TASK 2 REPORT

UTM UNIVERSITI TEKNOLOGI MALAYSIA | Faculty of Computer Science and Information Systems

UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR BAHRU

FACULTY OF COMPUTING

NAME OF GROUP MEMBER :

1) Ahmad Zulfikar (A19EC3003)
2) Muhammad Faris Ibrahim (A19EC3012)
3) Naufal Hadi (A19EC0272)

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Group Meeting Info :
Meeting #1

Date: 23 October 2020

Time: 20:15 PM

Place: Google Meet

Duration: 1 Hours and 20 Minute

Meeting #2

Date: 24 October 2020

Time: 20:15PM

Place: Google Meet

Duration: 30 Minutes

Meeting #3

Date: 26 October 2020

Time: 9:15PM

Place: Google Meet

Duration: 53 Minutes

1. GROUP INFO

Section: 10

Group Name: Qualified

Group Member: 1) Ahmad Zulfikar

Matric No : A19EC3003

Program: SECJ

2) Muhammad Faris Ibrahim

Matric No : A19EC3012

Program: SECV

3) Naufal Hadi Syukrima

Matric No : A19EC0272

Program: SECV

TASK 1: PROJECT SETUP [10 Marks]

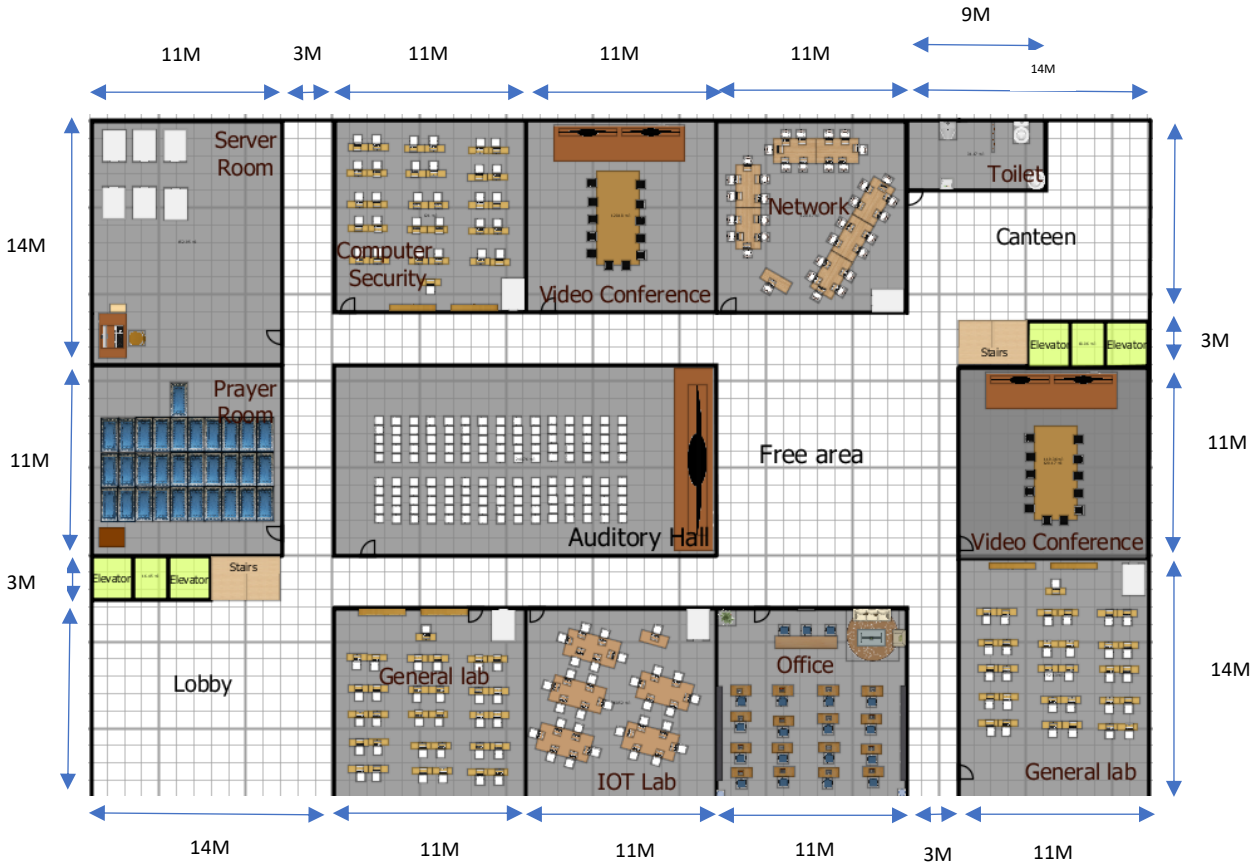
In this task, you are to create your own team. Choose people who can contribute and work well and hard. A good team can mean a better quality of work and, as a result, a better grade.

a) Create a group of 3 - 4 students per group and come up with a group name.

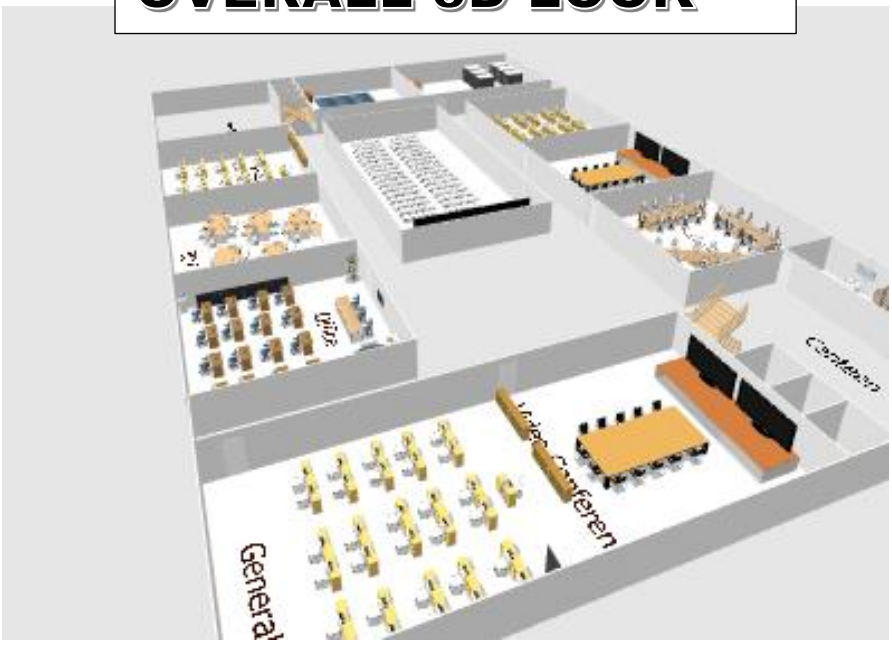
b) Read the case study thoroughly. Make sure you understand it. Ask if you don't.

c) Create your own additional building layout and design based on requirements. Draw a floor plan (with actual scale). You can use any software to draw, just make sure that the result is clear and readable.

