**Project Description**

Imagine you are a network engineer responsible for implementing a modern hotel network. You have been assigned the IP address 192.168.2.0/24. The hotel consists of 3 floors:

* The first floor has 3 departments: Reception, store, and Logistics.
* The second floor has 3 departments: Finance, HR, and Sales.
* The third floor has 2 departments: IT and Admin.

Each floor should have its own router, and all three routers should be connected using serial DCE cables. Each department must have its own subnet.

1. **Topology and Devices**:

• Use Cisco Packet Tracer to create the network with the following structure:

|  |  |  |
| --- | --- | --- |
| 1st Floor | No. of devices | VLAN number |
| Reception | 20 | 80 |
| Store | 2 | 70 |
| Logistics | 5 | 60 |

|  |  |  |
| --- | --- | --- |
| 2nd Floor | No. of devices | VLAN number |
| Finance | 13 | 50 |
| HR | 6 | 40 |
| Sales | 25 | 30 |

|  |  |  |
| --- | --- | --- |
| 3rd Floor | No. of devices | VLAN number |
| Admin | 9 | 20 |
| IT | 30 | 10 |

* The admin department contains a DNS server.
* The finance department contains a web server hosting the website [www.hotelservices.com](http://www.hotelservices.com), which can be accessed from any PC in the hotel.
* Three routers connect the devices within each floor. All three routers are placed in the server room in the IT department.
* Each floor has its own switches.
* Each floor has its own DHCP server.

1. **Routing:**

* Use OSPF as the routing protocol to advertise routes between floors.

1. **Test and Verify:**

* Ensure all devices can communicate with each other within and between floors.
* Ensure all devices can access the hotel website.

1. **Additional Scenario**

If the sales department is relocated to the headquarters in another city while remaining part of the network, and the admin department is moved to the first floor, redesign your network to accommodate these changes.

**Deliverables**

**The project progress Demo**:

You should submit the following:

1. A one-page pdf describing the progress and challenges you face, if any. Include screenshots documenting your work.
2. Your project’s Packet Tracer file containing all devices connected according to the topology described above. You must demonstrate successful connectivity within and between departments, along with documented subnetting steps

**Submission deadline:** Week 12.

**The final submission:**

You should submit the following:

1. The final packet tracer file.
2. A report demonstrating the following:
   1. *(CLO 7)* Each Department must be assigned its own subnet, and each device in the network must be assigned an IP address. Explain the steps of how those addresses were reached, and include a table for addresses of all devices in the network.
   2. *(CLO8)* Provide a screenshot of testing and verifying the operation of the network.
   3. *(CLO8)* Mention all the changes you have made to accommodate the relocation scenario. Test and verify the network's operation in case of relocation. Provide screenshots of it.

**Team Size:** A maximum of 3 students.

**Submission Deadline:** Week 14.

**Late Submission Policy:** minus 20% per day (max 2 days).

**Plagiarism Policy:** Any student found plagiarizing others’ work or helping others plagiarize his/her work, intentionally or unintentionally, will have the related class work credit removed. Repeated academic offenses will lead to failure in the course.

**Grading Distribution**

* Project progress demo (10%)
* The Final submission:
  + Presentation & Discussion (30%)
    - Presentation skills.
    - Presentation time management.
    - Responding to questions during discussion.
  + Report (60%)
    - Report formatting.
    - Providing sufficient details to document all work done.
    - Subnetting and its steps.
    - The relocation changes.
    - Screenshots of your work and verifying of it.