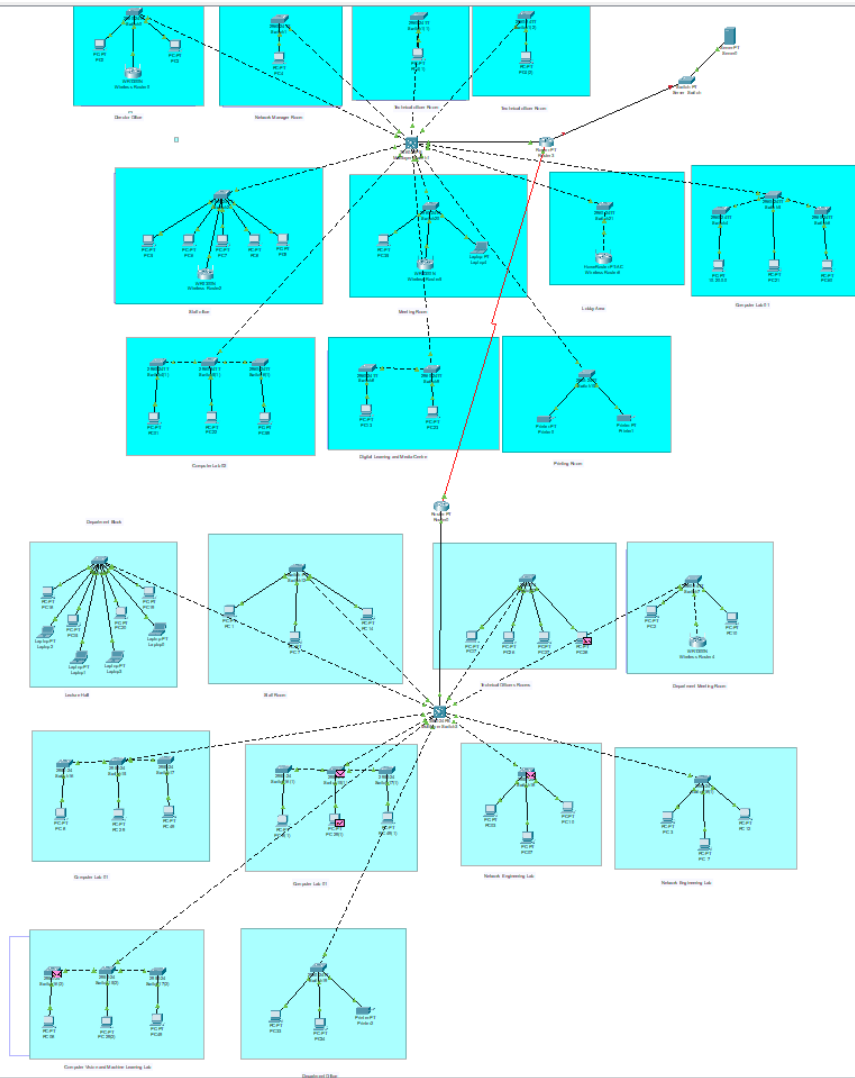
ACCESS CONTROL FOR EACH FACILITY

VLAN Name	VLAN No	Can be Accessed by (ADMIN, VLAN No.)
Computer Lab 01	10	Admin
Computer Lab 02	11	Admin
Digital Learning and Media Centre	12	Admin
Staff Office	13	Admin
Director Office	14	Admin
Meeting Room	15	Admin
Network Manager Room	16	Admin
Technical Office Room	17	Admin
Printer Room	18	Admin/Staff Room(22)
Computer Lab – 2	19	Admin
Computer Lab – 1	20	Admin
CV and ML Lab	21	Admin
Staff Rooms	22	Admin
Microprocessor Lab	23	Admin
Network Engineering Lab	24	Admin
Lecture Halls	25	Admin
Technical Officers Room	26	Admin
Department Meeting Room	27	Admin
Department Office	28	Admin/Staff room (14)