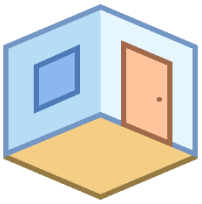
FLOOR PLAN



OVERALL 3D LOOK



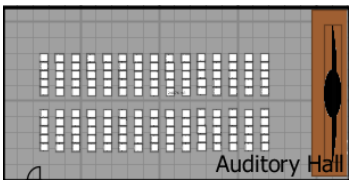
ROOM TO ROOM EXPLANATION



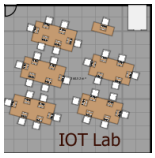
The prayer room is located at the most front of the building, with the proposed capaticy of around 50 people

There are two video conference room that are suited to have meetings online with around 12 people in the room

The office for teachers, right now it is designed simply to provide space for around 20 people



The auditory hall has a capacity of 150 people to accommodate large-scale talks and lectures



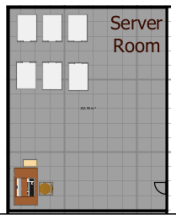
Like most labs, it has the capacity of 30 students. The IoT lab is designed to collaborate, hence the grouping of tables.

Like most labs, it has the capacity of 30 students. The Network lab is designed to collaborate, hence the grouping of tables.

Like most labs, it has the capacity of 30 students. There are two general lab that are simply designed to accommodate basic teaching and

The toilet, for ease of use, is located near the canteen

Like most labs, it has the capacity of 30 students. The computer security lab is simply designed to lecturing of computer sciences mainly security



The server room, to backend the networking purposes in the building

OVERALL FLOOR PLAN EXPLANATION

We designed the floorplan to accommodate labs and the basic needs of a campus building, with two hallways from the lobby to walk around the building. The end of both hallways is a canteen where the toilet is located. The stairs and elevators are located within the lobby and canteen making it a hub for both resting and navigation within the building.

When we design this floorplan we had the main goals of accommodating 4 types of labs: a general-purpose lab, a network lab, an IoT lab, and a computer security lab. Other rooms were prioritized after it.

SYMBOL LIST

Server

Keyboard & Monitor

PC

Chair

Prayer Mat

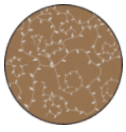
Storage Box

Office Chair

Office Sofa

Sofa Chair

Glass Table



Round Carpet

Big Table

Screen / Monitor

Sofa

Door

Sink

Auditory Hall Chair

Laptop

Yucca Plant

Urinal Toilet

Toilet

Toilet Blur Screen

Wood Cabinet

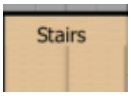
LAB Chair

Desk

Desk

Water Cooler

Medicine Box



Stairs

Elevator

CONCLUSION AND REFLECTION STATEMENTS

Floor plan is a view from above that shows the layout of a building in the same way as on a map. Floor Plan shows the layout of the room, showing the relationship between one space and another. Floor Plan is a basic reference for the entire floor plan that will be useful for estimating and planning the actual construction of a building or building. Alhamdulillah, we finish the first task within the time given. We were trying our best to work on this project together, hence we meet up virtually often. We knew that this task will need to accommodate future tasks that's why we take careful actions in making this floorplan. We are still open to suggestions and criticism since this project is far from over, so we might change the layout in the future if necessary and finally our group can finish the first task within the time given. Even though we do all this project fully online from the discussion to the process itself, we've tried our best to work together on this project. Also, we believe that our group is ready to go for another task that require strategic actions to complete this floor plan project. Because of that, any potential improvement in this project still possible and alhamdulliah there's not any obstacle when our group try to finish thus project but we think it's mostly good if we do it by face to face, but because the condition doesn't worth so we just do the task and study with online context.

Question and Answer

Documentation :

1. Offer your point of view why we prefer using Sweet Home 3D than another design application?

Because it is a full open source application, which allows for many features while being free to use, it also has the added benefit of using 2d top-down view as standard for designing rooms.

2. Does the laboratory need to add the cctv (Closed-Circuit Television) ?

should have, because it is shared property and therefore it requires security.

3. Lay out your argument, why do you select setting up a wireless network in college?

To encourage internet usage by making it more accesible to the people in the college.

4. Give me an excuse about statement that say "router and switch are needed as LAN devices?

Because router is used to create larger complex networks by complex traffic routing. It

has the ability to connect dissimilar LANs on the same protocol, meanwhile the switch

is used to connect computer and router.

5. Which type of topology that we used and why??

We use tree topology. Tree topology is a joint between star topology and bus topology.

This network topology is commonly used for central interconnection with different

hierarchies.

6. Explain the differentiation between switches and hub?

Both have a simple function: receiving electric signals and transmitting them. But the difference shows the way the devices treat the data they receive; hub and switch. Hub works by sending the data to all device ports whereas a switch only transfers the data to a port that is connected to the target device. A switch does this through an integrated MAC address learning of the connected devices.

7. What is the best time do you think to do the renovation?

The ideal time to implement all of this work is during the long semester break. Since most of the students and staffs are away from the campus. Thus, their activities will be not interrupted and the work will be carried out smoothly.

