Đặng Hoàng Nguyên – SE171946

Phạm Trung Hậu – SE171764

Problem 1:

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| --- | --- | --- |
|  | Given: | |
| Host IP Address: |  | 192.168.200.139 |
| Original Subnet Mask |  | 255.255.255.0 |
| New Subnet Mask: |  | 255.255.255.224 |

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| --- | --- | --- |
|  | Find: | |
| Number of Subnet Bits |  | 3 |
| Number of Subnets Created |  | 8 |
| Number of Host Bits per Subnet |  | 5 |
| Number of Hosts per Subnet |  | 2^5-2 =30 |
| Network Address of this Subnet |  | 192.168.200.128 |
| IPv4 Address of First Host on this Subnet |  | 192.168.200.129 |
| IPv4 Address of Last Host on this Subnet |  | 192.168.200.158 |
| IPv4 Broadcast Address on this Subnet |  | 192.168.200.159 |

Problem 2:

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| --- | --- | --- |
|  | Given: | |
| Host IP Address: |  | 10.101.99.228 |
| Original Subnet Mask |  | 255.0.0.0 |
| New Subnet Mask: |  | 255.255.128.0 |

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| --- | --- | --- |
|  | Find: | |
| Number of Subnet Bits |  | 9bit |
| Number of Subnets Created |  | 2^9 |
| Number of Host Bits per Subnet |  | 15bit |
| Number of Hosts per Subnet |  | 2^15-2 |
| Network Address of this Subnet |  | 10.101.0.0` |
| IPv4 Address of First Host on this Subnet |  | 10.101.0.1 |
| IPv4 Address of Last Host on this Subnet |  | 10.101.127.254 |
| IPv4 Broadcast Address on this Subnet |  | 10.101.127.255 |

problem 3:

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| --- | --- | --- |
|  | Given: | |
| Host IP Address: |  | 172.22.32.12 |
| Original Subnet Mask |  | 255.255.0.0 |
| New Subnet Mask: |  | 255.255.224.0 |

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| --- | --- | --- |
|  | Find: | |
| Number of Subnet Bits |  | 3 |
| Number of Subnets Created |  | 2^3 |
| Number of Host Bits per Subnet |  | 13 |
| Number of Hosts per Subnet |  | 2^13-2 |
| Network Address of this Subnet |  | 172.22.32.0 |
| IPv4 Address of First Host on this Subnet |  | 172.22.32.1 |
| IPv4 Address of Last Host on this Subnet |  | 172.22.63.254 |
| IPv4 Broadcast Address on this Subnet |  | 172.22.63.255 |

Problem 4:

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| --- | --- | --- |
|  | Given: | |
| Host IP Address: |  | 192.168.1.245 |
| Original Subnet Mask |  | 255.255.255.0 |
| New Subnet Mask: |  | 255.255.255.252 |

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| --- | --- | --- |
|  | Find: | |
| Number of Subnet Bits |  | 6bit |
| Number of Subnets Created |  | 2^6 |
| Number of Host Bits per Subnet |  | 2 |
| Number of Hosts per Subnet |  | 2 |
| Network Address of this Subnet |  | 192.168.1.244 |
| IPv4 Address of First Host on this Subnet |  | 192.168.1.245 |
| IPv4 Address of Last Host on this Subnet |  | 192.168.1.246 |
| IPv4 Broadcast Address on this Subnet |  | 192.168.1.247 |

Problem 5:

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| --- | --- | --- |
|  | Given: | |
| Host IP Address: |  | 128.107.0.55 |
| Original Subnet Mask |  | 255.255.0.0 |
| New Subnet Mask: |  | 255.255.255.0 |

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| --- | --- | --- |
|  | Find: | |
| Number of Subnet Bits |  | 8bit |
| Number of Subnets Created |  | 2^8 |
| Number of Host Bits per Subnet |  | 8 |
| Number of Hosts per Subnet |  | 2^8-2 |
| Network Address of this Subnet |  | 128.107.0.0 |
| IPv4 Address of First Host on this Subnet |  | 128.107.0.1 |
| IPv4 Address of Last Host on this Subnet |  | 128.107.0.254 |
| IPv4 Broadcast Address on this Subnet |  | 128.107.0.255 |

Problem 6:

|  |  |  |
| --- | --- | --- |
|  | Given: | |
| Host IP Address: |  | 192.135.250.180 |
| Original Subnet Mask |  | 255.255.255.0 |
| New Subnet Mask: |  | 255.255.255.248 |

|  |  |  |
| --- | --- | --- |
|  | Find: | |
| Number of Subnet Bits |  | 5bit |
| Number of Subnets Created |  | 2^5 |
| Number of Host Bits per Subnet |  | 3bit |
| Number of Hosts per Subnet |  | 2^3-2 |
| Network Address of this Subnet |  | 192.135.280.176 |
| IPv4 Address of First Host on this Subnet |  | 192.135.280.177 |
| IPv4 Address of Last Host on this Subnet |  | 192.135.280.182 |
| IPv4 Broadcast Address on this Subnet |  | 192.135.280.183 |

Reflection Questions

Why is the subnet mask so important when analyzing an IPv4 address?

Because it can defind how all the the network, number of host bits, number of hosts and the broadcast address.