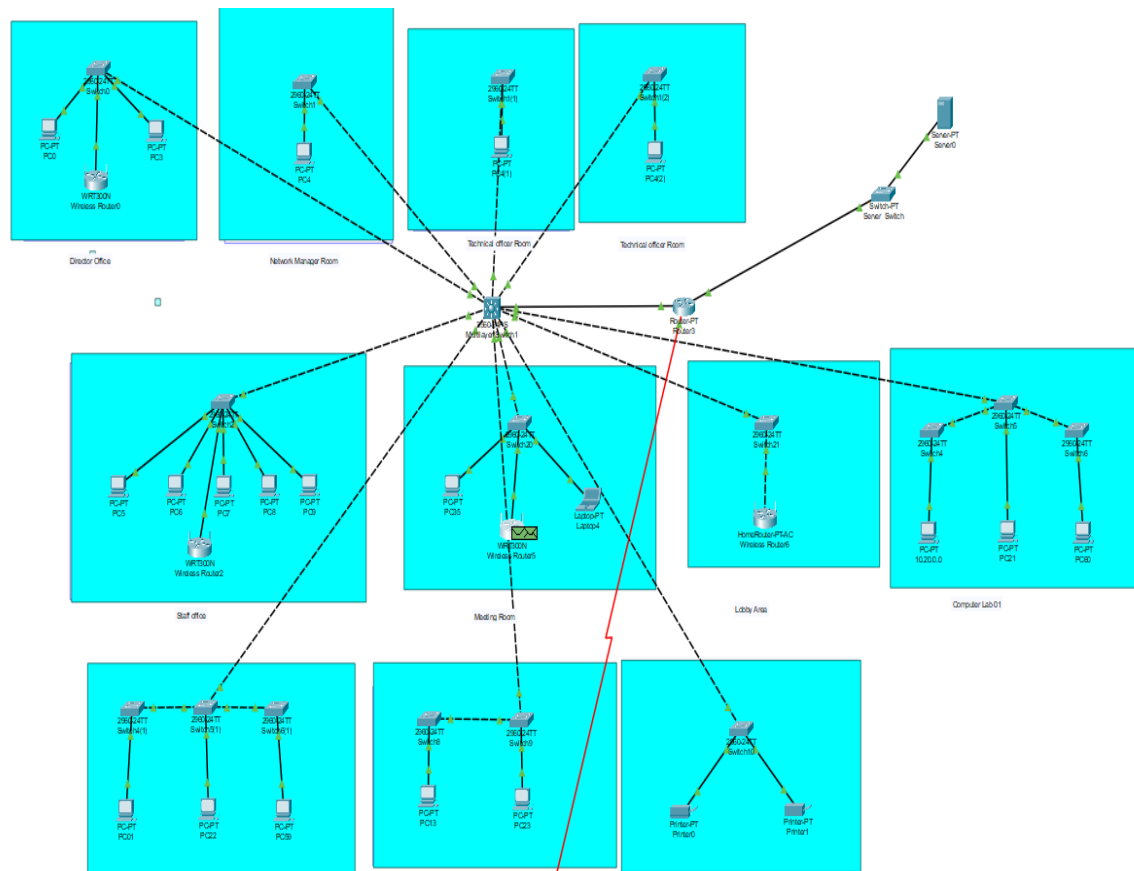
IP ADDRESS RANGE FOR EACH BUILDINGS

Facility	VLAN No	IP Address Range
IT Centre Block: (Data Points - 164)		
Computer Lab 01	10	10.20.0.0-10.20.0.63
Computer Lab 02	11	10.20.0.64-10.20.0.127
Digital Learning and Media Centre	12	10.20.0.128-10.20.0.159
Staff Office	13	10.20.0.160-10.20.0.167
Director Office	14	10.20.0.168-10.20.0.175
Meeting Room	15	10.20.0.176-10.20.0.179
Network Manager Room	16	10.20.0.180-10.20.0.183
Technical Office Room	17	10.20.0.184-10.20.0.187
Printer Room	18	
Department Block (Data Points - 203)		
Computer Lab – 2	16	10.20.1.0-10.10.1.63
Computer Lab – 1	17	10.20.1.64-10.20.1.127
CV and ML Lab	18	10.20.1.128-10.20.1.192
Staff Rooms	19	10.20.1.192-10.20.1.207
Microprocessor Lab	20	10.20.1.208-10.20.1.223
Network Engineering Lab	21	10.20.1.224-10.20.1.239
Lecture Halls	22	10.20.1.240-10.20.1.247
Technical Officers Room	23	10.20.1.248-10.20.1.255
Department Meeting Room	24	10.20.2.0-10.20.2.7
Department Office	25	10.20.2.8-10.20.2.11