8. Talking about the system, what is the suitable architecture that you like to use?

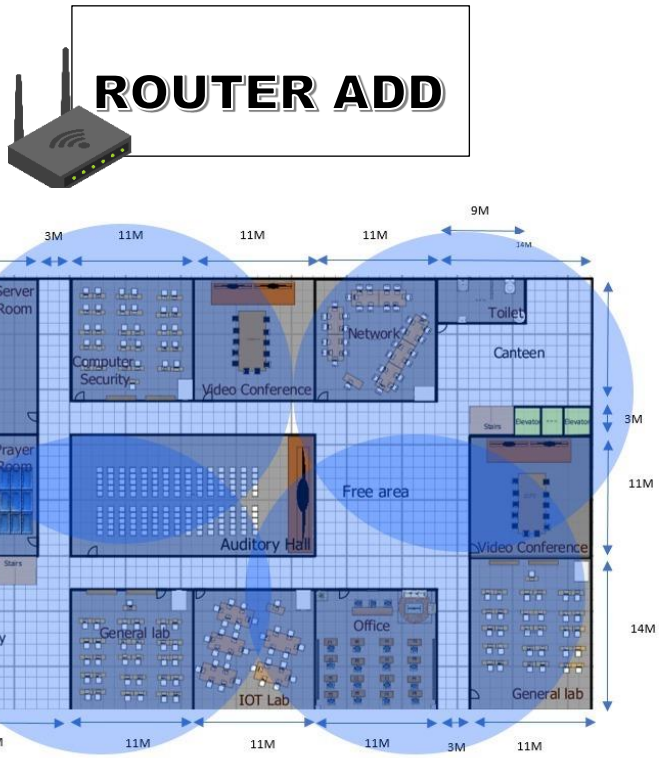
The Client-Server Architecture. Is a network architecture in which each server is located. The computer or the network operation is either a client or a server. Servers are efficient machines or processes devoted to managing disk drives (file servers), printers (print servers), or network traffic (network servers). Clients are PCs or workstations used for users to run programs. Clients rely on resource servers, such as files, devices, and even processing power.

9. What is the exemplar of ceiling that our group would like to used?

We used the drop type and raceway ceiling that commonly used for basement. This ceiling have certain benefits that other ceiling types are lacking, like allow easy access to ductwork, wires, or plumbing. And, if there's a damage, this ceiling can be easily replaced per-section rather than the whole thing.

10. According to your building, how many router be located of the construction?

We used both wired and wireless routers to ensure that all users had connections to the internet. Assume that we will have about four (4) connection points (wireless router) to ensure that students and staff can have access to the internet nearly everywhere. For now, below is the location of the entry point in our floor plan. Cable (LAN) can be used in any important room that requires higher bandwidth and more secure link. (Suppose that we use an access point that supports a scope of up to 15 m to 36 m.)



PRICE LIST

Devices	Description	Quantity	Price / unit	Total (RM)
 ***ASUS RT-AC3200 Tri-Band Wireless***	AC3200 Tri-Band Gigabit WiFi Router with AiProtection network security powered by Trend Micro, Adaptive QoS and Parental Control • 802.11ac tri-band Wi-Fi router boosts speeds up to 3200Mbps for low-latency online gaming, smooth 4K UHD video playback and extremely fast file-sharing. • Tri-Band Smart Connect automatically selects the fastest of the three available frequency bands for each device, based on the device's speed, signal strength and how busy each band is. • High performance antennas with AiRadar universal beamforming for unrivaled Wi-Fi range. • AiProtection with Trend Micro™ for triple-strength network security, plus robust Parental Controls and privacy protection. • Intuitive ASUS Router App lets you control your network anywhere, without needing to boot up a PC. • USB 3.0 port for 10X-faster data transfers than USB 2.0; also includes one USB 2.0 port	4	RM 856	RM 3,424
 Linksys AC2400 Dual-Band Router (E8350)	Connections: Wireless Brand: Linksys Operating System: Windows, Mac OS Wireless Type: 5.8 GHz Radio Frequency, 802.11a/b/g/n Security Protocol: WPA-PSK • 4x4 AC: 4 streams of data for stronger, faster performance. Optimal for HD video streaming and lag-free gaming • MU-MIMO Ready: Latest Wireless-AC technology for simultaneous streaming and gaming to multiple devices without speed degradation	6	RM 660	RM 3,960

	• Dual-Band (2.4 + 5 GHz): Double the network bandwidth for maximum speeds to gaming and streaming devices. Speeds up to N600 + AC 1733 Mbps • Central Processing Unit (CPU): Supercharged 1.4GHz Dual-Core Processor for heavy-bandwidth gaming, file transfers and downloads • 4 Adjustable Antennas: Position antennas for a clear wireless signal in each room • USB 3.0 Port: Connect external storage devices or printers and share across your network at speeds 10x faster than USB 2.0 • 4 Gigabit Ports: 10x faster than Fast Ethernet for exceptional wired connections • Advanced Security: WPA/WPA2 encryption and SPI firewall keep your network safely connected			
 ***D-Link 30-Port L2+ Fully Managed Gigabit PoE Switch (DGS-3130-30PS)***	The DGS-3130 Series is a range of Lite Layer 3 Stackable Managed Switches designed to help connect end-users in a secure enterprise or metro Ethernet access network. These switches support multicast and enhanced security features, making them an ideal Gigabit access layer solution. The DGS-3130-30TS/54TS provide 24 or 48 10/100/1000 Mbps Gigabit Ethernet ports. The DGS-3130-30PS/54PS provide 24 or 48 10/100/1000 Mbps Power over Ethernet (PoE) Gigabit Ethernet ports. The DGS-3130-30S/54S provide 24 or 48 SFP Gigabit Ethernet ports. Each 10/100/1000 Mbps port on the DGS-3130-30PS/54PS supports the IEEE 802.3af and IEEE 802.3at PoE standards. The default power budget for these models is 370 watts and can be expanded to 740 watts with the DPS-700 redundant power supply. The switches are also equipped with a USB 2.0 port, allowing the user to boot images and upload configuration files directly, as well as conveniently save syslog files to an USB 2.0 storage device.	6	RM 5500	RM. 33.000

	Enhanced Network Reliability The DGS-3130 Series targets enterprises and metro Ethernet applications, and customers who require a high level of network security and maximum uptime. All the models in the DGS-3130 Series support an external redundant power supply to ensure continued operation. In addition, these switches incorporate essential reliability features to enhance network resilience, including 802.1D Spanning Tree (STP), 802.1w Rapid Spanning Tree (RSTP), and 802.1s Multiple Spanning Tree (MSTP), Loopback Detection (LBD), and Broadcast Storm Control. ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) minimizes the recovery time to 50 ms. For load sharing and redundancy backup in a switch cascading/server attachment configuration, the DGS-3130 Series provides dynamic 802.3ad Link Aggregation Port Trunking. Comprehensive Security Features The DGS-3130 Series provides users with security features such as Multi-layer and Packet Content Access Control Lists (ACL), Storm Control, and IP-MAC-Port Binding (IMPB) with DHCP Snooping. The IP-MAC-Port Binding feature allows administrators to bind a source IP address with an associated MAC and define the port number to enhance user access control. With the DHCP Snooping feature, the switch automatically learns IP/MAC pairs by snooping DHCP packets and saving them to the IMPB white list. Easy Access Control Policies The DGS-3130 Series supports authentication mechanisms such as 802.1X, Web-based Access Control (WAC), and MAC-based Access Control (MAC) for strict access control and easy deployment. After authentication, individual policies such as VLAN membership, QoS policies, and ACL rules can be assigned to each host. In addition, the switch also supports Microsoft® NAP			

	(Network Access Protection). NAP is a policy enforcement technology that helps customers protect network assets from compromised computers by enforcing compliance with network health policies. Power over Ethernet Support The DGS-3130-30PS and DGS-3130-54PS support industry standard IEEE 802.3at power over Ethernet across all Gigabit copper ports. They feature a total power budget of 370 W, capable of supplying up to 30 W of power per port to connected PoE-enabled devices. The PoE power budget can be increased to 740 W when the DPS-700 redundant power supply is used in conjunction. Power over Ethernet helps simplify deployment of surveillance devices and access point infrastructures by reducing cable clutter, eliminating the need for dedicated power supplies, and allowing PoE devices to be installed in remote locations. Versatile Traffic Management The DGS-3130 Series implements a rich set of multi-layer QoS/CoS features to help ensure that critical network services such as VoIP, video conferences, IPTV, and IP surveillance are always given high priority. Traffic Shaping features guaranteed bandwidth for these services when the network is busy. L2 Multicast support enables the DGS-3130 Series to handle growing IPTV applications. Host-based IGMP/MLD Snooping allows multiple multicast subscribers per physical interface while ISM VLAN allows the switches to send multicast streams in a multicast VLAN to save bandwidth and to provide better security to the backbone network. The ISM VLAN profiles allow administrators to bind or replace the pre-defined multicast registration information to subscriber ports quickly and easily. Lifetime Warranty and NBD Replacement D-Link offers a Lifetime Warranty and Next Business Day (NBD) hardware replacement on the DGS-3130 Series Lite			

	Layer 3 Stackable Managed Switches to further its commitment to product quality and long-term customer confidence.			
TP-LINK  ***TP-LINK 6 Port PoE ethernet switch (TL-SF1006P)***	**6-Port 10/100Mbps Desktop Switch with 4-Port PoE+** • 6× 10/100 Mbps RJ45 ports • 4× PoE+ ports transfer data and power on individual cables • Works with IEEE 802.3af/at compliant PDs • Up to 250m data and power transmitting range under Extend Mode** • Priority Mode ensures high priority of ports 1–2 to guarantee the quality of sensitive application • Supports PoE Power up to 30 W for each PoE port • Supports PoE Power up to 67 W for all PoE ports • Plug and play with no configuration required	6	RM 260	RM 1,560
 ***AMP COMMSCOPE UTP Cat6 Cable***	**Characteristic Impedance(Zo): 85~115Ω (1~250 MHz) DC.** -Resistance Capacitance Unbalance: 5% -Pair-to-Ground Capacitance Unbalance: 330 pF/100m Max. -Conductor Resistance: 14.00Ω/100m 20o Max. -Mutual Capacitance: 5.6nF/m Max. -Spark Test: 2.5kV Nominal Velocity of -Propagation (NVP): 69%	6	RM 395	RM 2,370
 ***HIKVISION Medusa Camera Turbo HD Lens 3.6mm (DS-2CE56C0T-IR)***	**Product excellence** Hikvision Medusa Camera Turbo HD DS-2CE56C0T-IR 3.6MM White is a CCTV with clear and sharp image quality, with this 3.6mm CCTV Lens it can capture clear images day and night with a distance of 20 meters. Sophisticated technology makes it easy for you to monitor your CCTV whenever and wherever you are with iOS, Android and Web settings support. Installation is suitable for warehouses, shop houses, schools, living rooms, boarding houses, etc. Specification Lens	14	RM 90	RM 1,260

	- 3.6mm -Warranty -24 months from an Authorized Distributor in Indonesia -Effective Pixel - 1MP 720p - Min. Illumination - 0.01 Lux / F1.2; 0 Lux Smart IR - Sensor - CMOS Sensor			
 ***DELL POWEREDGE T40 SERVER***	Dell EMC PowerEdge T40 system overview The Dell EMC PowerEdge T40 system is a tower system that supports up to: • One Intel Xeon E-series processor or Intel Core i3 processor or Intel Pentium Gold processor • Up to three 3.5-Inch cabled SATA drives • Four UDIMM slots • One cabled AC power supply unit (PSU)	11	RM 2650	RM 29,150

Overall Price : RM.74.715

MAKING THE CONNECTIONS – LAN and WAN

TASK 4 MEETING INFO

Meeting #1

Date: 23 December 2020

Time: 20:30 PM

Place: Discord APP

Duration : 1 Hours

Meeting #2

Date: 25 December 2020

Time: 22:00 PM

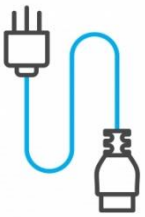
Place: Google Meet

Duration : 30 Minutes

A local area network (LAN) is a collection of devices connected together in one physical location, such as a building, office, or home

A wide area network (WAN) is a telecommunications network that extends over a large geographic area for the primary purpose of computer networking. Wide area networks are often established with leased telecommunication circuits

