جامعة أكتوبر
October 6 University

Network & Cloud Service for O6U.

Under the supervision of :

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Eng. Ahmed Rashad

Who Are We !

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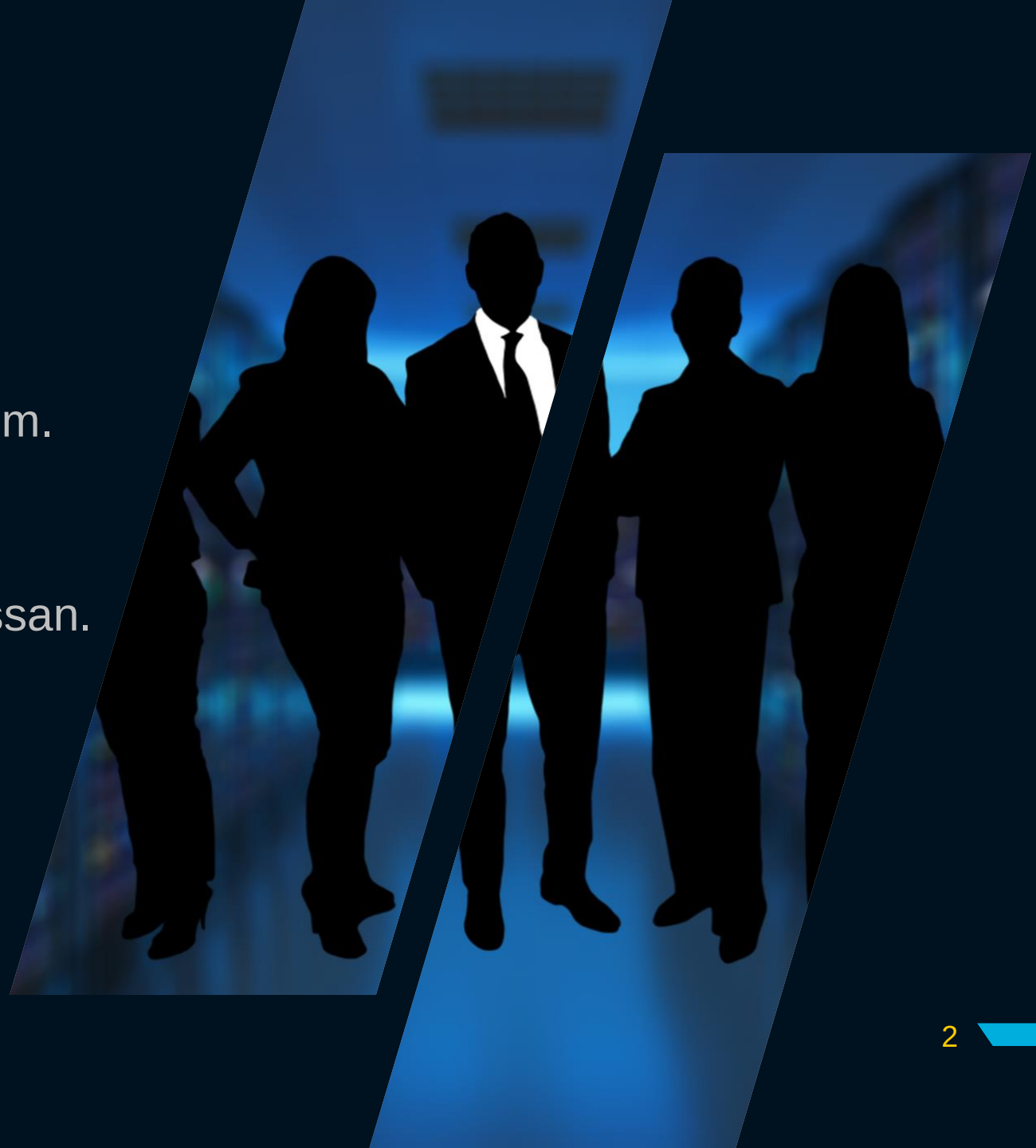
3. Abdallah Mohamed Abdelfadel Hassan.
4. Mohamed Khaled Hamdy Radwan.
5. Nada Essam Al-Din Abu Al-Saud.



Content :

Content :

3.Project Diagrams

- Network Diagram
- Rack Diagram
- Final Result for Network
- Cloud Diagram
- Cloud Results
- Data Flow Diagram
- Entity Relationship Diagram
- Website Student Result

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:

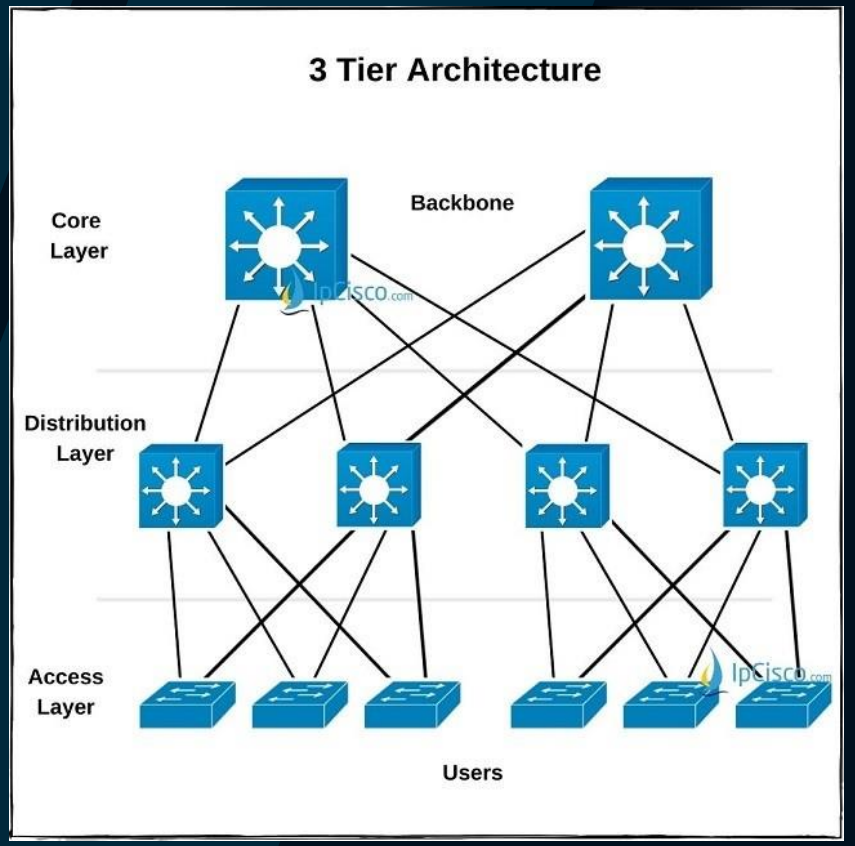
- An integrated network to connect sectors and departments to each other
- Partition for data storage
- Domain Controller to set permissions and policies on devices
- Voice communication service within the network (VoIP)
- Firewall for Network Security
- Cloud storage service
- An integrated site to 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 (*ESXI*) 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

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

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 :