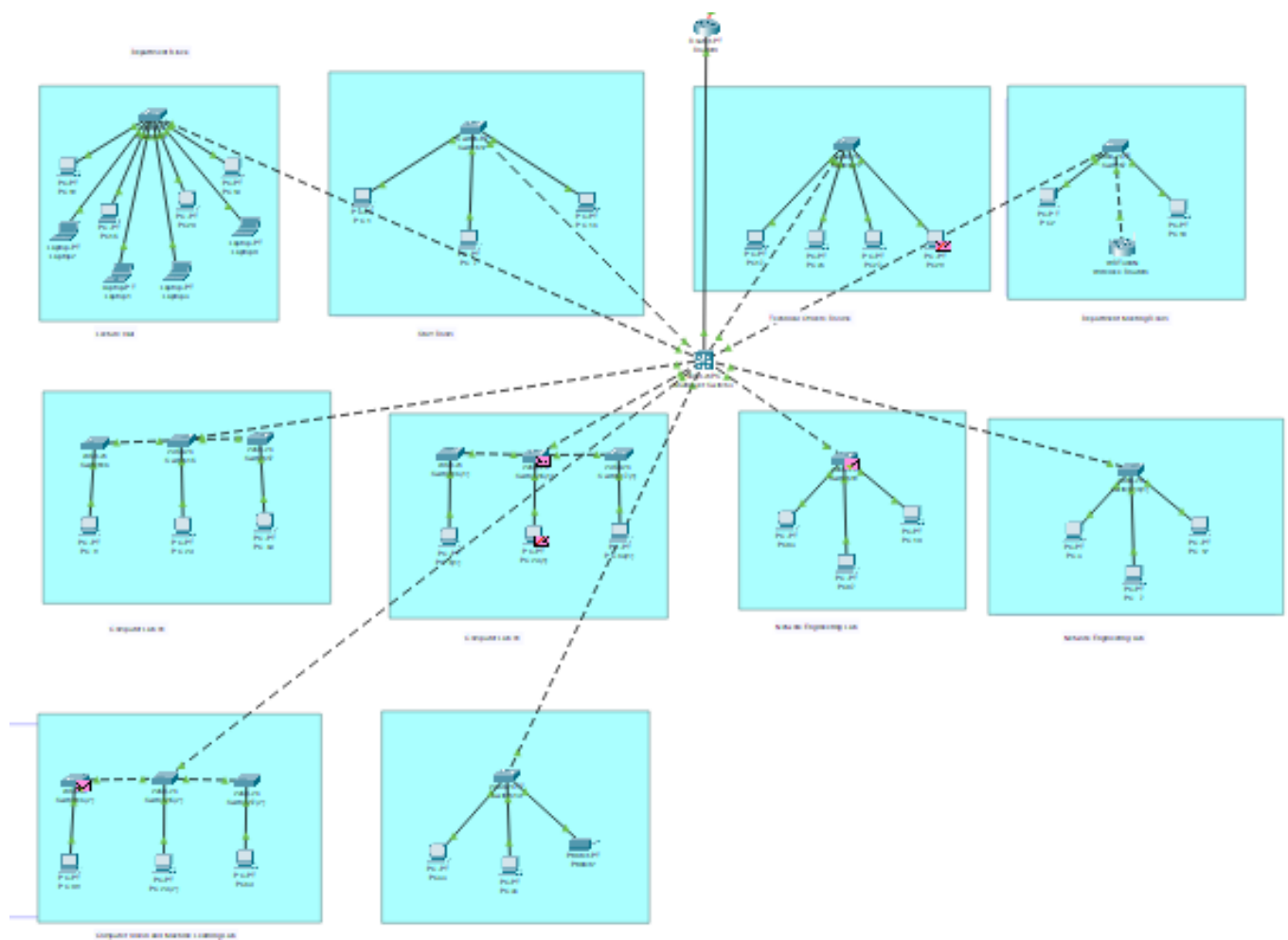
FULL NETWORK DIAGRAM



IT CENTRE BLOCK:



DEPARTMENT BLOCK:



- **CONFIGURATION ROUTER**

```
Press RETURN to get started!

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#exit
Router(config)#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 10.20.1.1 255.255.255.0
Router(config-if)#exit
Router(config)#
Router(config)#
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#ip address 10.20.0.2 255.255.255.252
Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#
```

- **CONFIGURATION OF THE ADMIN MULTI LAYER SWITCH**

Switch> enable

Switch# configure terminal

Switch(config)# interface GigabitEthernet1/0/n

Switch(config-if)# switchport mode access

Switch(config-if)# switchport access vlan n

Switch(config-if)# switchport mode trunk

Switch(config-if)# switchport trunk allowed vlan add n

Switch(config-if)# exit

Switch(config-if)# switchport mode trunk

Switch(config-if)# switchport trunk allowed vlan add n

Switch(config-if)# exit

- CONFIGURATION OF THE SWITCH AND SET VLAN

```
Switch>enable
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vl 10
Switch(config-vlan)#name ComputerLab01
Switch(config-vlan)#vl 11
Switch(config-vlan)#name ComputerLab02
Switch(config-vlan)#vl 12
Switch(config-vlan)#name DLandMC
Switch(config-vlan)#vl 13
Switch(config-vlan)#name Staff_Office
Switch(config-vlan)#vl 14
Switch(config-vlan)#name derector
Switch(config-vlan)#vl 15
Switch(config-vlan)#Meeting
      ^
```

% Invalid input detected at '^' marker.

```
