**COMPUTER NETWORKS**

**Subnetting (FLSM & VLSM)**



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**Problem No.1 /30**

For the given IPs fill the following table for first 4 subnets.

1. **IP = 41.0.0.0 for 3110 subnets**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subnet no.** | **Subnet ID** | **Subnet Mask** | **1st usable IP address** | **2nd usable IP address** | **Last usable IP address** | **Broadcast address** |
| 1 | 41.0.0.0 | 255.0.0.0 | 41.0.0.1 | 41.0.0.2 | 41.0.15.254 | 41.0.15.255 |
| 2 | 41.0.16.0 | 255.0.16.0 | 41.0.16.1 | 41.0.16.2 | 41.0.31.254 | 41.0.31.255 |
| 3 | 41.0.32.0 | 255.0.32.0 | 41.0.32.1 | 41.0.32.2 | 41.0.47.254 | 41.0.47.255 |
| 4 | 41.0.48.0 | 255.0.48.0 | 41.0.48.1 | 41.0.48.2 | 41.0.63.254 | 41.0.63.255 |

1. **IP = 177.8.0.0 for 1818 subnets**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subnet no.** | **Subnet ID** | **Subnet Mask** | **1st usable IP address** | **2nd usable IP address** | **Last usable IP address** | **Broadcast address** |
| 1 | 177.8.0.0 | 255.255.0.0 | 177.8.0.1 | 177.8.0.2 | 177.8.0.30 | 177.8.0.31 |
| 2 | 177.8.0.32 | 255.255.0.32 | 177.8.0.33 | 177.8.0.34 | 177.8.0.62 | 177.8.0.63 |
| 3 | 177.8.0.64 | 255.255.0.64 | 177.8.0.65 | 177.8.0.66 | 177.8.0.94 | 177.8.0.95 |
| 4 | 177.8.0.96 | 255.255.0.96 | 177.8.0.97 | 177.8.0.98 | 177.8.0.126 | 177.8.0.127 |

1. **IP = 222.22.2.0 for 6 subnets**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subnet no.** | **Subnet ID** | **Subnet Mask** | **1st usable IP address** | **2nd usable IP address** | **Last usable IP address** | **Broadcast address** |
| 1 | 222.22.2.0 | 255.255.255.0 | 222.22.2.1 | 222.22.2.2 | 222.22.2.30 | 222.22.2.31 |
| 2 | 222.22.2.32 | 255.255.255.32 | 222.22.2.33 | 222.22.2.34 | 222.22.2.62 | 222.22.2.63 |
| 3 | 222.22.2.64 | 255.255.255.64 | 222.22.2.65 | 222.22.2.66 | 222.22.2.94 | 222.22.2.95 |
| 4 | 222.22.2.96 | 255.255.255.96 | 222.22.2.97 | 222.22.2.98 | 222.22.2.126 | 222.22.2.127 |

**Problem No.2 /30**

For the following IPs do the subnetting as per the no. of hosts given and fill the following table.

1. **IP = 34.0.0.0 for 30000, 217000 , 1000 , 70000 hosts**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subnet no.** | **Subnet ID** | **Subnet Mask** | **1st usable IP address** | **2nd usable IP address** | **Last usable IP address** | **Broadcast address** | **No. of hosts** |
| **217000** | 34.0.0.0 | 255.0.0.0 | 34.0.0.1 | 34.0.0.2 | 34.3.255.254 | 34.3.255.255 | 262144 |
| **70000** | 34.4.0.0 | 255.4.0.0 | 34.4.0.1 | 34.4.0.2 | 34.5.255.254 | 34.5.255.255 | 131072 |
| **30000** | 34.6.0.0 | 255.6.0.0 | 34.6.0.1 | 34.6.0.2 | 34.6.127.254 | 34.6.127.255 | 32768 |
| **1000** | 34.6.128.0 | 255.6.128.0 | 34.6.128.1 | 34.6.128.2 | 34.6.131.254 | 34.6.131.255 | 1024 |

1. **IP = 135.0.0.0 for 8880 , 6000 , 13000 , 500 hosts**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subnet no.** | **Subnet ID** | **Subnet Mask** | **1st usable IP address** | **2nd usable IP address** | **Last usable IP address** | **Broadcast address** | **No. of hosts** |
| **13000** | 135.0.0.0 | 255.255.0.0 | 135.0.0.1 | 135.0.0.2 | 135.0.63.254 | 135.0.63.255 | 16384 |
| **8880** | 135.0.64.0 | 255.255.64.0 | 135.0.64.1 | 135.0.64.2 | 135.0.127.254 | 135.0.127.255 | 16382 |
| **6000** | 135.0.68.0 | 255.255.68.0 | 135.0.68.1 | 135.0.68.2 | 135.0.99.254 | 135.0.99.255 | 8192 |
| **500** | 135.0.100.0 | 255.255.100.0 | 135.0.100.1 | 135.0.100.2 | 135.0.101.254 | 135.0.101.255 | 512 |

1. **IP = 200.16.6.0 for 44, 11, 28, 18 hosts**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subnet no.** | **Subnet ID** | **Subnet Mask** | **1st usable IP address** | **2nd usable IP address** | **Last usable IP address** | **Broadcast address** | **No. of hosts** |
| **44** | 200.16.6.0 | 255.255.255.0 | 200.16.6.1 | 200.16.6.2 | 200.16.6.62 | 200.16.6.63 | 64 |
| **28** | 200.16.6.64 | 255.255.255.64 | 200.16.6.65 | 200.16.6.66 | 200.16.6.94 | 200.16.6.95 | 32 |
| **18** | 200.16.6.96 | 255.255.255.96 | 200.16.6.97 | 200.16.6.98 | 200.16.6.126 | 200.16.6.127 | 32 |
| **11** | 200.16.6.128 | 255.255.255.128 | 200.16.6.129 | 200.16.6.130 | 200.16.6.142 | 200.16.6.143 | 16 |

**Once you’re done with exercise, make submission on google classroom ☺**