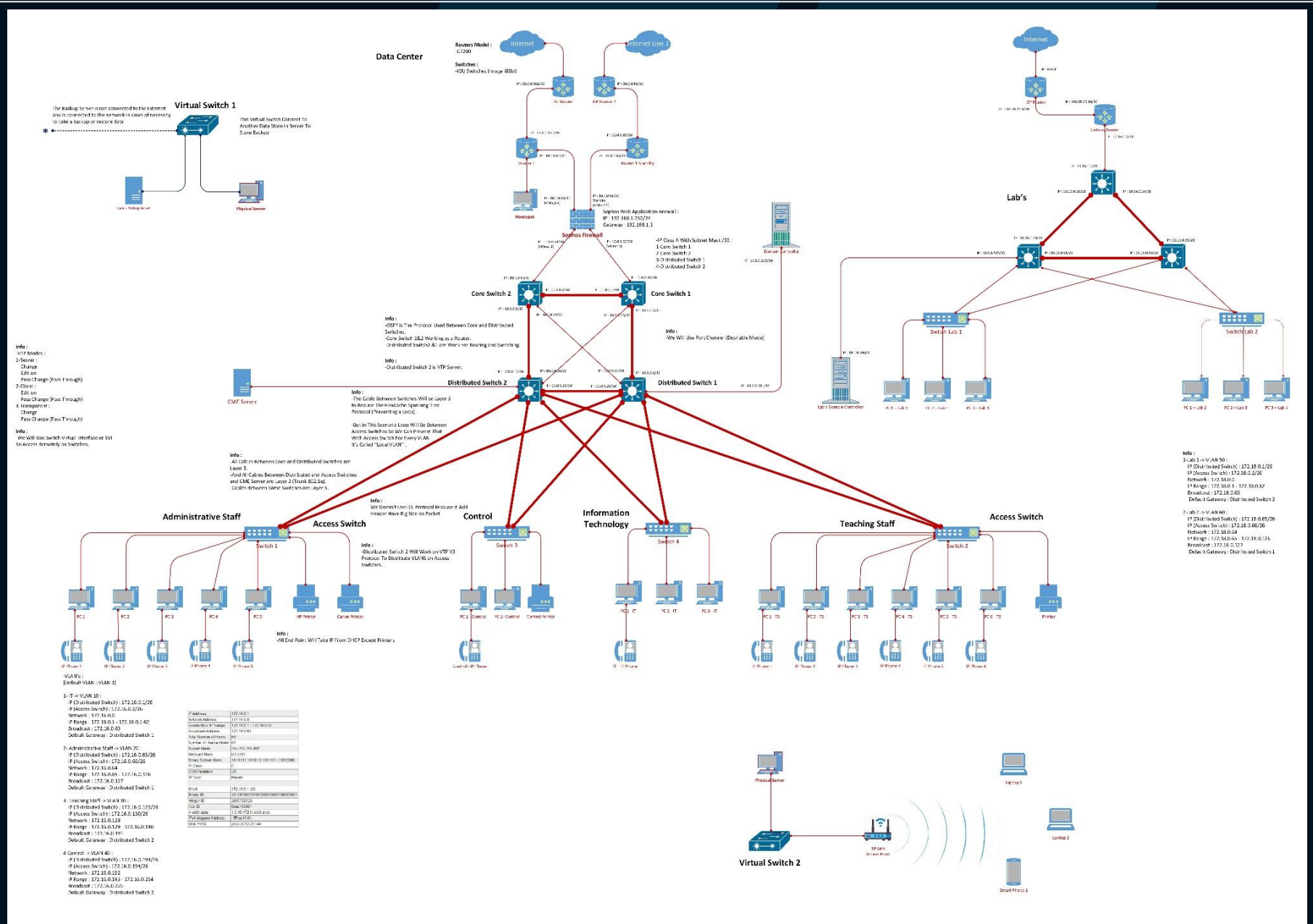
- Administrative Staff on VLAN 20
- Control on VLAN 40
- Information Technology on VLAN 10
- Teaching Staff on VLAN 30
- Lab 1 on VLAN 50
- Lab 2 on VLAN 60

PROJECT DIAGRAMS

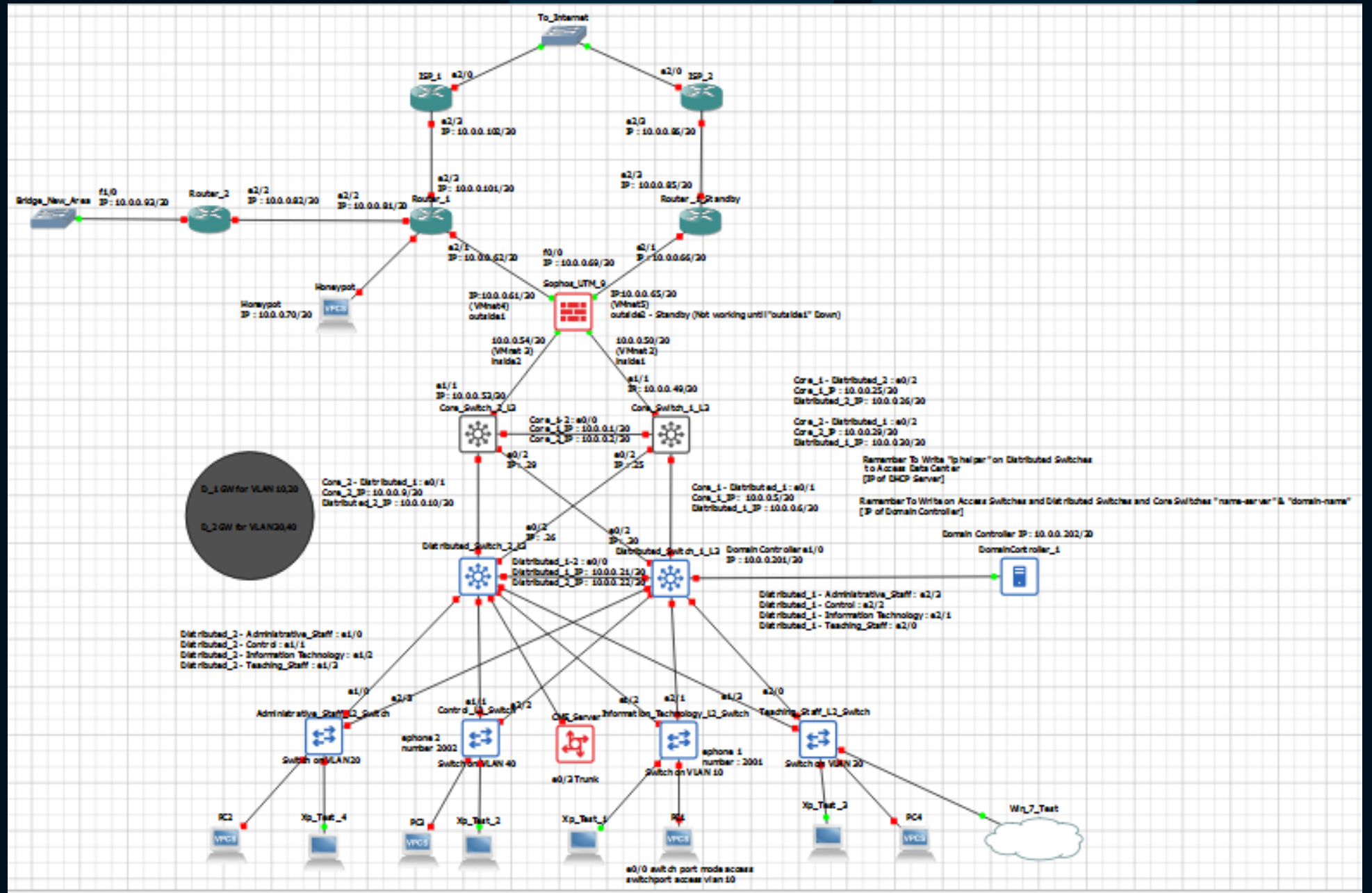
-We Have 8 Diagrams For Our Project :

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

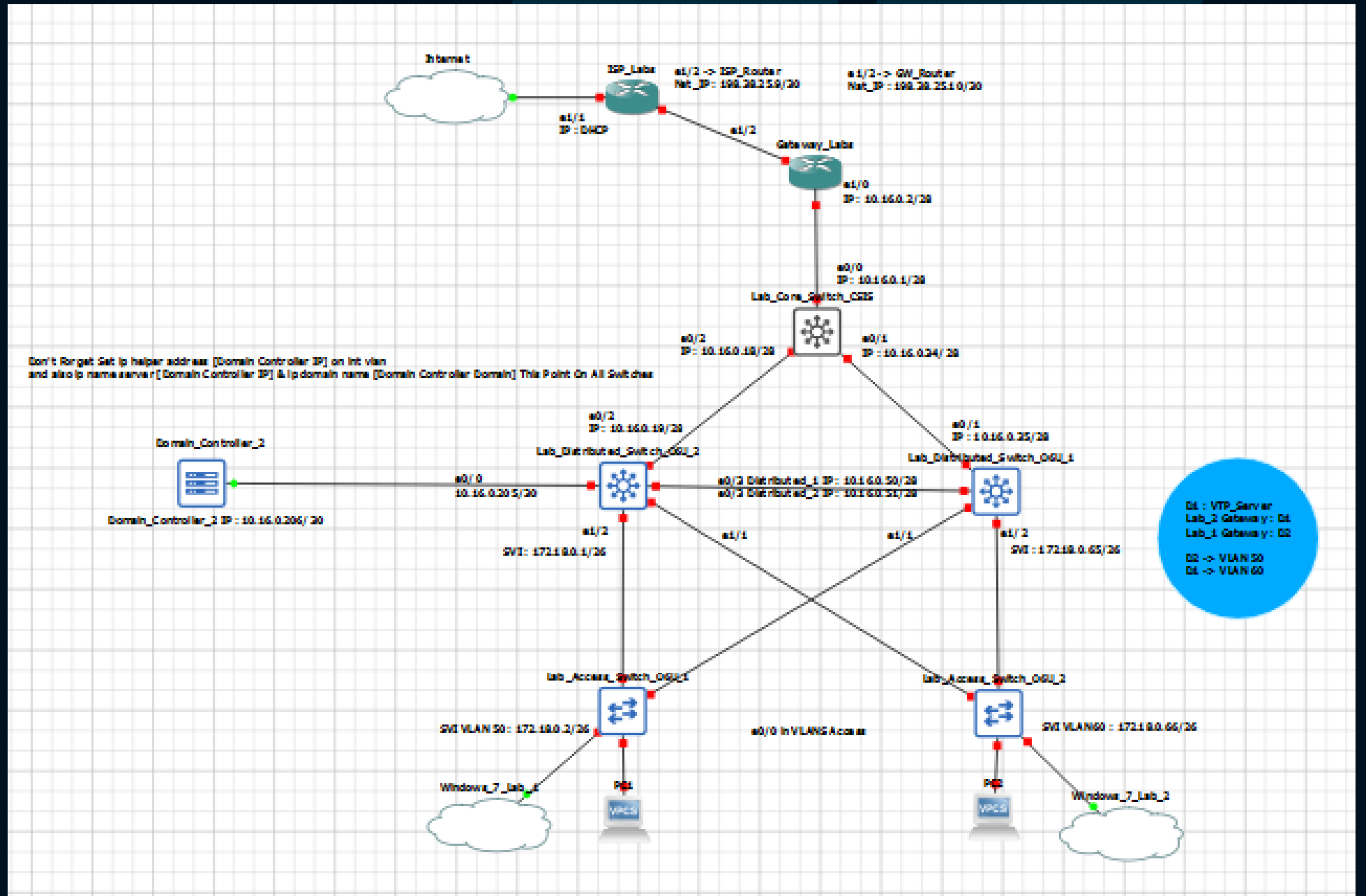
Network Diagram



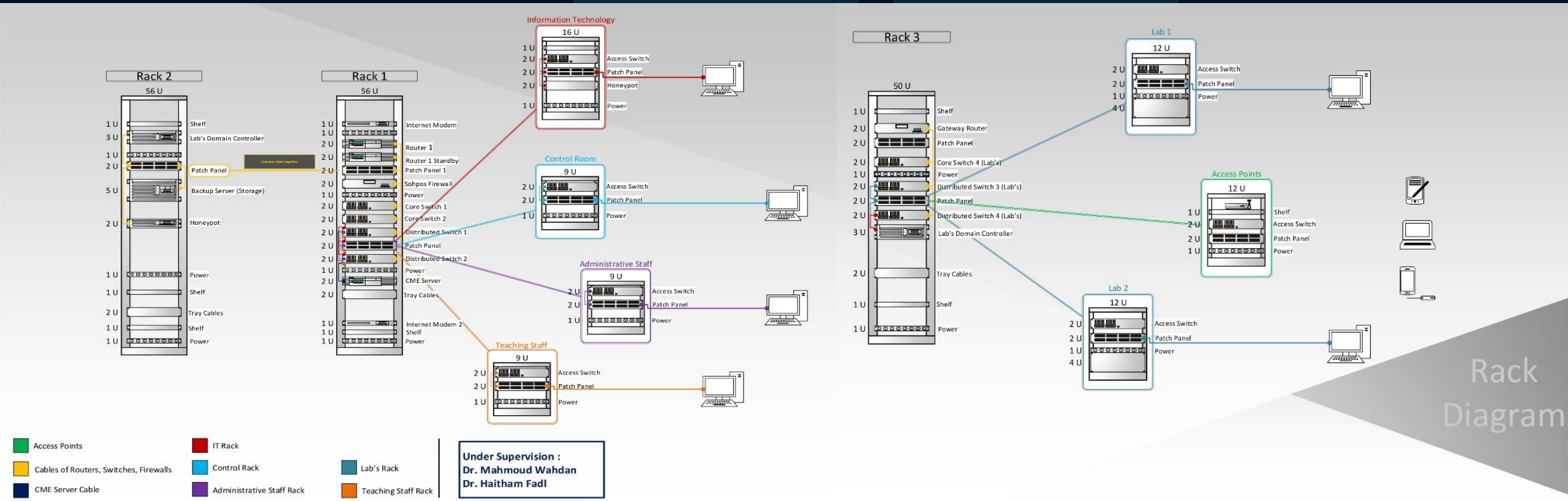
Final Results on Network