Switch(config-vlan)#name Meeting
Switch(config-vlan)#vl 16
Switch(config-vlan)#name NetworkManager
Switch(config-vlan)#vl 17
Switch(config-vlan)#name Technical-office
Switch(config-vlan)#
```

```
-----
Switch>
Switch>
Switch>en
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 2
Switch(config-vlan)#name BUTTER
Switch(config-vlan)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch#
Switch#
Switch#
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#
```

- **CONFIGURATION OF THE DATA POINTS (COMPUTER, PRINTER)**

The screenshot shows a window titled "10.20.0.0" with tabs for Physical, Config, Desktop, Programming, and Attributes. The "Config" tab is active, and the "IP Configuration" sub-tab is selected. The interface is set to "FastEthernet0".

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 10.20.0.1

Subnet Mask: 255.255.255.192

Default Gateway: 10.20.0.1

DNS Server: 255.255.255.192

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::260:5CFF:FE18:7997

Default Gateway:

DNS Server:

- **CONFIGURATION OF THE WIFI ACCESS POINTS**

The screenshot shows a window titled "Wireless Router5" with tabs for Physical, Config, GUI, and Attributes. The "Config" tab is active, and the "Internet Settings" sub-tab is selected. The left sidebar shows a tree view with "GLOBAL" and "INTERFACE" sections. Under "INTERFACE", "Internet" is selected.

Internet Settings

IP Configuration

☐ DHCP ☒ Static ☐ PPPoE

UserName:

Password:

IPv4 Address: 10.20.2.176

Subnet Mask: 255.255.255.192

Default Gateway: 10.10.1.1

DNS Server: