

Network & Cloud Service for O6U.

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Who Are We !

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 - ❖ OSPF
 - ❖ Network Sectors



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- ❖ Cloud Results
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- ❖ Entity Relationship Diagram
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Abstract :

At the present time, there is no organization or company that can work without a strong and stable network and infrastructure, and this guarantees a large part of the organization's gains and communication between clients and other organizations.

So, we will establish this project to create a stable infrastructure for the college through which it can communicate with the sectors of the college and university, as well as with students, to provide study materials and online examinations in a smooth, stable and without complication.

Introduction :



Establishing an infrastructure in the educational sector requires several competencies to serve students and communicate with other organizations to provide support and exchange experiences, but usually there are many problems in communication between the two systems and this is due to the complexity of the system and the difficulty of developing it and linking it to other systems.

Overview :

Part of The Problem

One of the most common problems facing companies is service interruption due to poor infrastructure and the costs of its maintenance and management, but this is not the big problem.

The biggest problem is the difficulty in developing and expanding this type of infrastructure, which costs a lot of money and time and puts companies at Risk





Problem Definition :

We Have Two Sides For Problem :

Service Side	Client Side
Cost of configuration, administration, Hosting, maintenance.	Service stability and efficiency and without complication
Security and install updates and patches.	Keep the privacy and security of his information
Accessibility to Get Support	Get support to solve common and individual problems

Our Project :

About The Project

Our project aims to create an integrated network for the College of Information Systems and Computer Science at October 6 University to include stability, redundancy and security

And to make the costs of its establishment and administration less and more efficient by linking it to the Cloud and its ability to expand to all colleges and university (Scalability) sectors to enhance the infrastructure



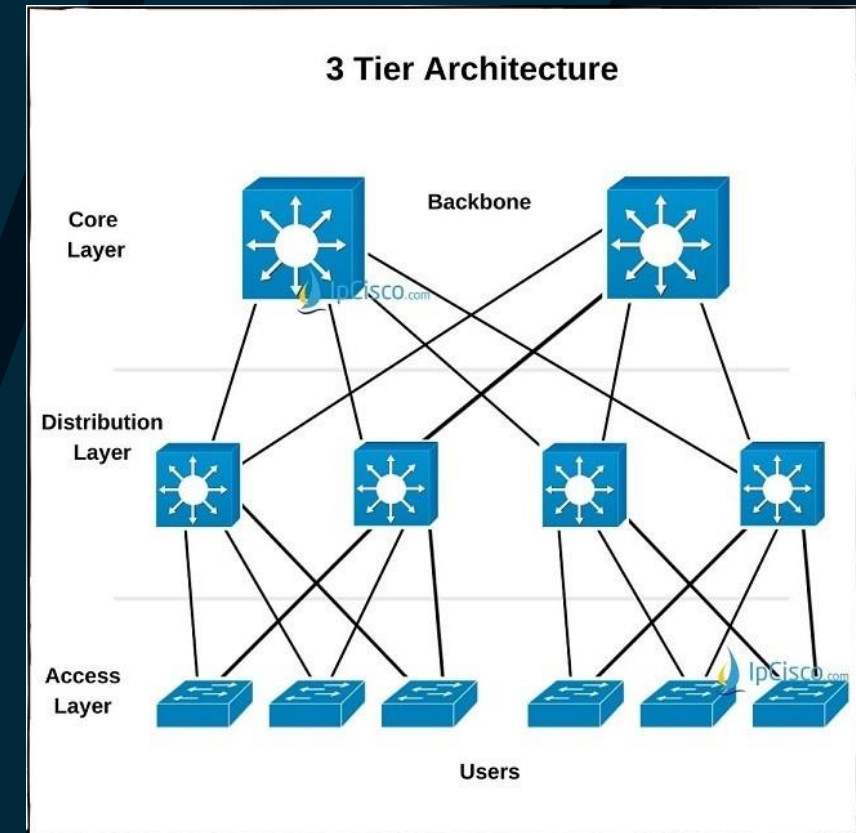
Deliverables:



- ❖ An integrated network to connect sectors and departments to each other
- ❖ Partition for data storage
- ❖ Domain Controller to set permissions and policies on devices
- ❖ Voice communication service within the network (VoIP)
- ❖ Firewall for Network Security
- ❖ Cloud storage service
- ❖ An integrated site to serve students from registering materials to exams
- ❖ Admin panel on the site that is easy to handle
- ❖ Isolated network for labs and student services

Cisco Hierarchical Design :

- We have used Cisco Hierarchical Design to have 3 layers with separate functions that help engineers improve and define network hardware, software, and features, and apply a set of principles to the network such as redundancy and flexibility
- Each layer performs certain functions :
 1. **Access layer:** Provides workgroup/user access to the network
 2. **Distribution layer:** Provides policy-based connectivity and controls the boundary between the access and core layers
 3. **Core layer:** Provides fast transport between distribution switches within the enterprise campus



Tools :

1- GNS3 : GNS3 is a Simulator Used To Emulate Network Devices and Apply Them Realistically, Whether it is on A Server (*ESX*) or Physical Devices.

Why GNS3 :

Because it simulates all types of systems realistically, the configuration can be pulled from it and applied to Physical Devices

2-VMware Workstation : To simulate devices and connect them to GNS3

3-Cisco : We will use Cisco products in the network because of their strong support, few issues, and compatibility with many other products



Tools (Cont..) :

4- Microsoft Azure : We will be using the most popular cloud platforms to host Database, and also for backup systems and storage system.

And we can use it to distribute resources to the cloud to relieve pressure on local devices.

5- ESXI : Hypervisor is an operating system component to manage virtual systems



Blob Storage



File Storage



Table Storage



Queue Storage

Tools (Cont..) :

6- Cisco IP Communicator : We will use IP Phone technology to enable employees and all sectors to communicate with each other.

7- Sophos Firewall : We have Sophos Firewall inside the network to protect it from attacks and apply Internet access to users



SOPHOS
UTM

Tools (Cont..) :

8- Wireshark : Network monitoring and Troubleshooting

9-Pumpkin : To take backup of the router and switches on the TFTP Server, which is located in the Backup Server

10-Putty : To access network devices remotely



Why OSPF ?!



OSPF is one of the Link State protocols, and our use has several advantages :

1. Fast convergence of OSPF: The route changes can be transmitted to the entire autonomous system in the shortest time.
2. OSPF adapts to various scales of networks, up to thousands of units
3. Divide the router into Areas to reduce the number of faults in the event of damage and reduce information between routers.
4. It is easy to deal with and add new nodes
5. Can make load balancing with change metric

Network Sectors :

- Administrative Staff on VLAN 20
- Control on VLAN 40
- Information Technology on VLAN 10
- Teaching Staff on VLAN 30
- Lab 1 on VLAN 50
- Lab 2 on VLAN 60