Final Results on Network Labs



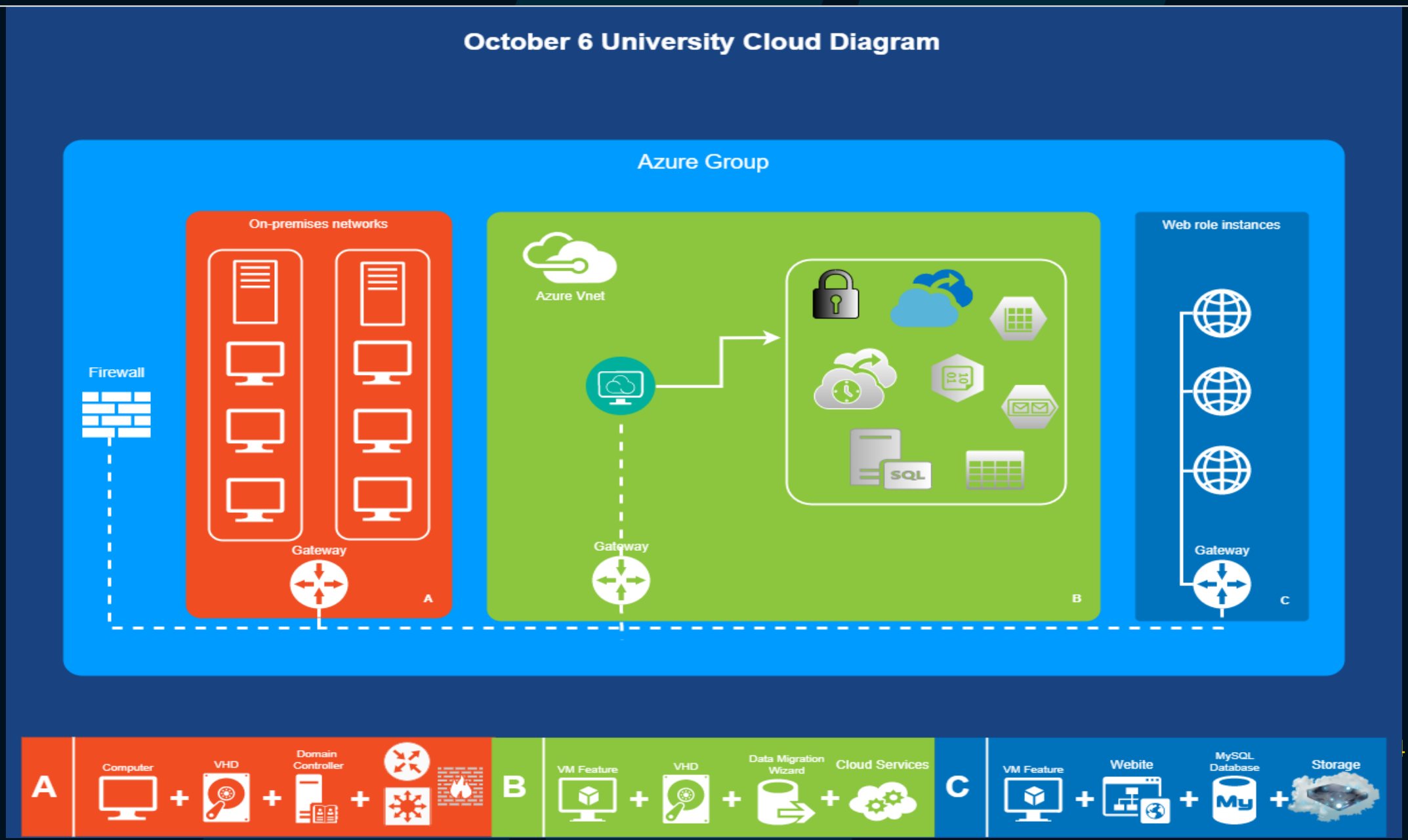
Rack Diagram



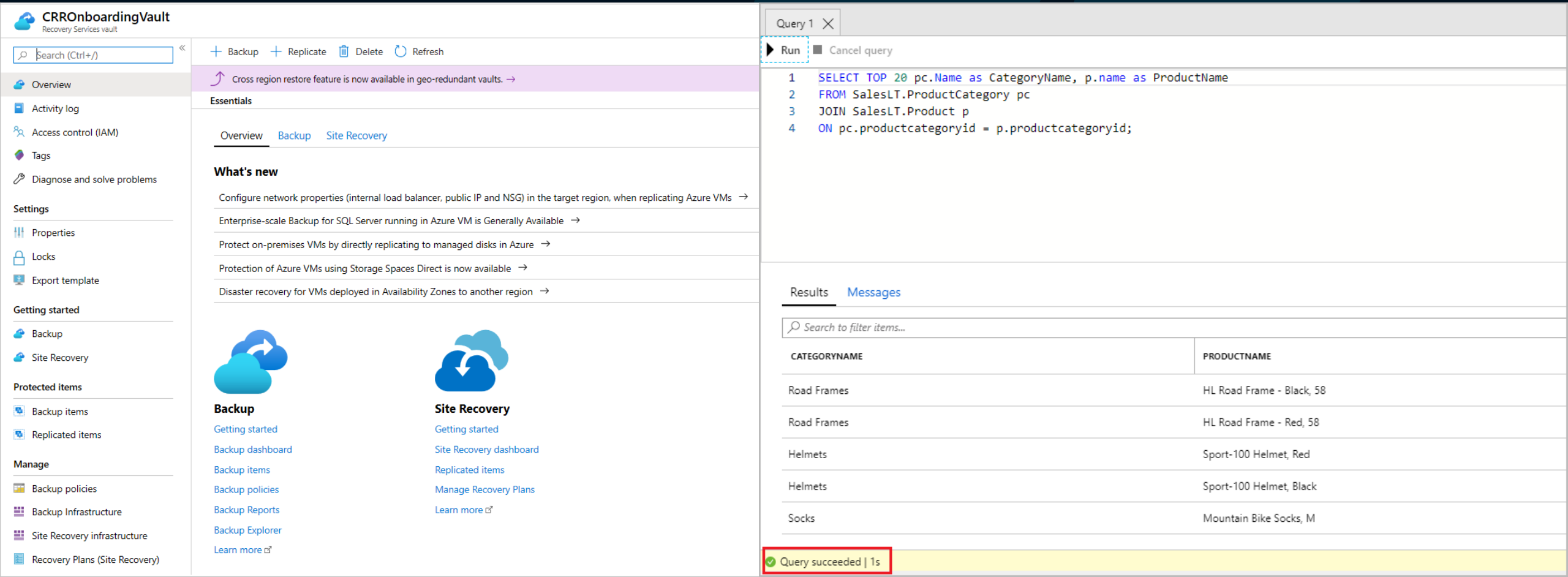
Rack Diagram

Final Results on Network Count.. :