Cable Sized Used



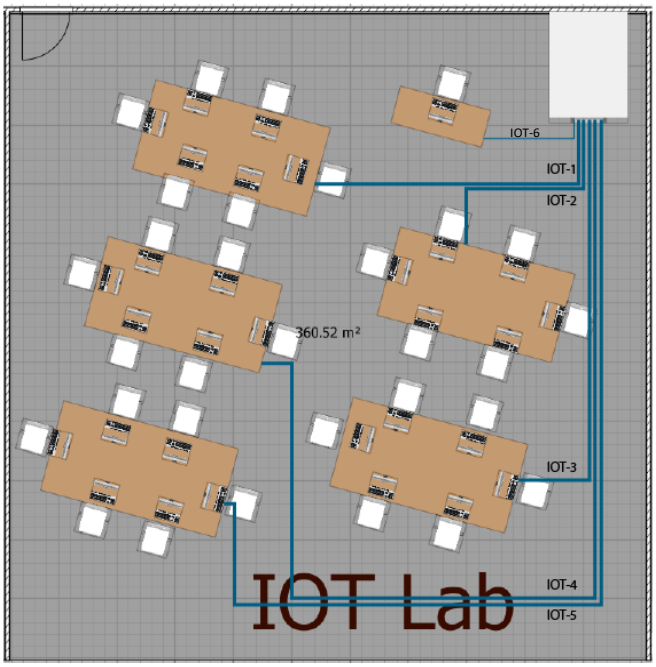
Cable A	15 M,10 M, 6 M, 0,8 M
Cable B	6,5 M, 10 M, 9 M, 5,8 M,9 M, 2,5 M, 3,5 M, 8,8 M
Cable C	4 M, 9,8 M

Total: 100,7 meters

ABOUT TABLES

We connect our cables only to the tables in our pictures because we will calculate the tables extra length of cables.

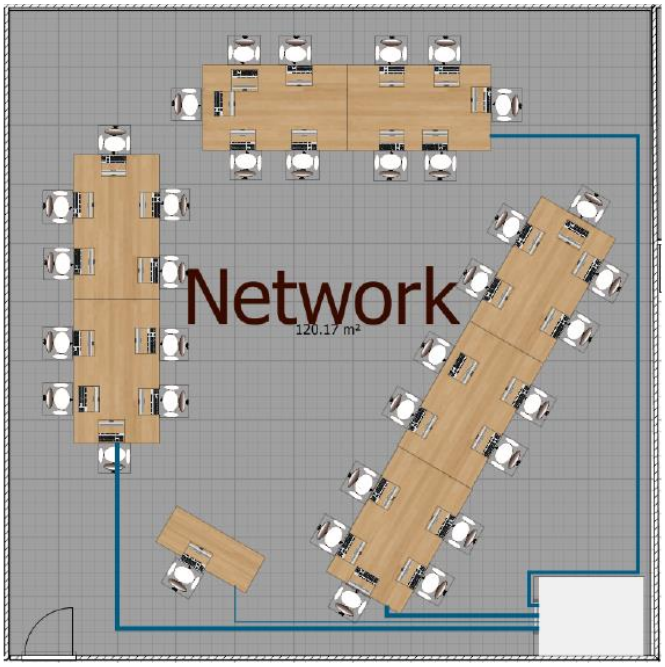
I. IOT LAB



Label	Length	Table length	Total length	Cables bundled	Total Cost
IOT-1	6 meters	1,5 meters	7,5 meters	6 cables	45
IOT-2	4 meters	1,5 meters	5,5 meters	6 cables	33
IOT-3	6 meters	1,5 meters	7,5 meters	6 cables	45
IOT-4	18 meters	1,5 meters	19,5 meters	6 cables	117
IOT-5	16 meters	1,5 meters	17,5 meters	6 cables	105
IOT-6	2 meters	1 meter	3 meters	1 cable	3
				Total	348

In the IOT lab there are 5 identical tables, making the cable that pass through the tables (table length) identical except the cable going to the lecturer's table. The cables are bundled evenly that they can be calculated together. Because the IOT lab is designed to be used flexibly using phones and laptops, there are no desktop computer on the tables, instead we provide LAN cables sprouting from the table for students to connect their laptops.

II. NETWORK LAB



Label	Length	Table length	Total length	Cables bundled	sum
Net-1	3 meters	1,5 meters	4,5 meters	5 cables	22,5
Net-2	3 meters	3,5 meters	6,5 meters	4 cables	26
Net-3	3 meters	5,5 meters	8,5 meters	5 cables	42,5
Net-4	10 meters	1,5 meters	11,5 meters	5 cables	57,5
Net-5	10 meters	3,5 meters	13,5 meters	5 cables	67,5
Net-6	13 meters	1,5 meters	14,5 meters	5 cables	72,5
Net-7	13 meters	3,5 meters	16,5 meters	5 cables	82,5
Net-8	6 meters	1 meter	7 meters	1 cable	7
				Total	378

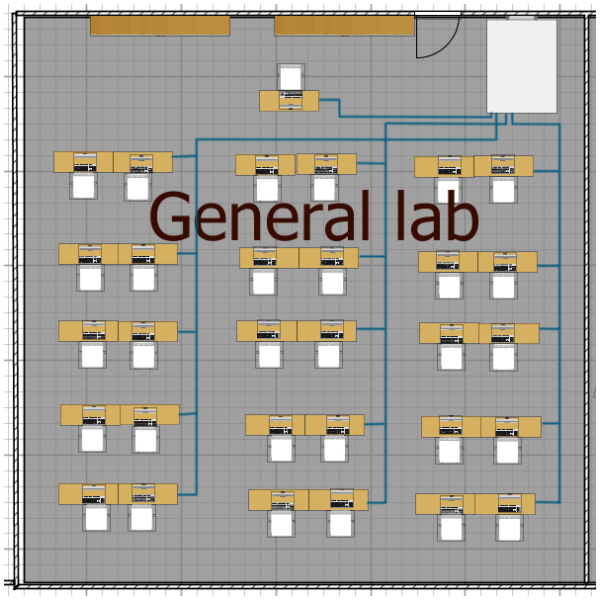
The network lab also uses a provided desktop computer, but we designed the table to stick together, hence we use the sprouting LAN cables from the mid points of the table. Cables Net-1, Net-2, and Net-3 are actually bundled together from the Switch, the bundle then split underneath the table on the right side of the room from this floorplan view for it to reach each PCs. The other bundles are Net-4 and Net-5 that goes to the left table, then Net-6 and Net-7 that goes to the upper table. And lastly, the Net-8 alone goes to the lecturer's table.