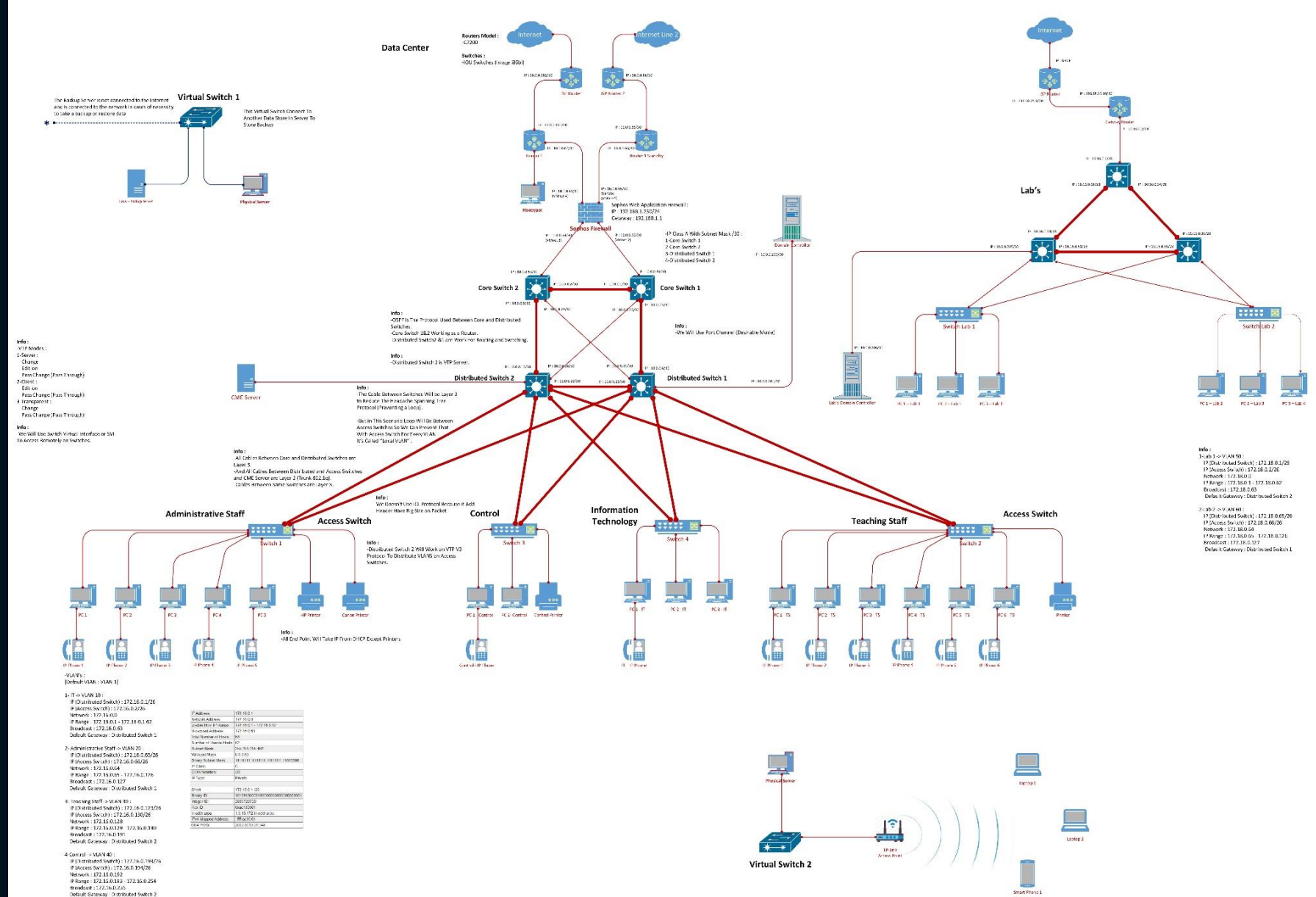
PROJECT DIAGRAMS

-We Have 8 Diagrams For Our Project :

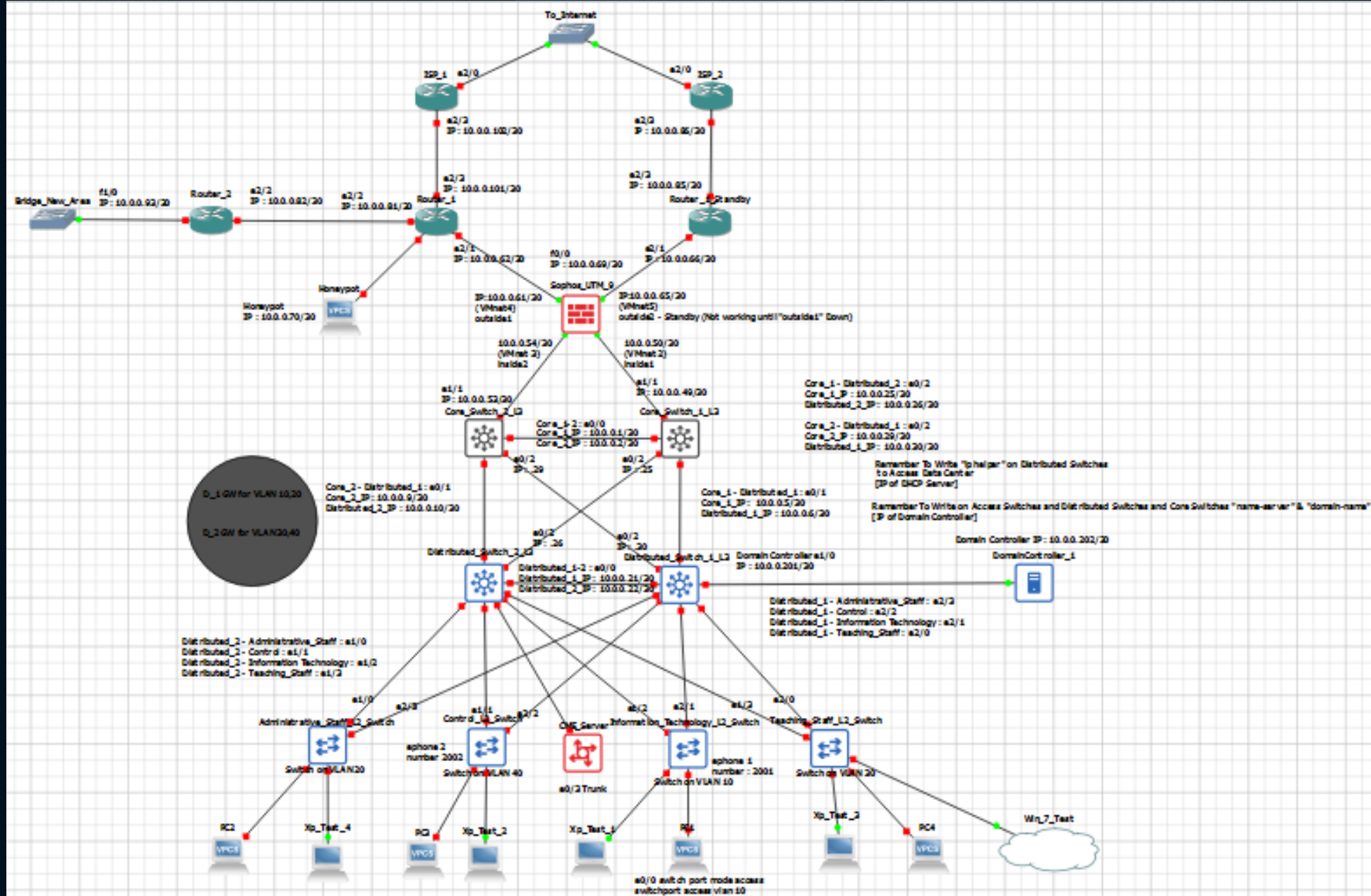
- 1-Network Diagram
- 2-Rack Diagram
- 3-Cloud Diagram
- 4-Use Case Diagram
- 5-Context Diagram
- 6-Data Flow Diagram
- 7-Entity Relationship Diagram
- 8-Schema Diagram