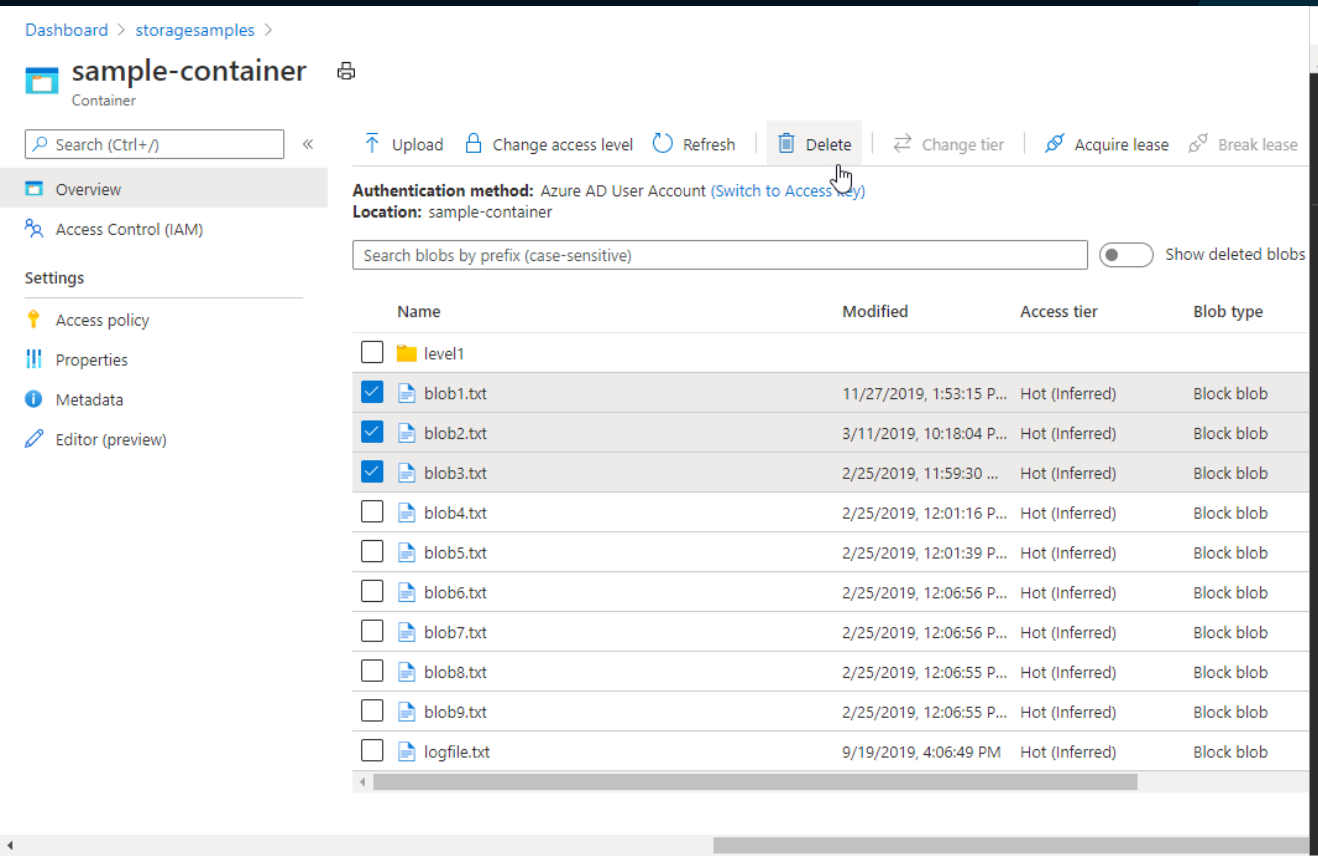
Cloud Diagram

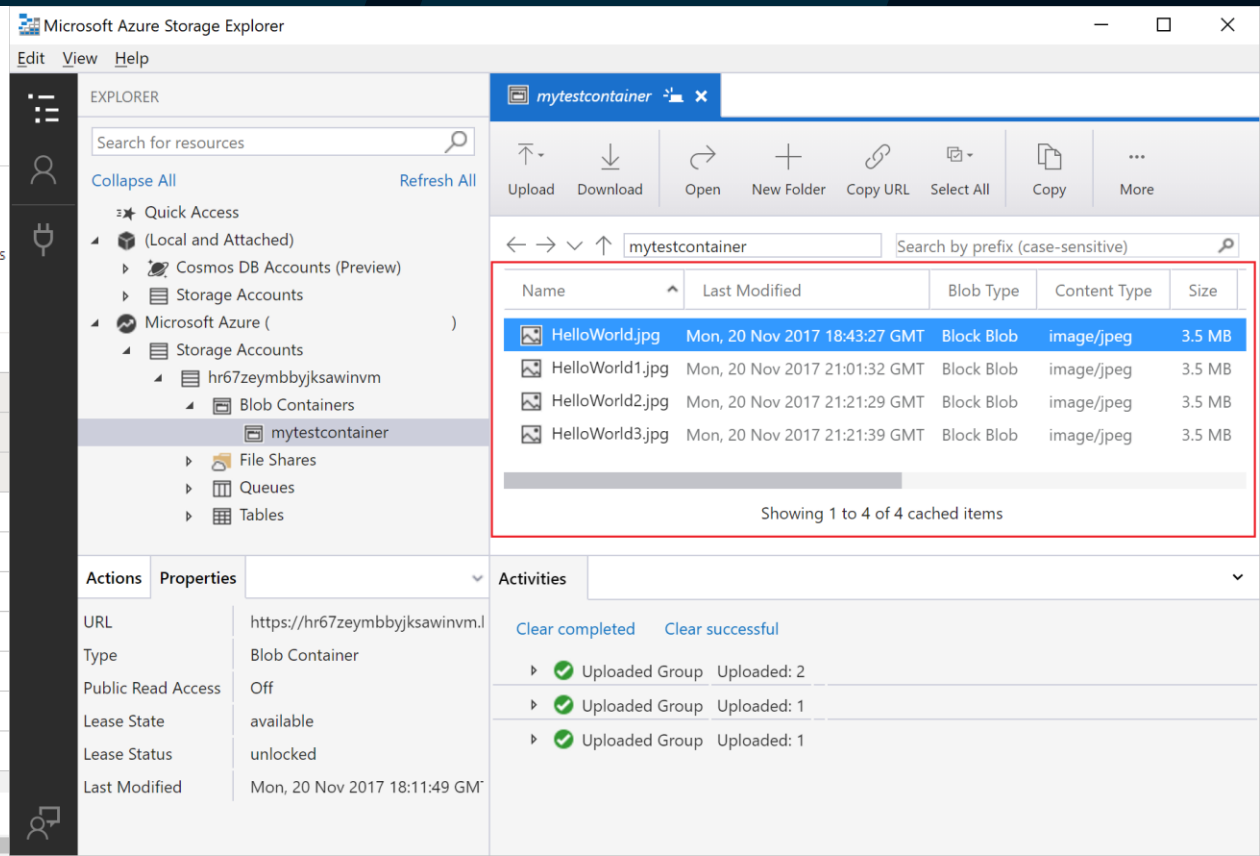


Final Results on Cloud :

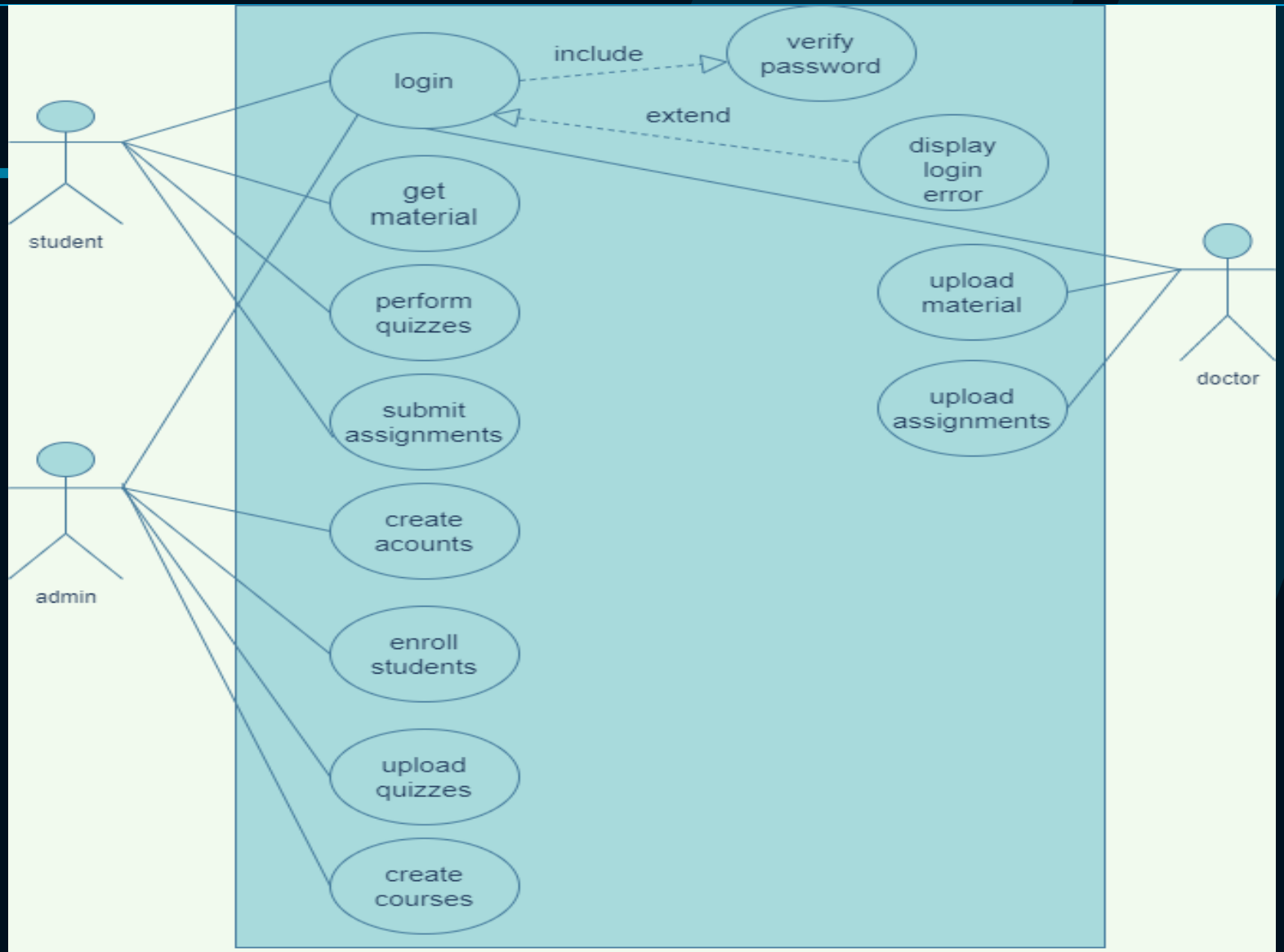


Final Results on Cloud Count.. :