III. OFFICE

Label	Length	Table length	Total length	Cables bundled	Total Cost
Office-1	1,5 meters	1,5 meters	3 meters	3 cables	9
Office-2	4 meters	2 meters	6 meters	1 cable	6
Office-3	4 meters	1,5 meters	5,5 meters	1 cable	5,5
Office-4	4 meters	4 meters	8 meters	1 cable	8
Office-5	4 meters	6,5 meters	10,5 meters	1 cable	10,5
Office-6	5,5 meters	2 meters	7,5 meters	1 cable	7,5
Office-7	5,5 meters	1,5 meters	7 meters	1 cable	7
Office-8	5,5 meters	4 meters	9,5 meters	1 cable	9,5
Office-9	5,5 meters	6,5 meters	12 meters	1 cable	12
Office-10	7 meters	2 meters	9 meters	1 cable	9
Office-11	7 meters	1,5 meters	8,5 meters	1 cable	8,5
Office-12	7 meters	4 meters	11 meters	1 cable	11
Office-13	7 meters	6,5 meters	13,5 meters	1 cable	13,5
Office-14	8,5 meters	2 meters	10,5 meters	1 cable	10,5
Office-15	8,5 meters	1,5 meters	10 meters	1 cable	10
Office-16	8,5 meters	4 meters	12,5 meters	1 cable	12,5
Office-17	8,5 meters	6,5 meters	15 meters	1 cable	15
				Total	165

The office features very separate cabling, as such the cable lengths are calculated separately except for the presentation table in the upper side.

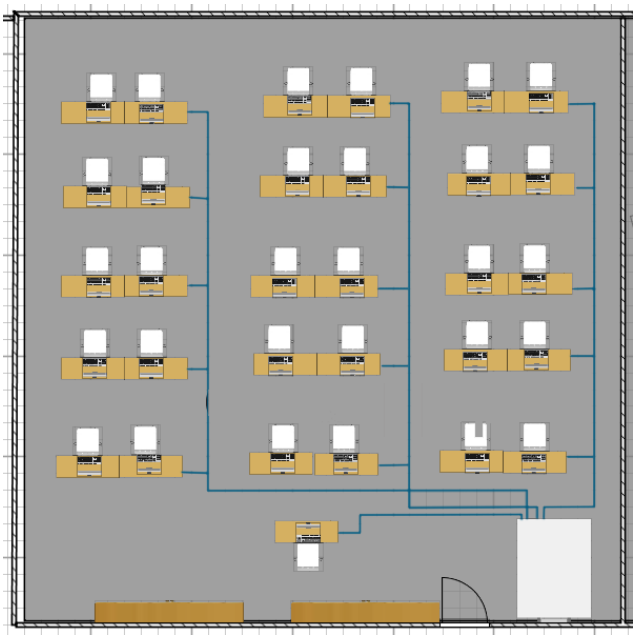
IV. GENERAL LAB



Label	Length	Table length	Total length	Cables bundled	total cost
GL-1	2 meters	0.5 meters	2.5 meters	1 cable	2,5
GL-2	1 meters	1 meters	2 meters	2 cable	4
GL-3	2 meters	1 meters	3 meters	2 cable	6
GL-4	2.5 meters	1 meters	3.5 meters	2 cable	7
GL-5	3.5 meters	1 meters	4.5 meters	2 cable	9
GL-6	4 meters	1 meters	5 meters	2 cable	10
GL-7	1 meters	1 meters	2 meters	2 cable	4
GL-8	2 meters	1 meters	3 meters	2 cable	6
GL-9	2.5 meters	1 meters	3.5 meters	2 cable	7
GL-10	3.5 meters	1 meters	4.5 meters	2 cable	9
GL-11	4 meters	1 meters	5 meters	2 cable	10
GL-12	1 meters	1 meters	2 meters	2 cable	4
GL-13	2 meters	1 meters	3 meters	2 cable	6
GL-14	2.5 meters	1 meters	3.5 meters	2 cable	7
GL-15	3.5 meters	1 meters	4.5 meters	2 cable	9
GL-16	4 meters	1 meters	5 meters	2 cable	10
				Total	*110,5*

In general lab, we have in total 16 LAN cables and used a proved desktop computer. Also, in this lab, we have in total 16 tables and 31 seats in total. Because this is a general lab, we provide a LAN cable for each desktop and a reachable Wi-Fi area. Some of the LAN cables are bundle for a better cable management to reduce cost. for other devices that needs internet, this area also in the range of the WI-FI. Because we have two general lab in our floor plan, thus all the value from the table need to be multiplied by two.