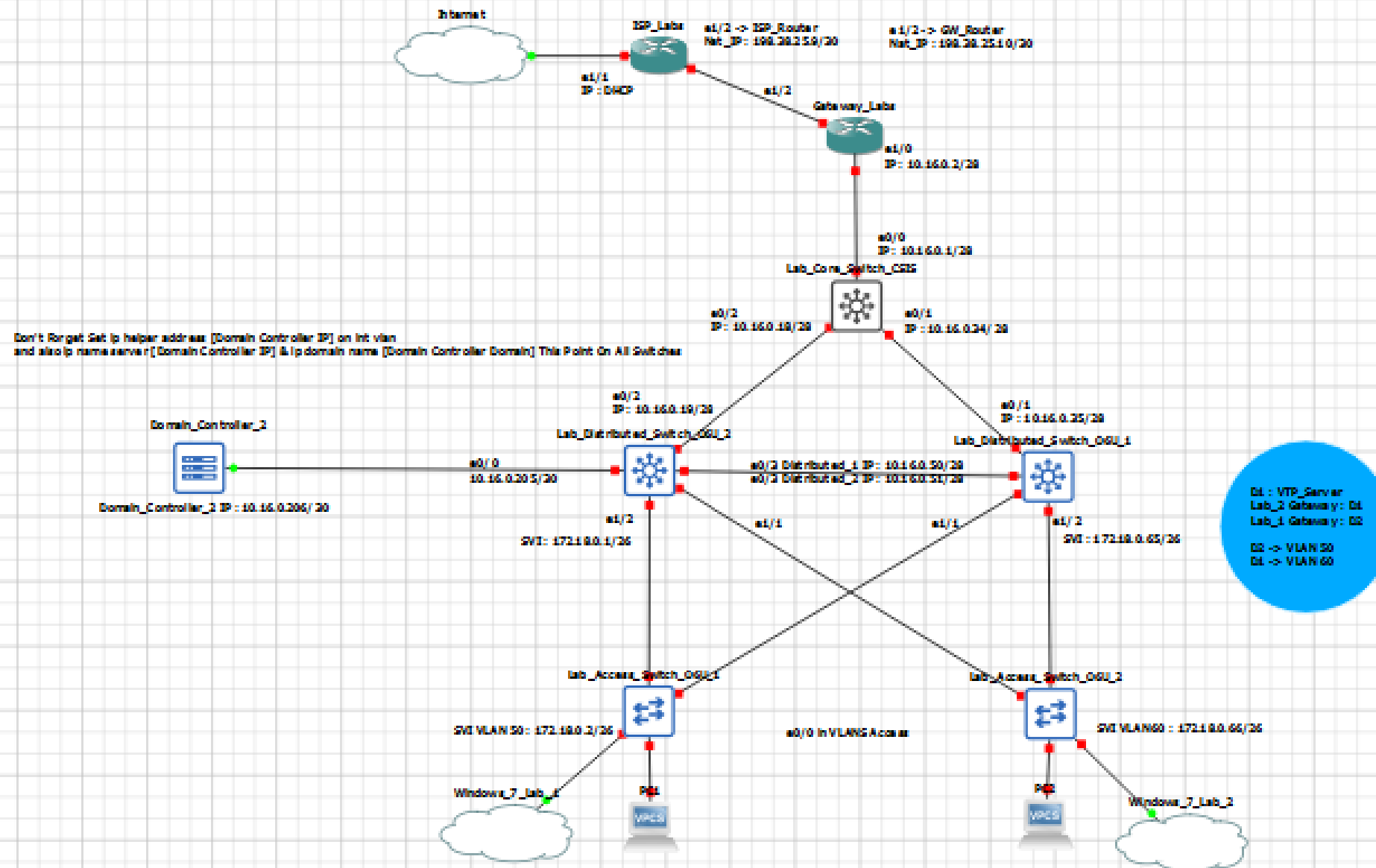
Network Diagram



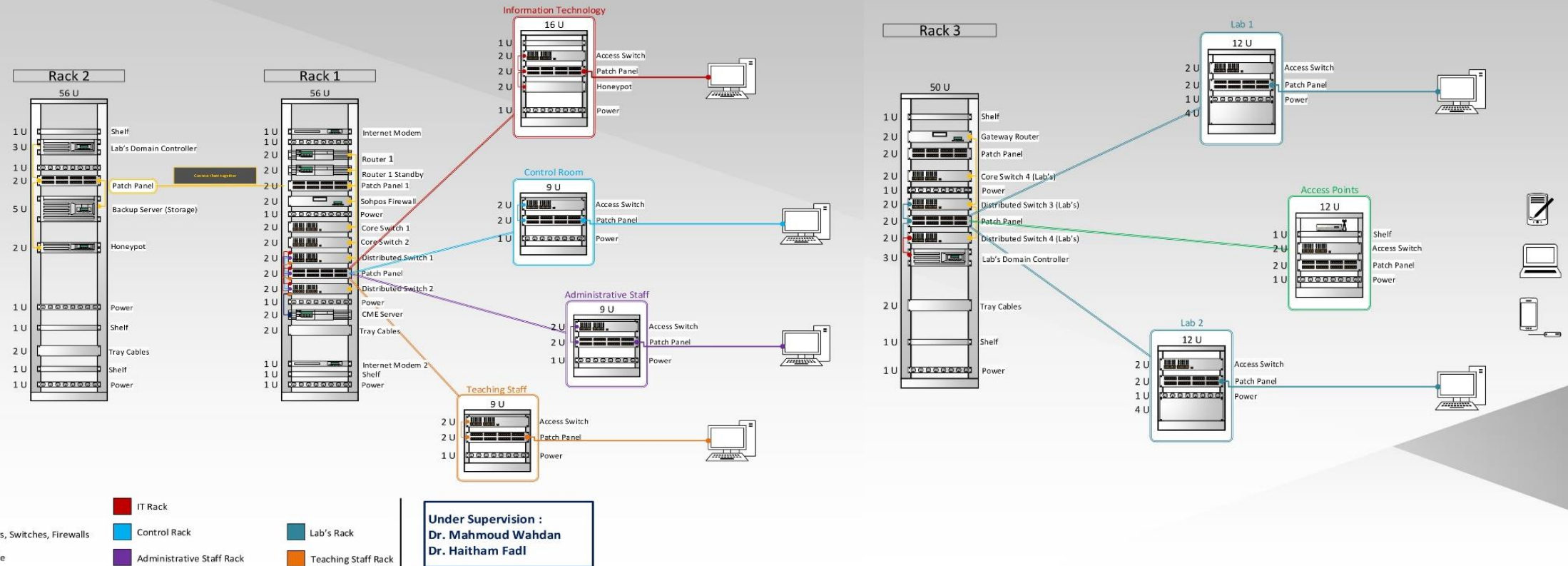
Final Results on Network



Final Results on Network Labs



Rack Diagram



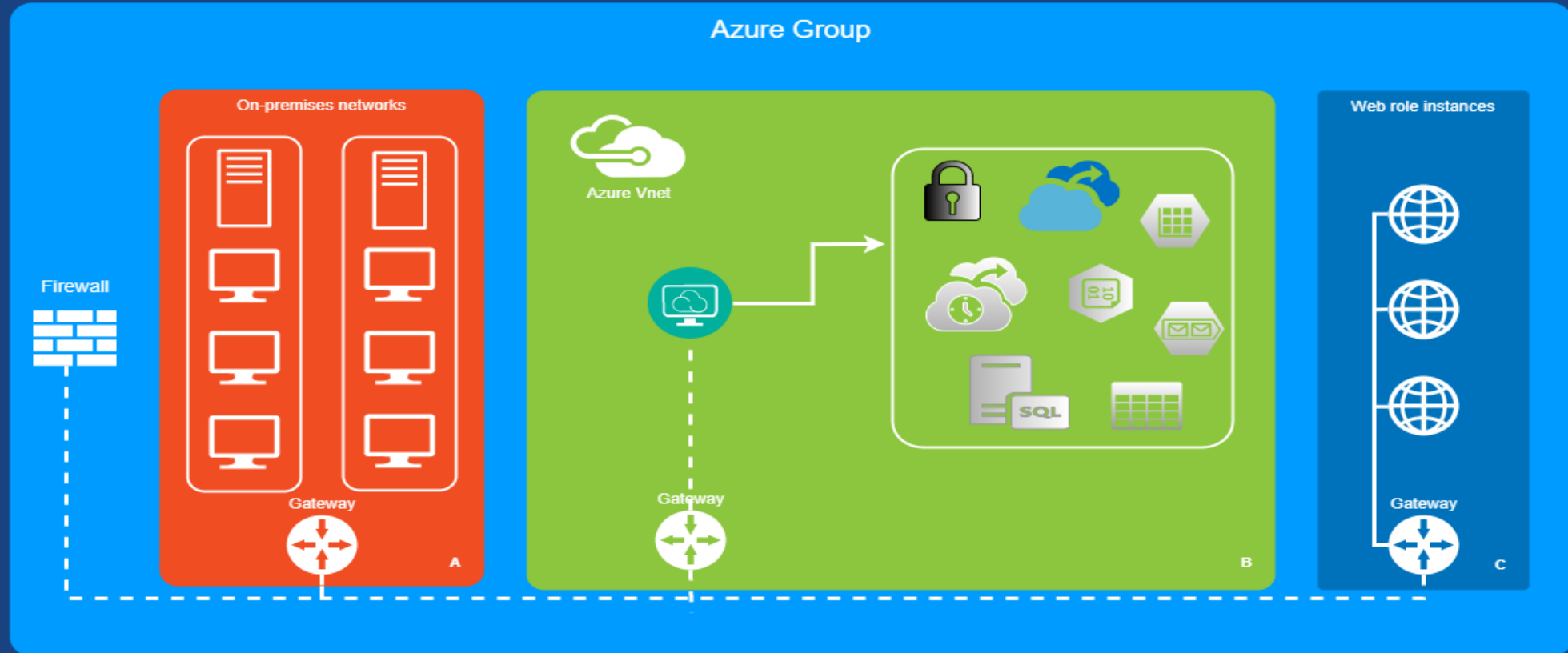
Rack
Diagram

Final Results on Network Count.. :




Cloud Diagram

October 6 University Cloud Diagram



Final Results on Cloud :

 **CRRonboardingVault**
Recovery Services vault

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Properties

Locks

Export template

Getting started

Backup

Site Recovery

Protected items

Backup items

Replicated items

Manage

Backup policies

Backup Infrastructure

Site Recovery infrastructure

Recovery Plans (Site Recovery)

+ Backup

+ Replicate

🗑 Delete

🔄 Refresh

Cross region restore feature is now available in geo-redundant vaults. →

Essentials

Overview

Backup

Site Recovery

What's new


Configure network properties (internal load balancer, public IP and NSG) in the target region, when replicating Azure VMs →

Enterprise-scale Backup for SQL Server running in Azure VM is Generally Available →

Protect on-premises VMs by directly replicating to managed disks in Azure →

Protection of Azure VMs using Storage Spaces Direct is now available →

Disaster recovery for VMs deployed in Availability Zones to another region →



Backup

Getting started

Backup dashboard


Backup items

Backup policies

Backup Reports

Backup Explorer

Learn more ↗



Site Recovery

Getting started

Site Recovery dashboard

Replicated items

Manage Recovery Plans

Learn more ↗

Query 1 ✕

▶ Run

■ Cancel query

```
1 SELECT TOP 20 pc.Name as CategoryName, p.name as ProductName
2 FROM SalesLT.ProductCategory pc
3 JOIN SalesLT.Product p
4 ON pc.productcategoryid = p.productcategoryid;
```

Results

Messages

CATEGORYNAME	PRODUCTNAME
Road Frames	HL Road Frame - Black, 58
Road Frames	HL Road Frame - Red, 58
Helmets	Sport-100 Helmet, Red
Helmets	Sport-100 Helmet, Black
Socks	Mountain Bike Socks, M

✔ Query succeeded | 1s

Final Results on Cloud Count.. :

Dashboard > storagesamples >