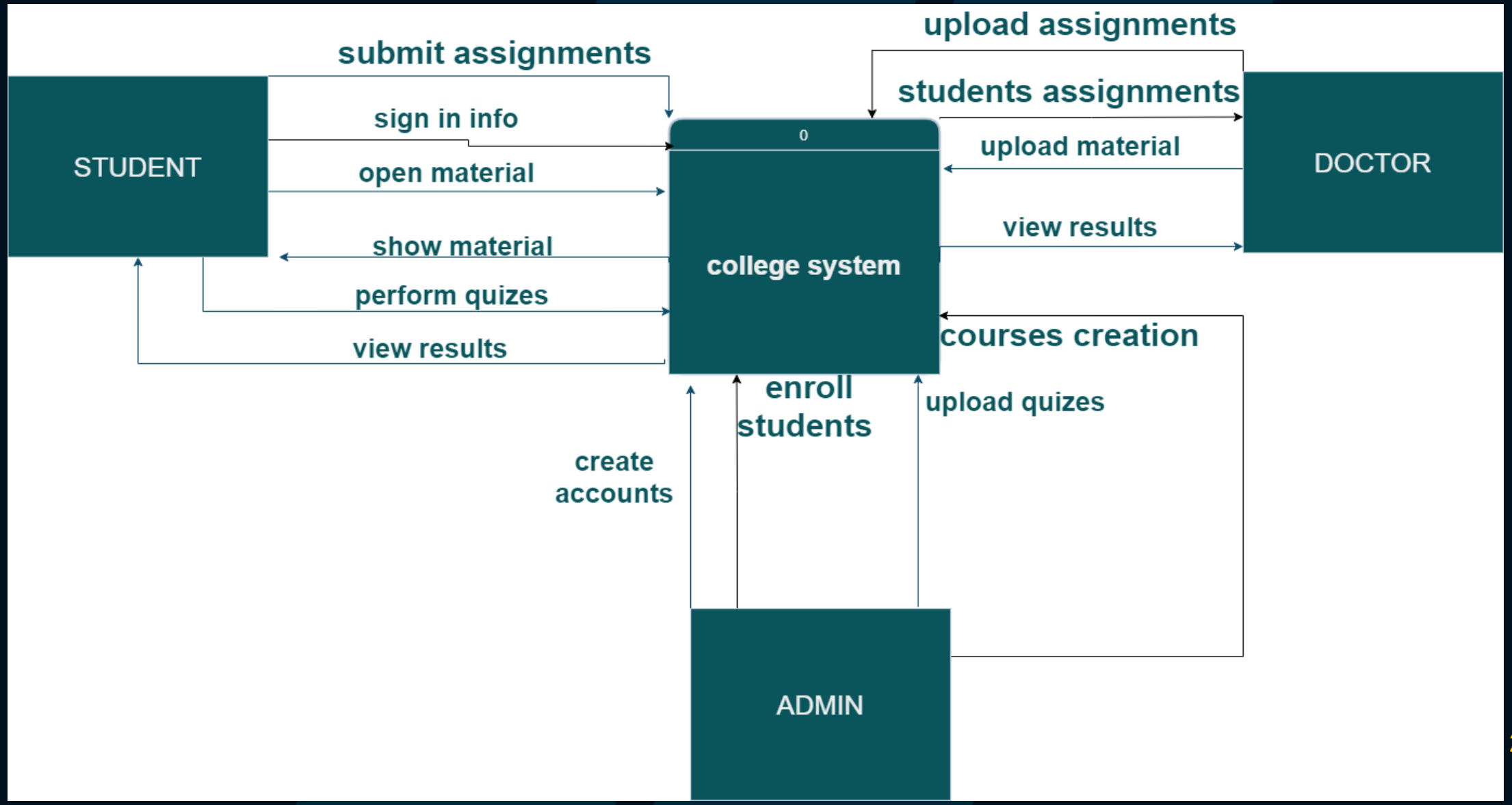


Use Case Diagram

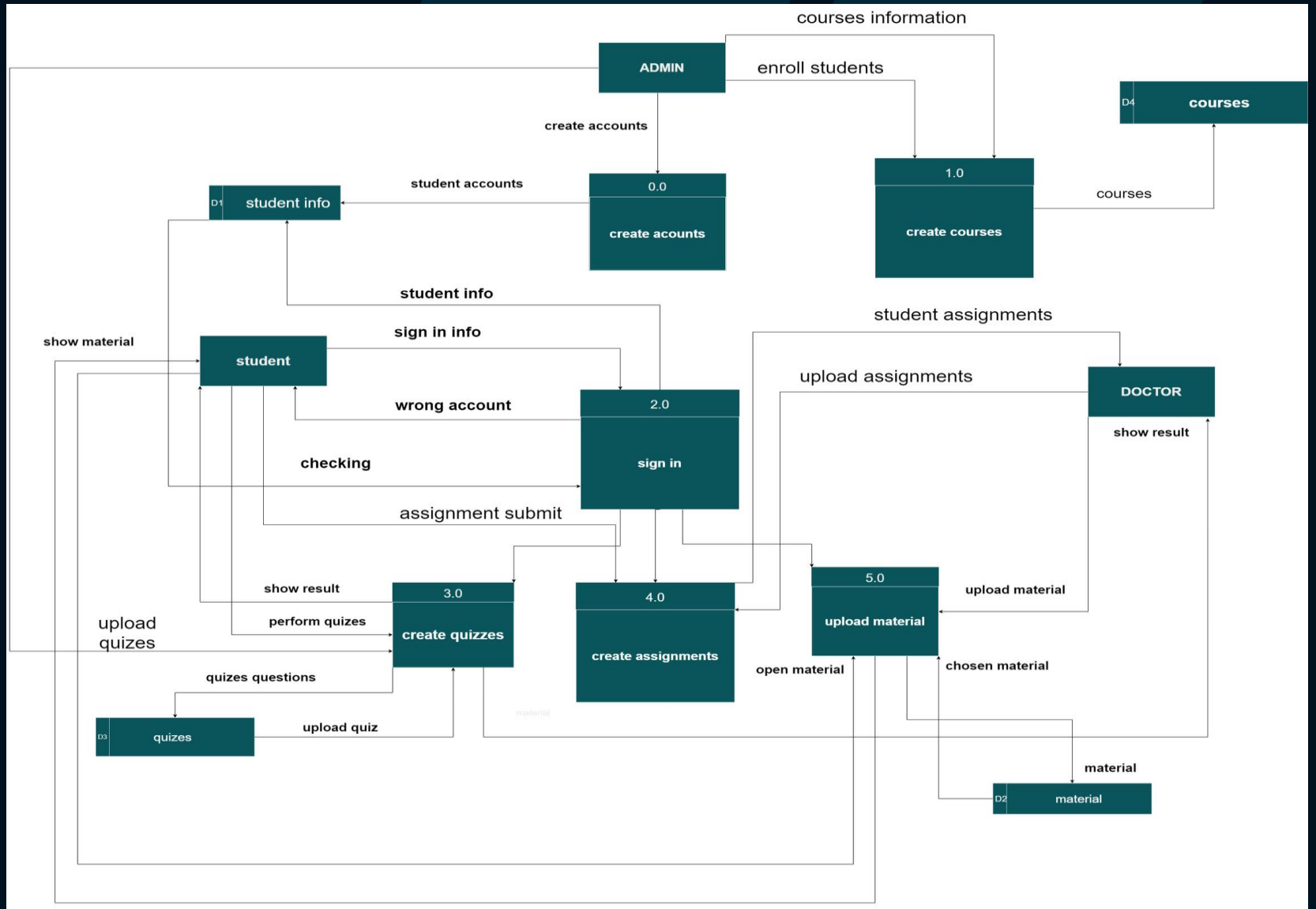


use case diagram

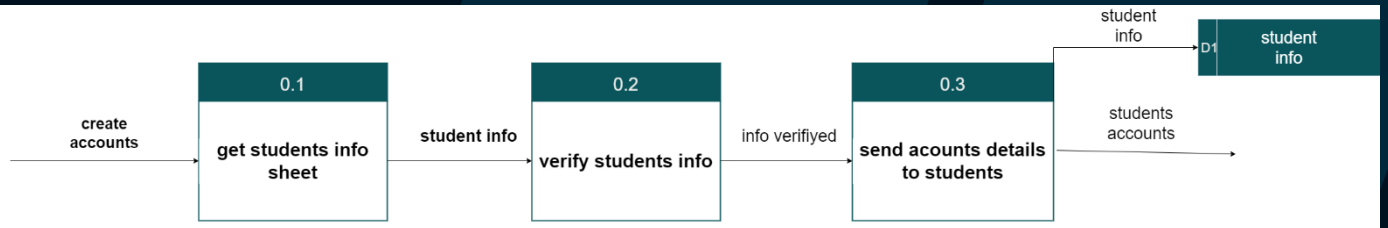
Context Diagram



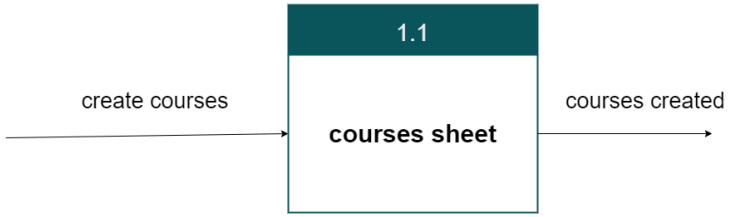
Data Flow Diagram

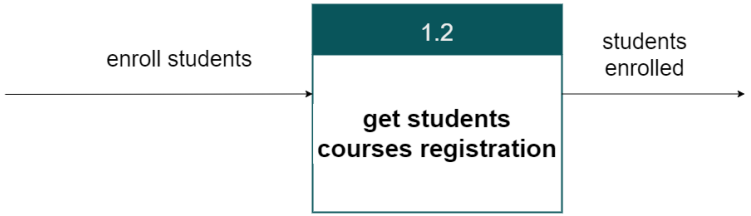


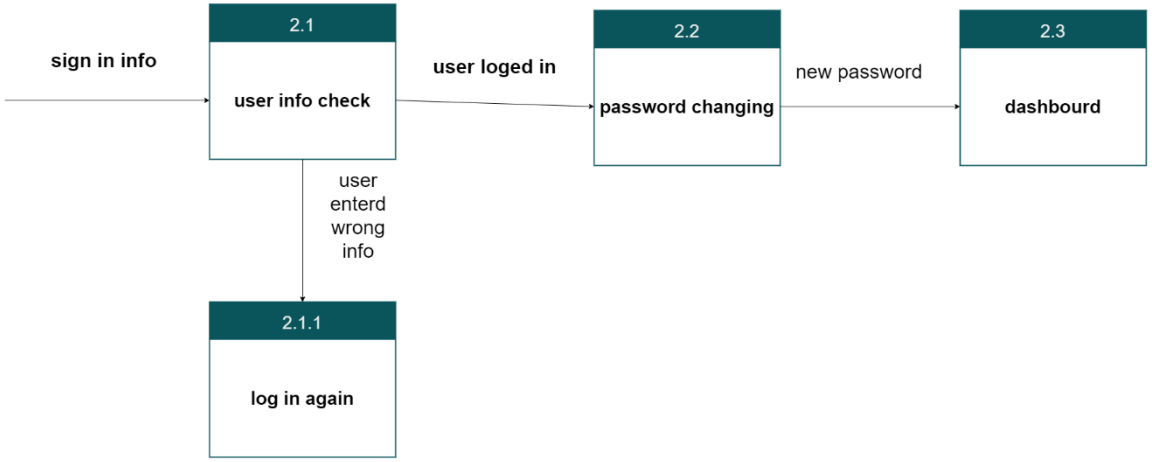
DFD LEVEL 0

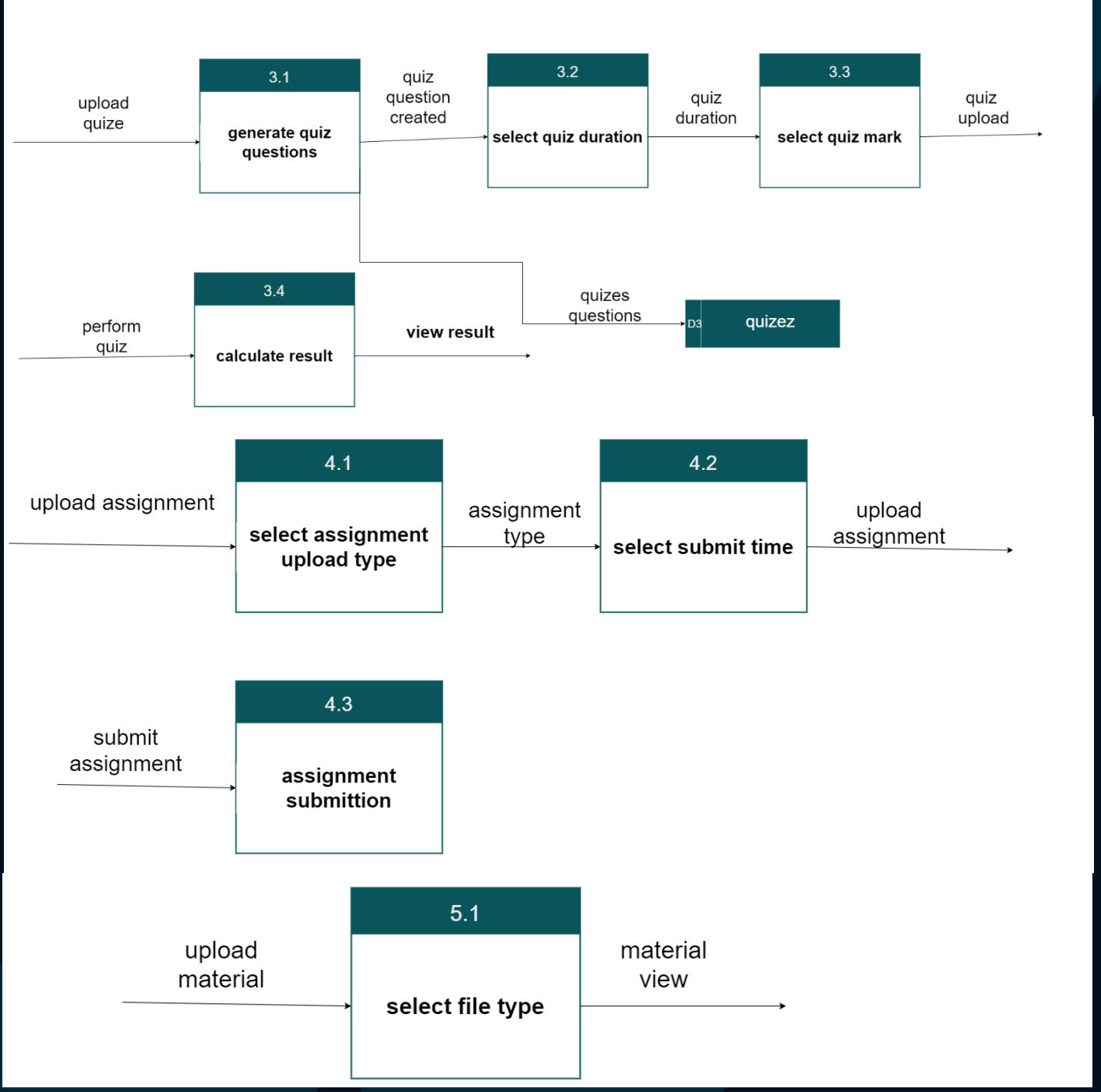