V. COMPUTER SECURITY

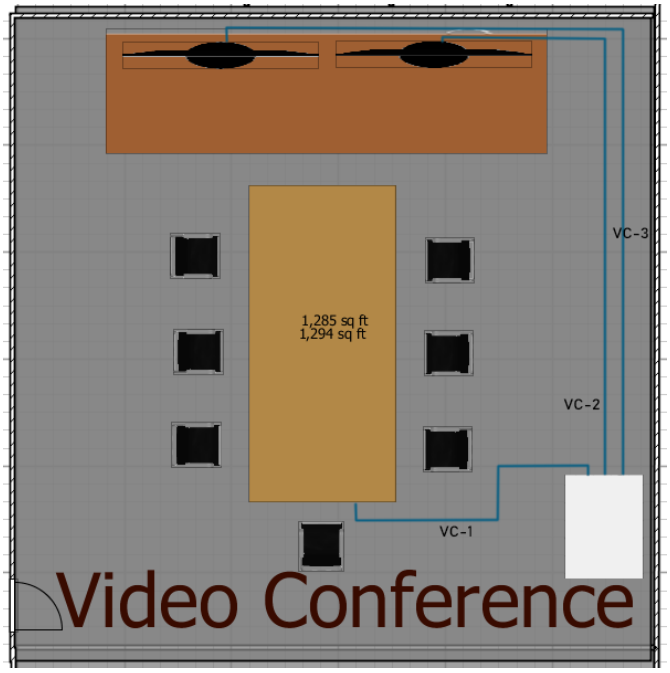


Label	Length	Table length	Total length	Cables bundled	total cost
CS-1	2 meters	0.5 meters	2.5 meters	1 cable	2,5
CS-2	1 meters	1 meters	2 meters	2 cable	4
CS-3	2 meters	1 meters	3 meters	2 cable	6
CS-4	2.5 meters	1 meters	3.5 meters	2 cable	7
CS-5	3.5 meters	1 meters	4.5 meters	2 cable	9
CS-6	4 meters	1 meters	5 meters	2 cable	12
CS-7	1 meters	1 meters	2 meters	2 cable	14
CS-8	2 meters	1 meters	3 meters	2 cable	16
CS-9	2.5 meters	1 meters	3.5 meters	2 cable	7
CS-10	3.5 meters	1 meters	4.5 meters	2 cable	9
CS-11	4 meters	1 meters	5 meters	2 cable	22
CS-12	1 meters	1 meters	2 meters	2 cable	24
CS-13	2 meters	1 meters	3 meters	2 cable	26
CS-14	2.5 meters	1 meters	3.5 meters	2 cable	7
CS-15	3.5 meters	1 meters	4.5 meters	2 cable	9
CS-16	4 meters	1 meters	5 meters	2 cable	32
				total	*206,5*

Computer security room is basically identical to the general lab. In this room we have in total 16 LAN cables and used a proved desktop computer. Also, in this lab, we have in total 16 tables and 31 seats in total. Because this is a general lab, we provide a LAN cable for each desktop and a reachable Wi-Fi area. Some of the LAN cables are bundle

for a better cable management to reduce cost. For other devices that needs internet, this area also in the range of the WI-FI. Because we have two general lab in our floor plan, thus all the value from the table need to be multiplied by two.

VI. VIDEO CONFERENCE



Label	Length	Table length	Total length	Cables bundled	total cost
VC-1	3 meters	1.5 meters	4.5 meters	7 cable	31,5
VC-2	5 meters	-	5 meters	1 cable	5
VC-3	7.5 meters	-	7.5 meters	1 cable	7,5
				total	44

In the video conference room, we have 1 big table and 7 seats that can be used to discuss or do other team required activities. We also have 1 bigger table that have 2 big monitor on it that can be used to do a presentation or a video conference. Because we only have one table for seven people, hence we use the sprouting LAN cables from the mid points of the table. Also, for other devices that needs internet, this area also in the range of the WI-FI. Last but not least, because there are two video conference room in our floor plan, all the value from the table need to be multiplied by two.

So in total we need cables with the length of:

348 + 378 + 165 + 110,5 + 110,5 + 206,5 + 206,5 + 44 + 44 + 100,7 = 1713,7 meters

Given that each box of LAN cables contain 305 meters of cable, we need 6 boxes of cables to cover them.

Task.5: IP addressing scheme

We distribute the IP addresses per room, in which we were given a set of IP addresses to work with,

We decided that our base network address will be 222.11.8.0

The distribution scheme as continues:

Room	Subnet Address	Usable host address range		Broadcast address
Computer security lab	222.11.8.0	222.11.8.1	222.11.8.62	222.11.8.63
Network lab	222.11.8.64	222.11.8.65	222.11.8.126	222.11.8.127
General Lab	222.11.8.128	222.11.8.129	222.11.8.190	222.11.8.191
Office	222.11.8.192	222.11.8.193	222.11.8.254	222.11.8.255
IOT Lab	222.11.9.0	222.11.9.1	222.11.9.62	222.11.9.63
General Lab 2	222.11.9.64	222.11.9.65	222.11.9.126	222.11.9.127
Video conference room	222.11.9.128	222.11.9.129	222.11.9.142	222.11.9.143
Video conference room 2	222.11.9.144	222.11.9.145	222.11.9.158	222.11.9.159
Auditory Hall	222.11.9.160	222.11.9.161	222.11.9.174	222.11.9.175
Unused		222.11.9.175	222.11.10.255	

1. **COMPUTER SECURITY LAB**

ADMIN

Group	PC No	IP Address
Computer Security Lab	1	222.11.8.1

STUDENT

Group	No	PC No	IP Address
Computer Security Lab	1	2	222.11.8.2
	2	3	222.11.8.3
	3	4	222.11.8.4
	4	5	222.11.8.5
	5	6	222.11.8.6
	6	7	222.11.8.7
	7	8	222.11.8.8
	8	9	222.11.8.9
	9	10	222.11.8.10
	10	11	222.11.8.11
	11	12	222.11.8.12
	12	13	222.11.8.13
	13	14	222.11.8.14
	14	15	222.11.8.15
	15	16	222.11.8.16
	16	17	222.11.8.17
	17	18	222.11.8.18
	18	19	222.11.8.19
	19	20	222.11.8.20

	20	21	222.11.8.21
	21	22	222.11.8.22
	22	23	222.11.8.23
	23	24	222.11.8.24
	24	25	222.11.8.25
	25	26	222.11.8.26
	26	27	222.11.8.27
	27	28	222.11.8.28
	28	29	222.11.8.29
	29	30	222.11.8.30
	30	31	222.11.8.31

2. NETWORK LAB

ADMIN

Group	PC No	IP Address
Network Lab	1	222.11.8.65

STUDENT

Group	No	PC No	IP Address
Network Lab	1	2	222.11.8.66
	2	3	222.11.8.67
	3	4	222.11.8.68
	4	5	222.11.8.69
	5	6	222.11.8.70
	6	7	222.11.8.71
	7	8	222.11.8.72
	8	9	222.11.8.73
	9	10	222.11.8.74
	10	11	222.11.8.75
	11	12	222.11.8.76
	12	13	222.11.8.77
	13	14	222.11.8.78
	14	15	222.11.8.79
	15	16	222.11.8.80
	16	17	222.11.8.81
	17	18	222.11.8.82
	18	19	222.11.8.83
	19	20	222.11.8.84
	20	21	222.11.8.85
	21	22	222.11.8.86