sample-container

Container

Search (Ctrl+/)

Upload Change access level Refresh Delete Change tier Acquire lease Break lease

Authentication method: Azure AD User Account (Switch to Access Key)
Location: sample-container

Search blobs by prefix (case-sensitive) Show deleted blobs

Name	Modified	Access tier	Blob type
<input type="checkbox"/> level1			
<input checked="" type="checkbox"/> blob1.txt	11/27/2019, 1:53:15 P...	Hot (Inferred)	Block blob
<input checked="" type="checkbox"/> blob2.txt	3/11/2019, 10:18:04 P...	Hot (Inferred)	Block blob
<input checked="" type="checkbox"/> blob3.txt	2/25/2019, 11:59:30 ...	Hot (Inferred)	Block blob
<input type="checkbox"/> blob4.txt	2/25/2019, 12:01:16 P...	Hot (Inferred)	Block blob
<input type="checkbox"/> blob5.txt	2/25/2019, 12:01:39 P...	Hot (Inferred)	Block blob
<input type="checkbox"/> blob6.txt	2/25/2019, 12:06:56 P...	Hot (Inferred)	Block blob
<input type="checkbox"/> blob7.txt	2/25/2019, 12:06:56 P...	Hot (Inferred)	Block blob
<input type="checkbox"/> blob8.txt	2/25/2019, 12:06:55 P...	Hot (Inferred)	Block blob
<input type="checkbox"/> blob9.txt	2/25/2019, 12:06:55 P...	Hot (Inferred)	Block blob
<input type="checkbox"/> logfile.txt	9/19/2019, 4:06:49 PM	Hot (Inferred)	Block blob

Microsoft Azure Storage Explorer

Edit View Help

EXPLORER

Search for resources Refresh All

Collapse All

- Quick Access (Local and Attached)
- Cosmos DB Accounts (Preview)
- Storage Accounts
- Microsoft Azure ()
 - Storage Accounts
 - hr67zeymbbyjksawinvm
 - Blob Containers
 - mytestcontainer
 - File Shares
 - Queues
 - Tables

mytestcontainer

Upload Download Open New Folder Copy URL Select All Copy More

← → ↕ ↑ mytestcontainer Search by prefix (case-sensitive)

Name	Last Modified	Blob Type	Content Type	Size
HelloWorld.jpg	Mon, 20 Nov 2017 18:43:27 GMT	Block Blob	image/jpeg	3.5 MB
HelloWorld1.jpg	Mon, 20 Nov 2017 21:01:32 GMT	Block Blob	image/jpeg	3.5 MB
HelloWorld2.jpg	Mon, 20 Nov 2017 21:21:29 GMT	Block Blob	image/jpeg	3.5 MB
HelloWorld3.jpg	Mon, 20 Nov 2017 21:21:39 GMT	Block Blob	image/jpeg	3.5 MB