Data Flow Diagram: Child of process 0

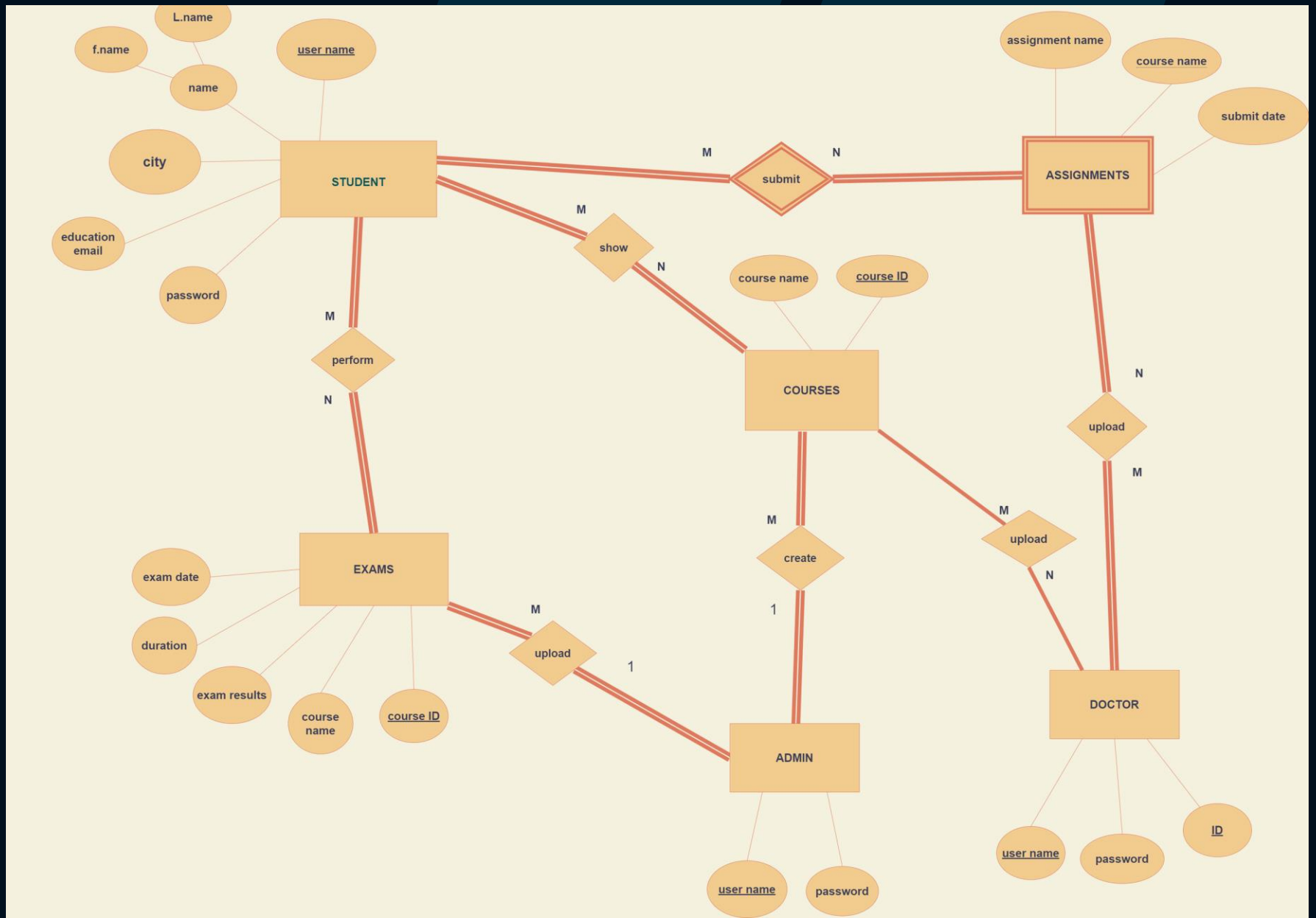




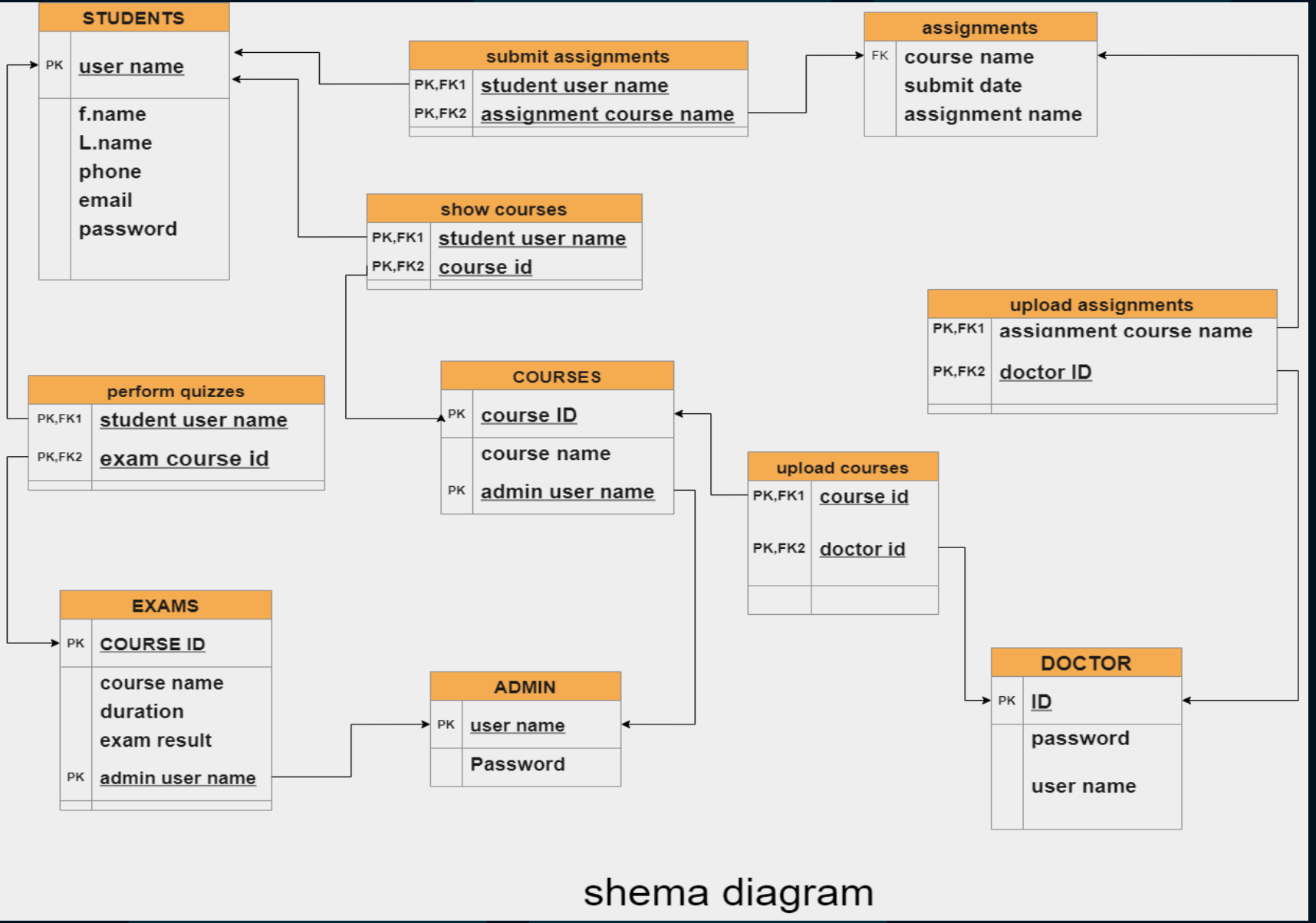



3.1
generate quiz questions
upload quize
quiz question created
3.2
select quiz duration
quiz duration
3.3
select quiz mark
quiz upload
3.4
calculate result
perform quiz
view result
quizes questions
D3
quizez
4.1
select assignment upload type
upload assignment
assignment type
4.2
