

# ***National University of Computer and Emerging Sciences***

## ***Computer Networks– Spring 2023***

### ***Assignment 1***

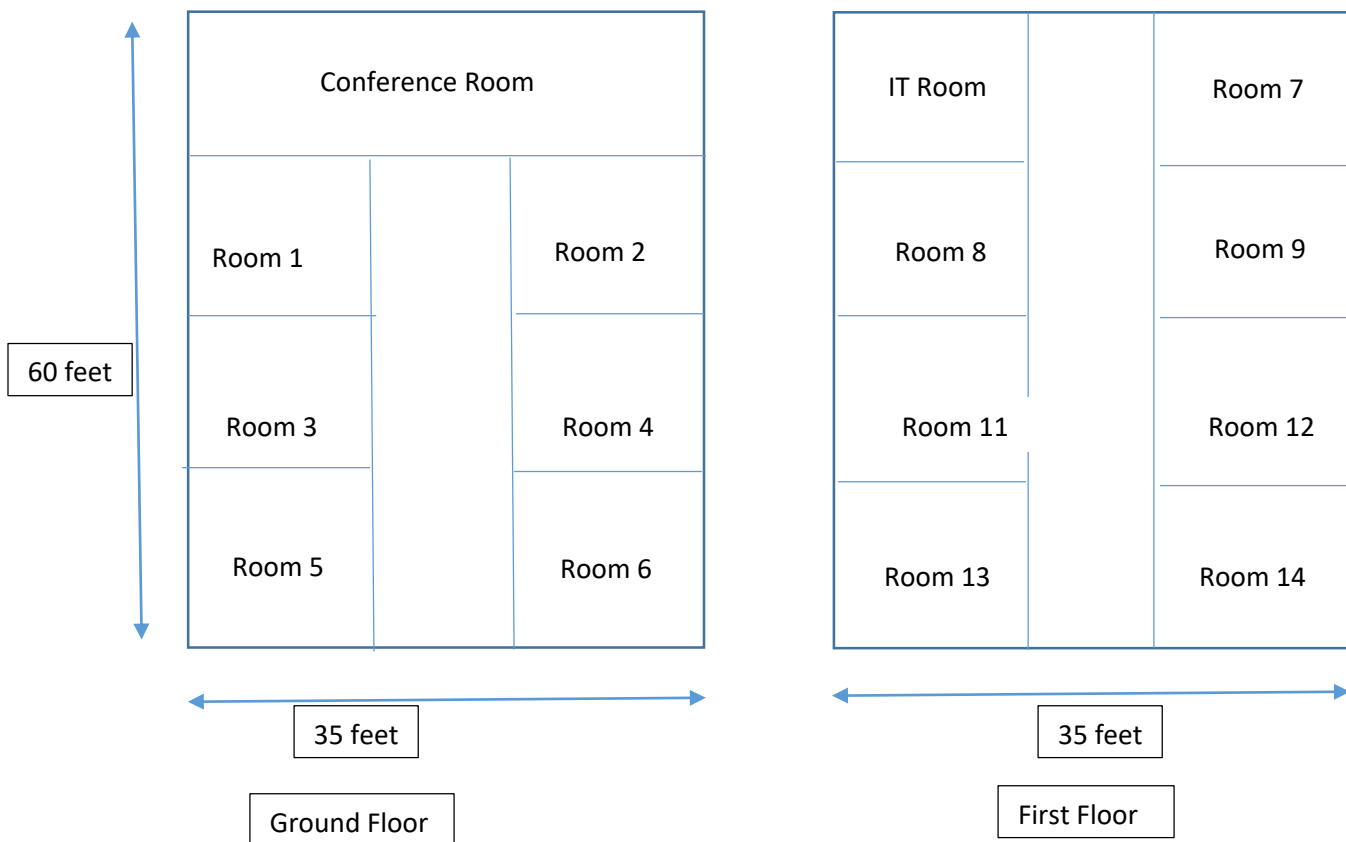
**Due Date: 23<sup>rd</sup> February 2023**

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**Note:**

- **This is group assignment. Each group can have a maximum of 2 students.**
- **All assignments will be marked zero, if assignment submission found plagiarized.**

ABC Pvt. Ltd is a renowned software development company in Islamabad. They have recently moved to a new building. They work on latest web technologies. They have total of 25 employees including CEO, 1 HR, 3 Admin, and 1 Finance. There are 3 employees working on documentation and rest of the employees are related to web development (frontend and backend). Till end of 2024 they are planning to expand their number of employees to 40.



They have two servers deployed in the IT room, one server has the website on it and other is a file server that manages project files storage. The new building has two floors i.e. ground floor and first floor as shown in the figure above. The building has a conference room that needs a network connected computer for presentations. There are 14 rooms of approx. 15x15 feet each. Height of each floor is 12 feet. Each

employee needs to connect a laptop as well as a mobile phone to the LAN network. They have purchased a 25 Mbps PTCL internet connection and PTCL has provided its devices (ONT). **Your task is to design a network for the above organization. For the network design, consider any appropriate seating plan for the employees.**

### **Network Devices and its Cost**

For the design of network, you can use any of the following devices/components

- Twisted Pair Cable (Average Rs 7/feet) (Good Rs 10/feet)
- RJ-45 Connectors (Average Rs 10/piece) (Good Rs 15/piece)
- Access point (40\*40 feet range single floor) (Rs 1000)
- Access point (70\*70 feet range single floor) (Rs 3000)
- Hub (4 port ) (Rs 600)
- Hub (8 port ) (Rs 1000)
- Switch ( 8 port ) (Rs 3000)
- Switch ( 16 port ) (Rs 8000)
- Switch (24 port ) (Rs 15000)
- Router (8 port) (Rs 35000)

### **Deliverables**

- **Network Diagram**
- **A report explaining the network and justifying the network design.**
- **Cost Calculation of the Network design.**