Showing 1 to 4 of 4 cached items

Activities

Clear completed Clear successful

- Uploaded Group Uploaded: 2
- Uploaded Group Uploaded: 1
- Uploaded Group Uploaded: 1

Actions Properties

URL https://hr67zeymbbyjksawinvm.l

Type Blob Container

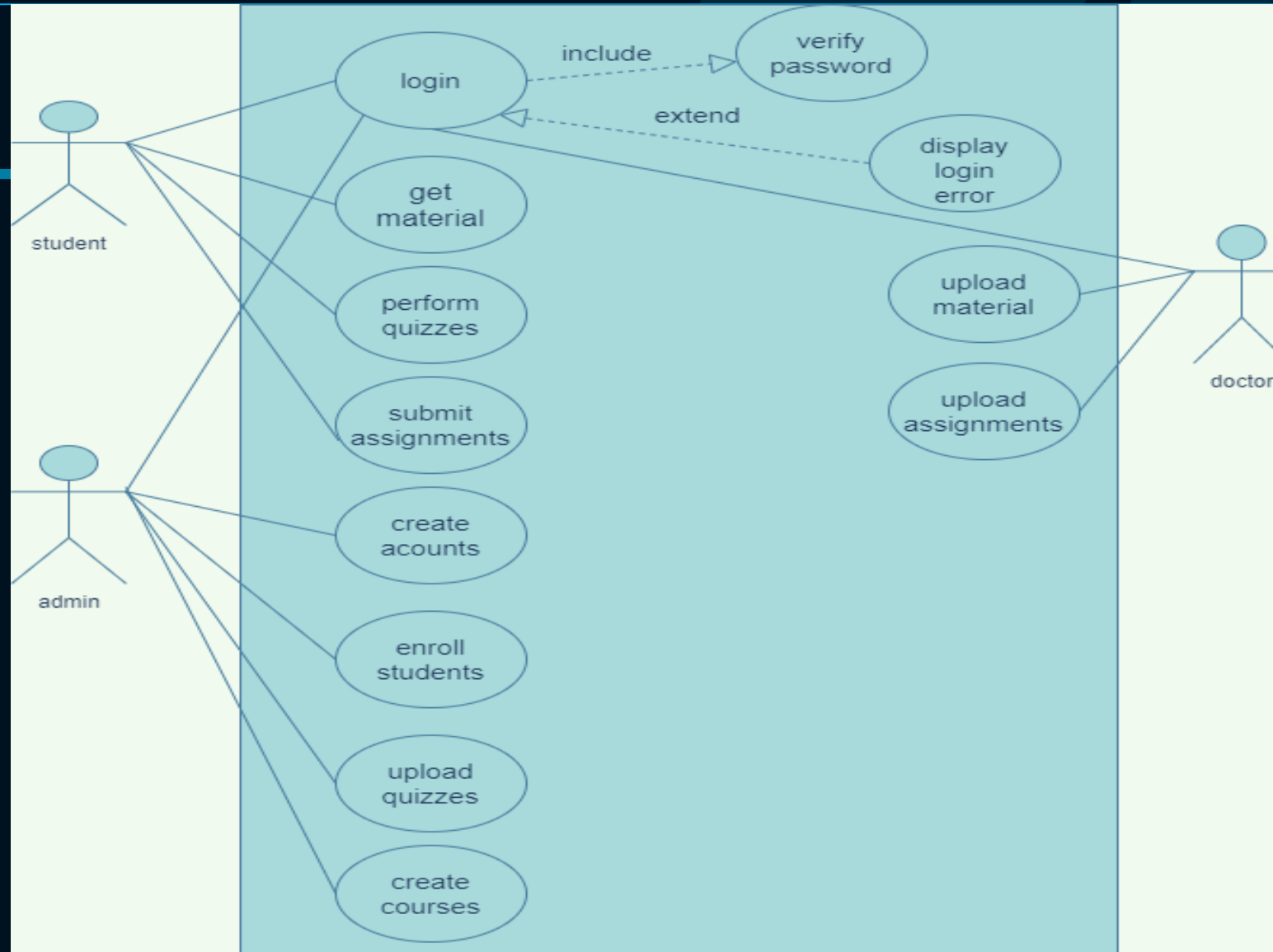
Public Read Access Off

Lease State available

Lease Status unlocked

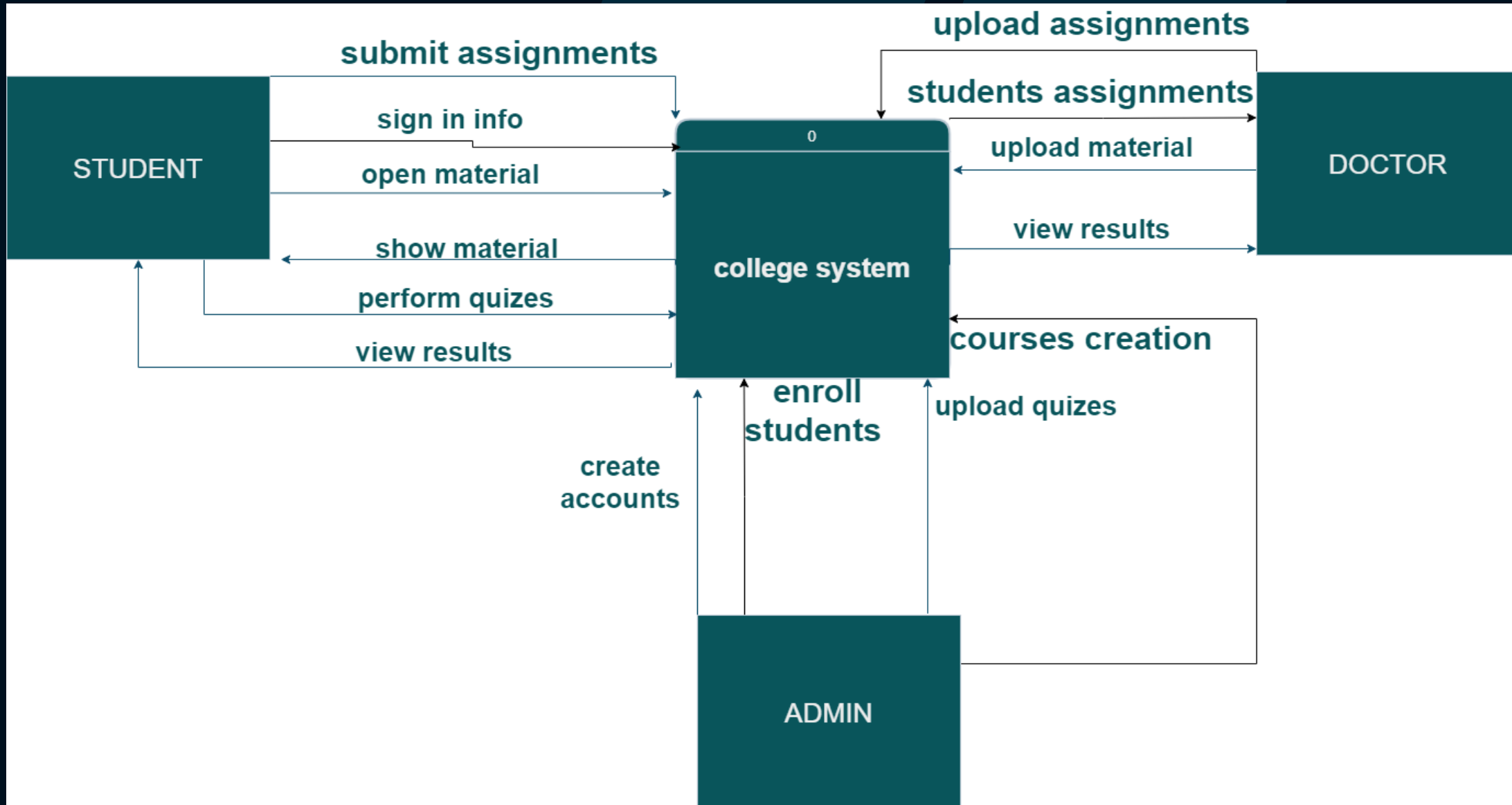
Last Modified Mon, 20 Nov 2017 18:11:49 GM