	22	23	222.11.8.87
	23	24	222.11.8.88
	24	25	222.11.8.89
	25	26	222.11.8.90
	26	27	222.11.8.91
	27	28	222.11.8.92
	28	29	222.11.8.93
	29	30	222.11.8.94
	30	31	222.11.8.95
	31	32	222.11.8.96
	32	33	222.11.8.97
	33	34	222.11.8.98
	34	35	222.11.8.99
	35	36	222.11.8.100

3. GENERAL LAB 1

ADMIN

Group	PC No	IP Address
General Lab 1	1	222.11.8.129

STUDENT

Group	No	PC No	IP Address
General Lab 1	1	2	222.11.8.130
	2	3	222.11.8.131
	3	4	222.11.8.132
	4	5	222.11.8.133
	5	6	222.11.8.134
	6	7	222.11.8.135
	7	8	222.11.8.136
	8	9	222.11.8.137
	9	10	222.11.8.138
	10	11	222.11.8.139
	11	12	222.11.8.140
	12	13	222.11.8.141
	13	14	222.11.8.142
	14	15	222.11.8.143
	15	16	222.11.8.144
	16	17	222.11.8.145
	17	18	222.11.8.146
	18	19	222.11.8.147
	19	20	222.11.8.148
	20	21	222.11.8.149
	21	22	222.11.8.150
	22	23	222.11.8.151
	23	24	222.11.8.152
	24	25	222.11.8.153
	25	26	222.11.8.154

	26	27	222.11.8.155
	27	28	222.11.8.156
	28	29	222.11.8.157
	29	30	222.11.8.158
	30	31	222.11.8.159

4. OFFICE

STUDENT / STAFF

Group	No	PC No	IP Address
OFFICE	1	1	222.11.8.193
	2	2	222.11.8.194
	3	3	222.11.8.195
	4	4	222.11.8.196
	5	5	222.11.8.197
	6	6	222.11.8.198
	7	7	222.11.8.199
	8	8	222.11.8.200
	9	9	222.11.8.201
	10	10	222.11.8.202
	11	11	222.11.8.203
	12	12	222.11.8.204
	13	13	222.11.8.205
	14	14	222.11.8.206
	15	15	222.11.8.207
	16	16	222.11.8.208
	17	17	222.11.8.209
	18	18	222.11.8.210
	19	19	222.11.8.211

5. IOT LAB

ADMIN

Group	PC No	IP Address
IOT Lab	1	222.11.9.1

STUDENT

Group	No	PC No	IP Address
IOT Lab	1	2	222.11.9.2
	2	3	222.11.9.3
	3	4	222.11.9.4
	4	5	222.11.9.5
	5	6	222.11.9.6
	6	7	222.11.9.7
	7	8	222.11.9.8
	8	9	222.11.9.9
	9	10	222.11.9.10
	10	11	222.11.9.11
	11	12	222.11.9.12
	12	13	222.11.9.13
	13	14	222.11.9.14
	14	15	222.11.9.15
	15	16	222.11.9.16
	16	17	222.11.9.17
	17	18	222.11.9.18
	18	19	222.11.9.19
	19	20	222.11.9.20
	20	21	222.11.9.21
	21	22	222.11.9.22
	22	23	222.11.9.23
	23	24	222.11.9.24
	24	25	222.11.9.25
	25	26	222.11.9.26
	26	27	222.11.9.27
	27	28	222.11.9.28
	28	29	222.11.9.29
	29	30	222.11.9.30
	30	31	222.11.9.31

6. GENERAL LAB 2

ADMIN

Group	PC No	IP Address
General Lab 2	1	222.11.9.65

STUDENT

Group	No	PC No	IP Address
General Lab 2	1	2	222.11.9.66
	2	3	222.11.9.67
	3	4	222.11.9.68
	4	5	222.11.9.69
	5	6	222.11.9.70
	6	7	222.11.9.71
	7	8	222.11.9.72
	8	9	222.11.9.73
	9	10	222.11.9.74
	10	11	222.11.9.75
	11	12	222.11.9.76
	12	13	222.11.9.77
	13	14	222.11.9.78
	14	15	222.11.9.79
	15	16	222.11.9.80
	16	17	222.11.9.81
	17	18	222.11.9.82
	18	19	222.11.9.83
	19	20	222.11.9.84
	20	21	222.11.9.85
	21	22	222.11.9.86
	22	23	222.11.9.87
	23	24	222.11.9.88
	24	25	222.11.9.89
	25	26	222.11.9.90
	26	27	222.11.9.91
	27	28	222.11.9.92
	28	29	222.11.9.93
	29	30	222.11.9.94
	30	31	222.11.9.95

7. VIDEO CONFERENCE 1

STUDENT/STAFF

Group	No	Pc No	IP Address
	1	1	222.11.9.129
	2	2	222.11.9.130
	3	3	222.11.9.131
	4	4	222.11.9.132
	5	5	222.11.9.133
	6	6	222.11.9.134
	7	7	222.11.9.135
	8	8	222.11.9.136
	9	9	222.11.9.137
	10	10	222.11.9.138
	11	11	222.11.9.139
	12	12	222.11.9.140

8. VIDEO CONFERENCE 2

STUDENT/STAFF

Group	No	Pc No	IP Address
	1	1	222.11.9.145
	2	2	222.11.9.146
	3	3	222.11.9.147
	4	4	222.11.9.148
	5	5	222.11.9.149
	6	6	222.11.9.150
	7	7	222.11.9.151
	8	8	222.11.9.152
	9	9	222.11.9.153
	10	10	222.11.9.154
	11	11	222.11.9.155
	12	12	222.11.9.156

9. **AUDITORY HALL**

STUDENT/STAFF

Group	No	Pc No	IP Address
	1	1	222.11.9.161
	2	2	222.11.9.162
	3	3	222.11.9.163
	4	4	222.11.9.164
	5	5	222.11.9.165
	6	6	222.11.9.166

	7	7	222.11.9.167
	8	8	222.11.9.168
	9	9	222.11.9.169
	10	10	222.11.9.170
	11	11	222.11.9.171
	12	12	222.11.9.172

10. **WIRELESS NETWORKS**

No.	IP address
1	222.11.9.174

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