select submit time
upload assignment
4.3
assignment submittion
submit assignment
5.1
select file type
upload material
material view

Entity Relationship Diagram

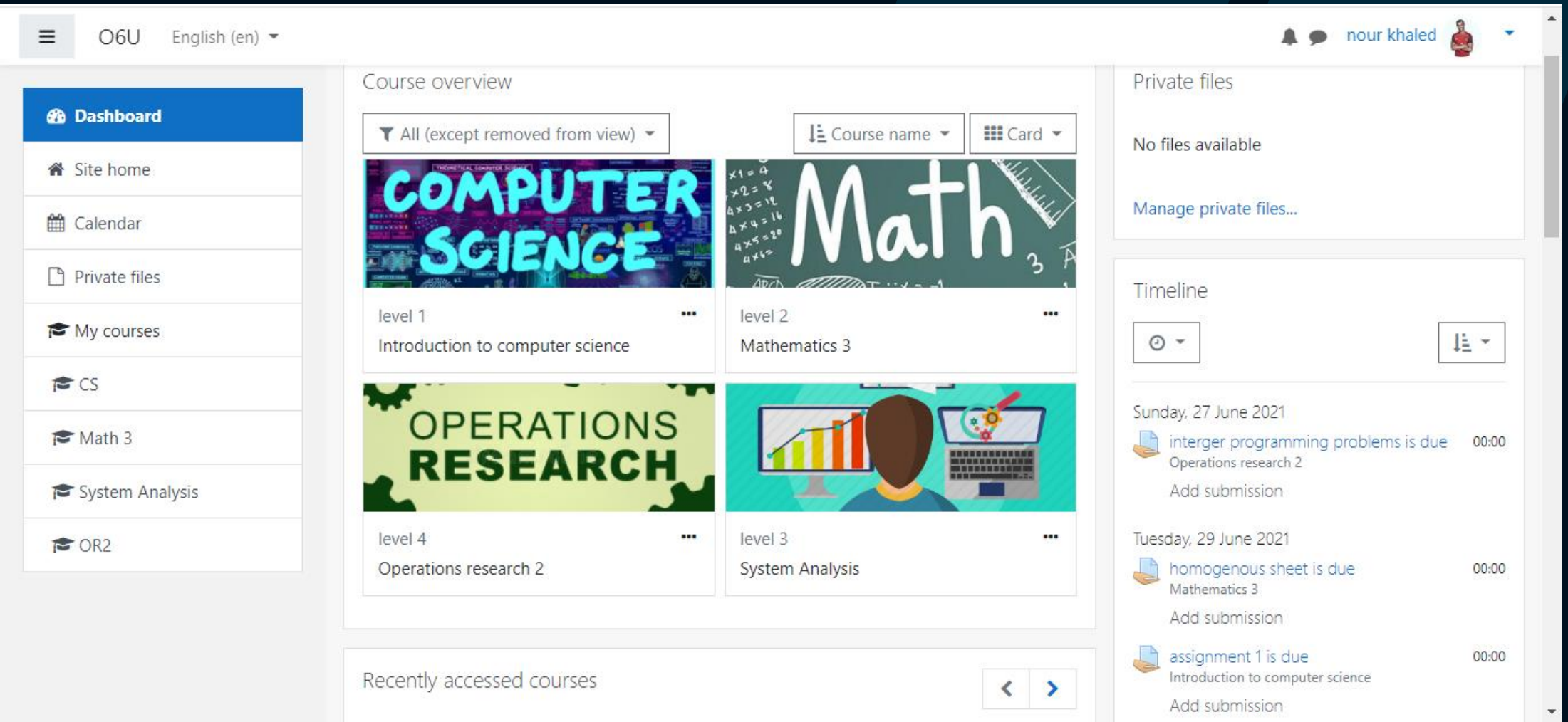


Schema Diagram



shema diagram

Final Results on Cloud Moodle :



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!
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October 6 University