1st Floor;

- **Reception- VLAN 80, Network of 192.168.8.0/24**
- **Store- VLAN 70, Network of 192.168.7.0/24**
- **Logistics- VLAN 60, Network of 192.168.6.0/24**

Subnetting

1. Reception - VLAN 80:

- Number of hosts needed (h): 254 (since 2^8−2=254 usable addresses in a /24 subnet).
- Calculate n: 2^n−2≥254, so n=8.
- Subnet mask: 32−8=2432−8=24, so the subnet mask is 255.255.255.0

Subnetting details

- Network Address 192.169.8.0
- Subnet Mask 255.255.255.0
- Usable IP Range 192.168.8.1 to 192.168.8.254
- Broad Cast Address 192.168.8.255

2. Store - VLAN 70:

- Number of hosts needed (h): 62 (since 2^6−2=62 usable addresses in a /26 subnet).
- Calculate n: 2^n−2≥62, so n=6.
- Subnet mask: 32−6=26, so the subnet mask is 255.255.255.192

Subnetting details:

- Network Address: 192.168.7.0
- Subnet Mask: 255.255.255.128
- Usable IP Range: 192.168.7.1 to 192.168.7.126
- Broadcast Address: 192.168.7.127

3. **Logistics - VLAN 60:**
    - Number of hosts needed (h): 62 (since 26−2=62 usable addresses in a /26 subnet).
    - Calculate n:2^n−2≥62, so n=6.
    - Subnet mask: 32−6=26, so the subnet mask is 255.255.255.192.

Subnetting details

- Network Address: 192.168.6.0
- Subnet Mask: 255.255.255.192
- Usable IP Range: 192.168.6.1 to 192.168.6.62
- Broadcast Address: 192.168.6.63

Department	VLAN	Network Address	Subnet Mask	Usable IP Range	Broadcast Range
Reception	80	192.268.8.0	255.255.255.0	192.168.8.1 to 192.168.8.254	192.168.8.255
Store	70	192.168.7.0	255.255.255.0	192.168.7.1 to 192.168.7.254	192.168.7.255
Logistics	60	192.168.6.0	255.255.255.0	192.168.6.1 to 192.168.6.254	192.168.6.255

2nd Floor;

- **Finance- VLAN 50, Network of 192.168.5.0/24**
- **HR- VLAN 40, Network of 192.168.4.0/24**
- **Sales- VLAN 30, Network of 192.168.3.0/24**

1) **Finance - VLAN 50:**
    - Number of hosts needed (h): 254 (since 2^8−2=254 usable addresses in a /24 subnet).

- Calculate n: 2^n−2≥254, so, n=8.
- Subnet mask: 32−8=2432−8=24, so the subnet mask is 255.255.255.0

Subnetting details:

- Network Address: 192.168.5.0
- Subnet Mask: 255.255.255.0
- Usable IP Range: 192.168.5.1 to 192.168.5.254
- Broadcast Address: 192.168.5.255

2) **HR - VLAN 40**:
   - Number of hosts needed (h):126 (since 2^7−2=126 usable addresses in a /25 subnet).
   - Calculate n: 2^n−2≥126, so n=7.
   - Subnet mask: 32−7=25, so the subnet mask is 255.255.255.128.

Subnetting details:

- Network Address: 192.168.4.0
- Subnet Mask: 255.255.255.128
- Usable IP Range: 192.168.4.1 to 192.168.4.126
- Broadcast Address: 192.168.4.127

3) Sales - VLAN 30:
   - Number of hosts needed (h): 62 (since 2^6−2=62 usable addresses in a /26 subnet).
   - Calculate n: 2^n−2≥62, so, n=6.
   - Subnet mask: 32−6=2632−6=26, so the subnet mask is 255.255.255.192

Subnetting details

- Network Address: 192.168.3.0
- Subnet Mask: 255.255.255.192
- Usable IP Range: 192.168.3.1 to 192.168.3.62
- Broadcast Address: 192.168.3.63

Department	VLAN	Network Address	Subnet Mask	Usable IP Range	Broadcast Range
Finance	50	192.268.5.0	255.255.255.0	192.168.5.1 to 192.168.5.254	192.168.5.255
HR	40	192.168.4.0	255.255.255.0	192.168.4.1 to 192.168.4.254	192.168.4.255
Sales	30	192.168.3.0	255.255.255.0	192.168.3.1 to 192.168.3.254	192.168.3.255

3rd Floor;

- **Admin- VLAN 20, Network of 192.168.2.0/24**
- **IT- VLAN 10, Network of 192.168.1.0/24**

1. **Admin - VLAN 20**
   - Number of hosts needed (h): 254 (since 2^8−2=254 usable addresses in a /24 subnet).
   - Calculate n: 2^n−2≥254, so, n=8.
   - Subnet mask: 32−8=2432−8=24, so the subnet mask is 255.255.255.0

Subnetting details:

- Network Address: 192.168.2.0
- Subnet Mask: 255.255.255.0
- Usable IP Range: 192.168.2.1 to 192.168.2.254
- Broadcast Address: 192.168.2.255

2. **IT - VLAN 10**
   - Number of hosts needed (h): 126 (since 2^7−2=126 usable addresses in a /25 subnet).
   - Calculate n: 2^n−2≥126, so, n=7.
   - Subnet mask: 332−7=25, so the subnet mask is 255.255.255.128.

Subnetting details:

- Network Address: 192.168.1.0
- Subnet Mask: 255.255.255.128
- Usable IP Range: 192.168.1.1 to 192.168.1.126
- Broadcast Address: 192.168.1.127

Department	VLAN	Network Address	Subnet Mask	Usable IP Range	Broadcast Range
ADMIN	20	192.268.2.0	255.255.255.0	192.168.2.1 to 192.168.2.254	192.168.2.255
IT	10	192.168.1.0	255.255.255.0	192.168.1.1 to 192.168.1.254	192.168.1.255