Use Case Diagram

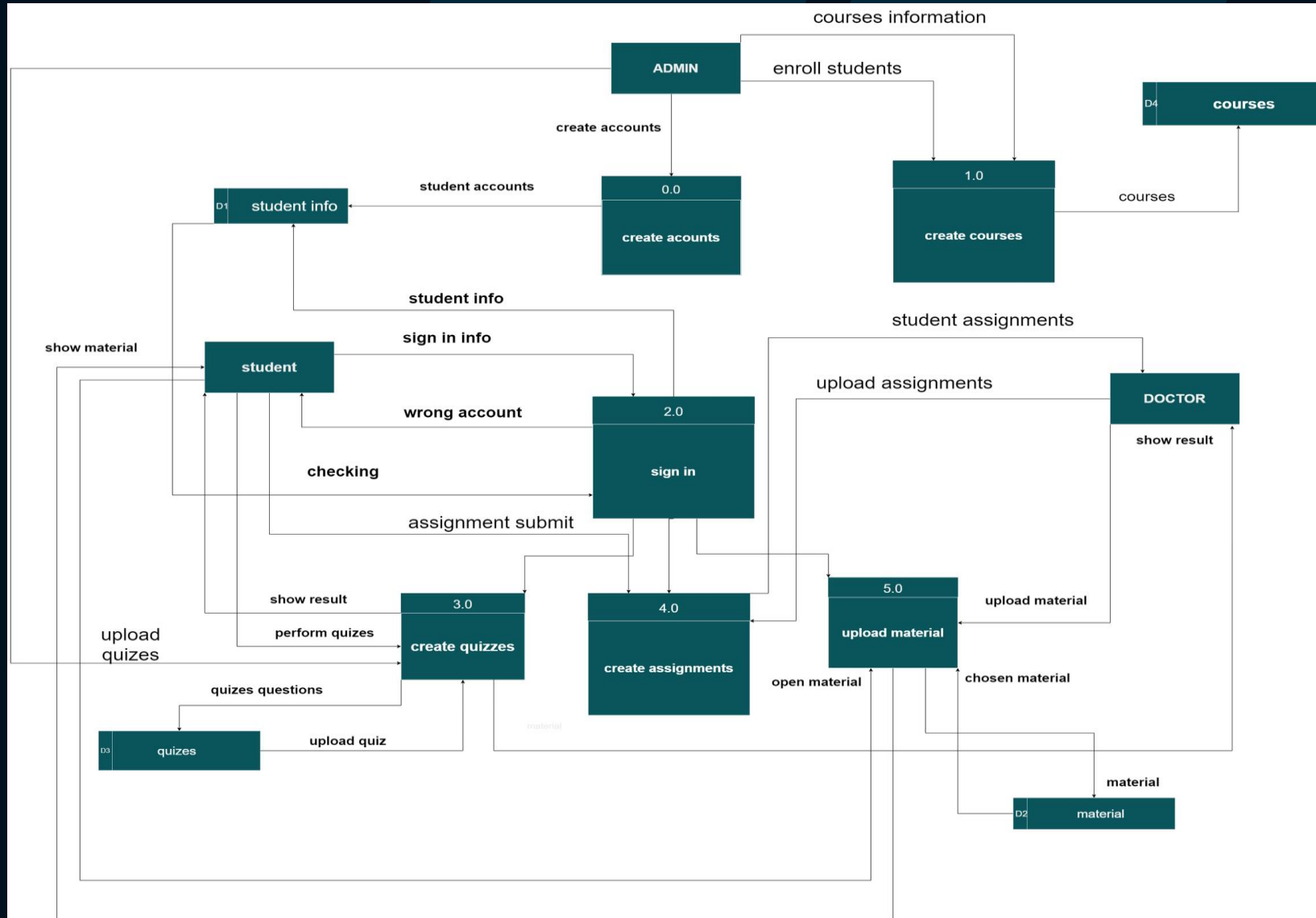


use case diagram

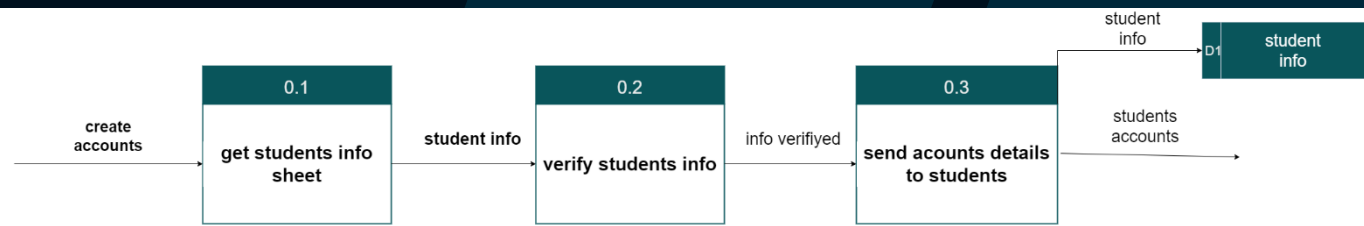
Context Diagram



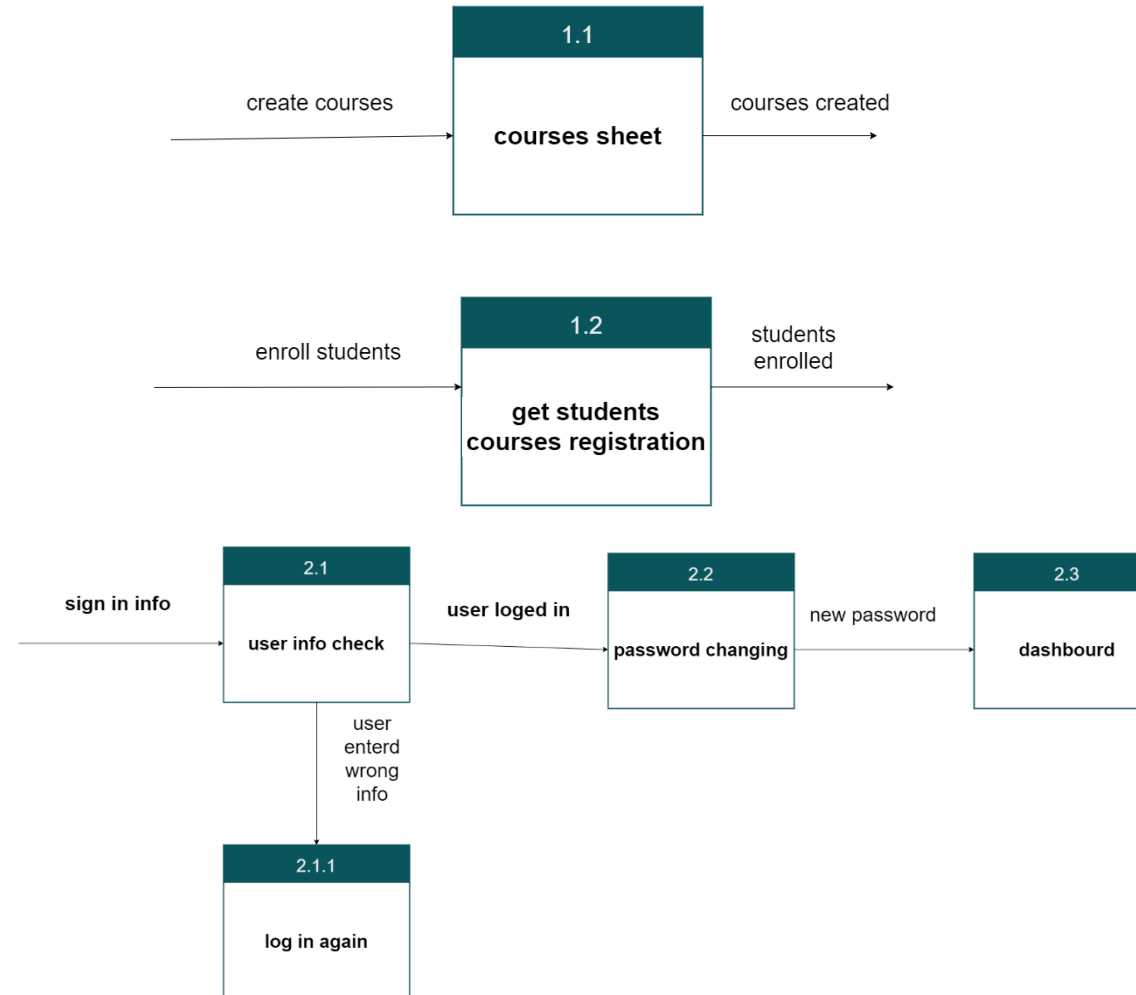
Data Flow Diagram

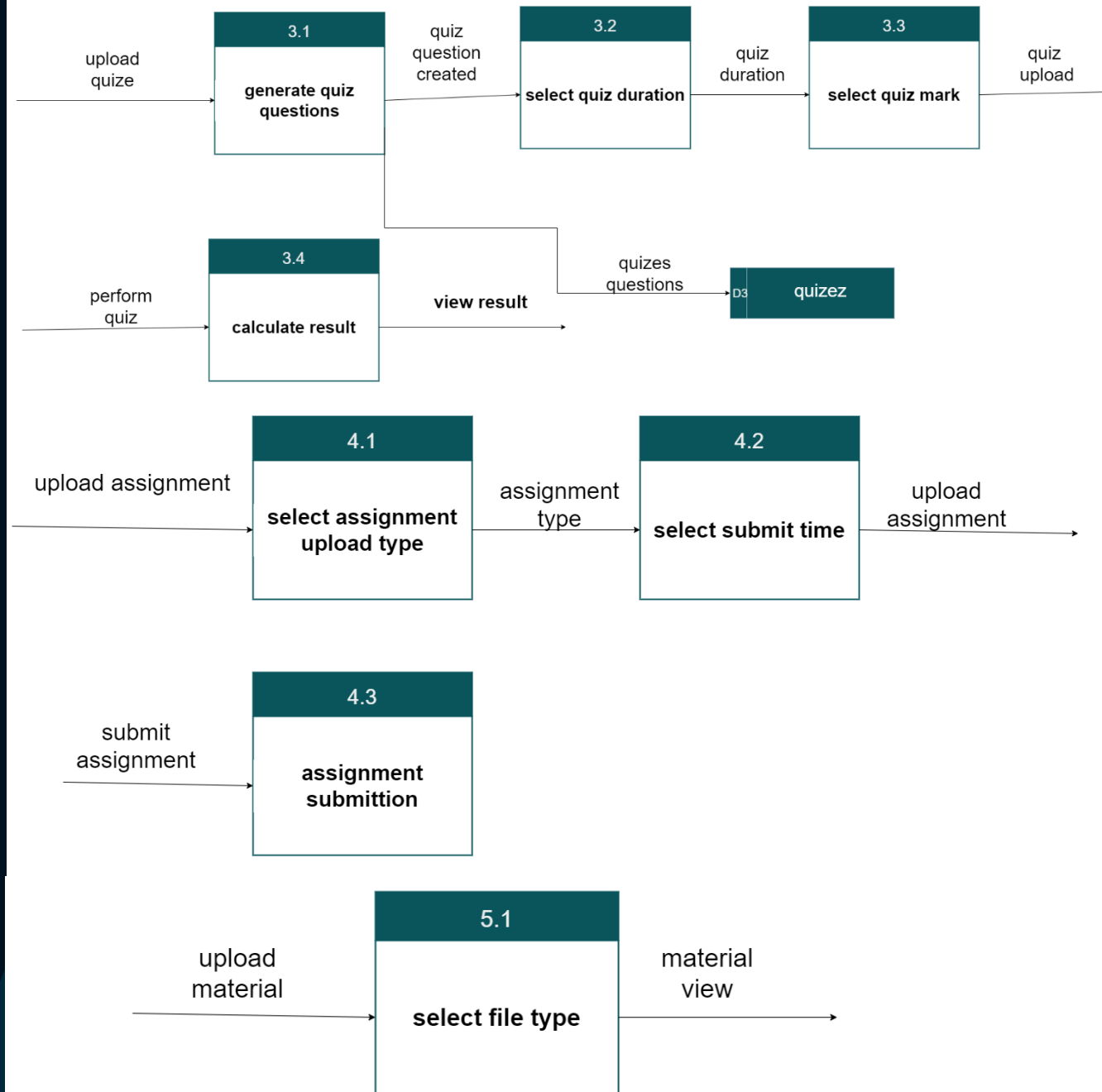


DFD LEVEL 0

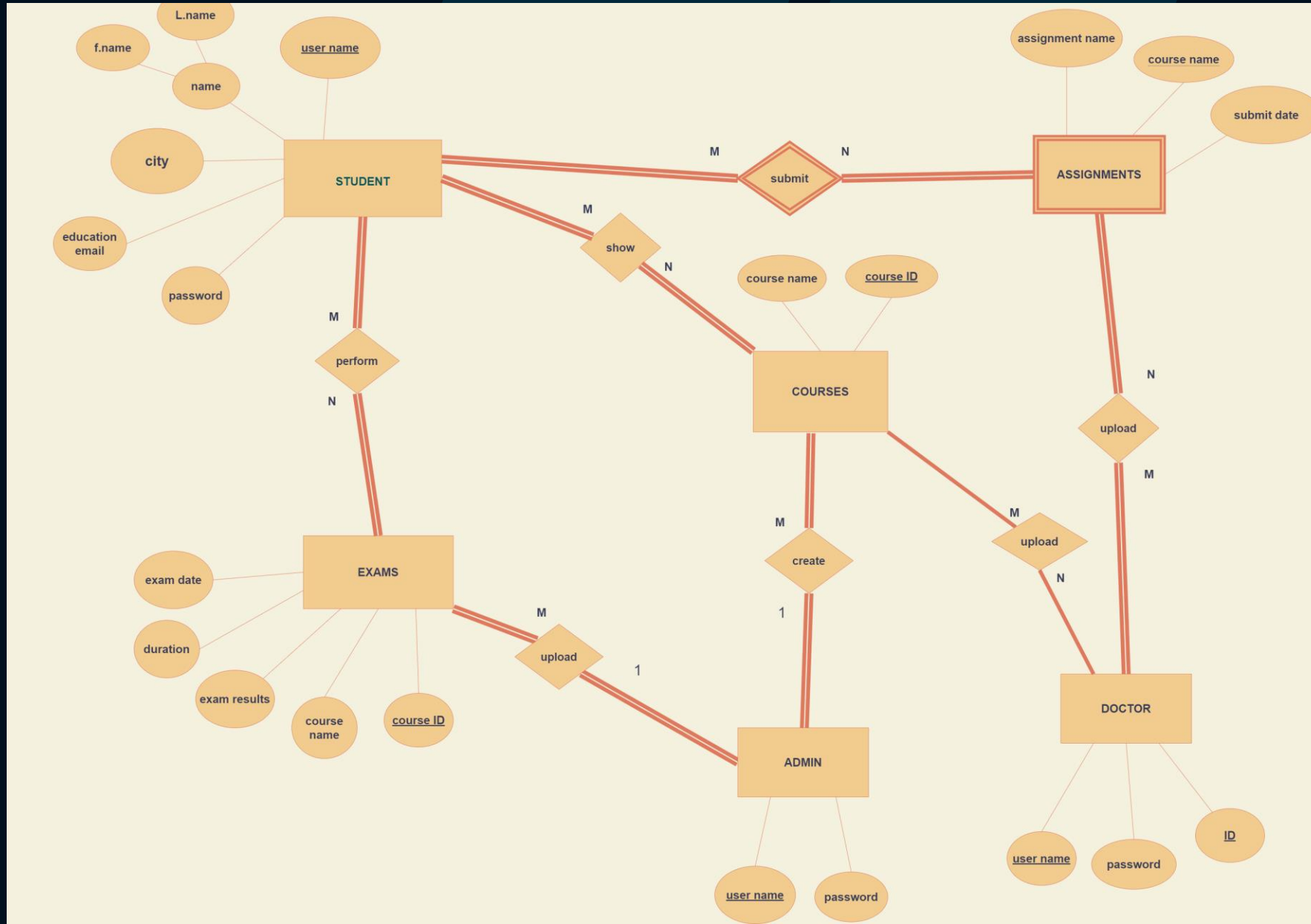


Data Flow Diagram: Child of process 0

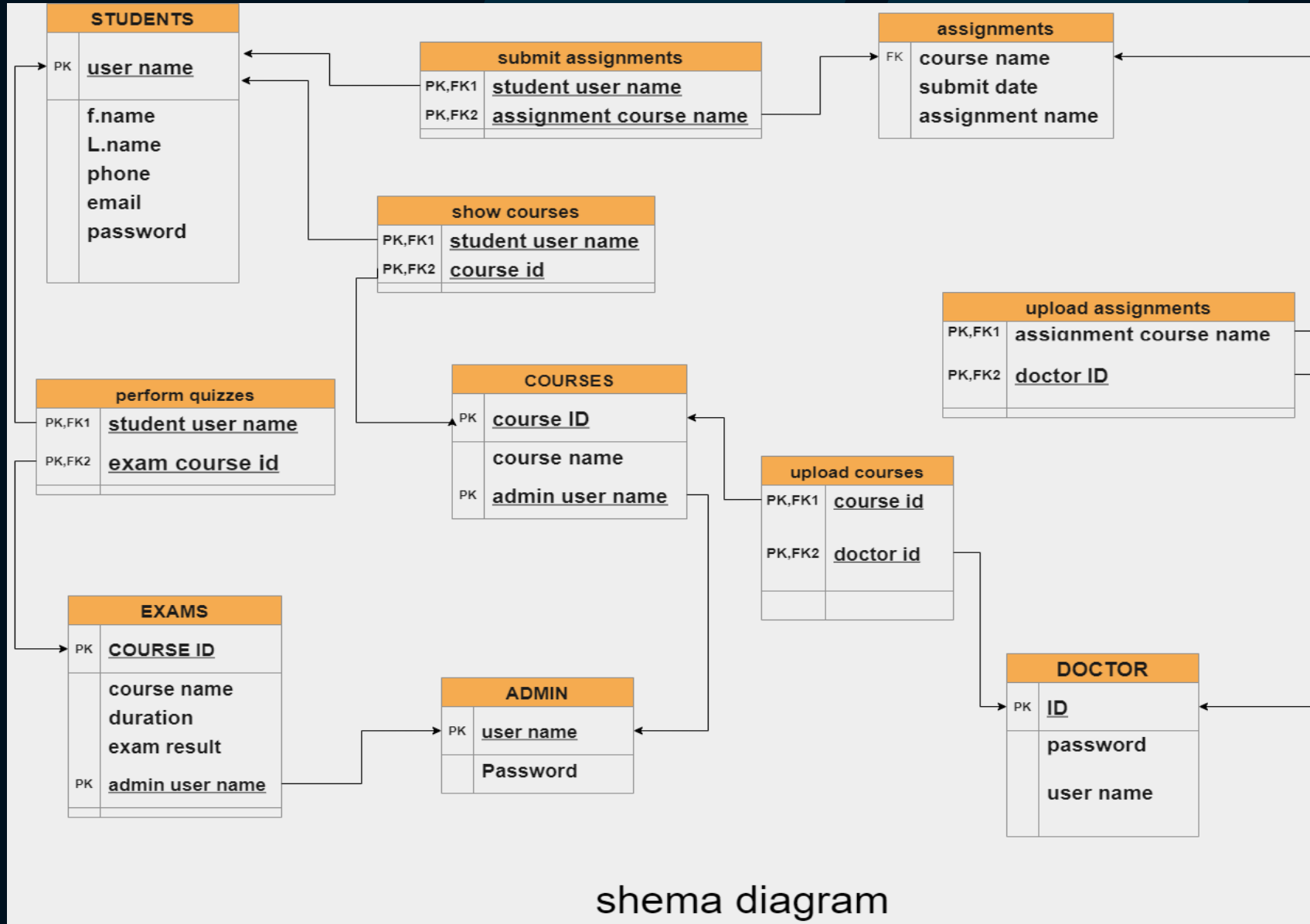




Entity Relationship Diagram



Schema Diagram



Final Results on Cloud Moodle :

O6U

English (en) ▾

Dashboard

Site home

Calendar

Private files

My courses

CS

Math 3

System Analysis


OR2

Course overview


All (except removed from view) ▾

Course name ▾


Card ▾




level 1
Introduction to computer science



level 2
Mathematics 3



level 4
Operations research 2



level 3
System Analysis

Recently accessed courses

< >

Private files

No files available

[Manage private files...](#)

Timeline

⌚ ▾

📅 ▾

Sunday, 27 June 2021

📄 interger programming problems is due 00:00

Operations research 2

Add submission

Tuesday, 29 June 2021

📄 homogenous sheet is due 00:00

Mathematics 3

Add submission

📄 assignment 1 is due 00:00

Introduction to computer science

Add submission

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Future Plan :

- Mikro Tik.
- ACS Server.
- Another Firewall.
- Domain Controller.
- Connect our college with other colleges inside the same university or with other universities.
- Using more cloud apps to ensure and improve the quality of education and ease of communication with students.



THANK YOU!

