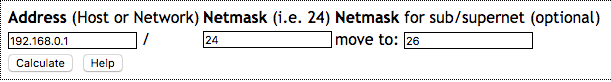
**NAME: Gustavo Hammerschmidt**

**HW3, Subnetting, 100 points**

**Note: You can use online subnetting tools like** [**http://jodies.de/ipcalc**](http://jodies.de/ipcalc) **to double-check your answers. However, you cannot use any online tool in the exam. The introduced website could be used for equal-size subnetting. For example, if you have a block of IP addresses 192.168.0.1/24 and enter move to: 26, it calculates 4 equal-size subnets of this block.**

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**Question1 (32 points):**

1. Divide 16.35.157.128/25 into sub-blocks of sizes: 32, 32, 16, 16

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 32 | 16.35.157.128/27 |
| 2 | 32 | 16.35.157.160/27 |
| 3 | 16 | 16.35.157.192/28 |
| 4 | 16 | 16.35.157.208/28 |

1. Divide 16.35.157.128/25 into sub-blocks of sizes: 64, 16, 16, 16, 8

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 64 | 16.35.157.128/26 |
| 2 | 16 | 16.35.157.192/28 |
| 3 | 16 | 16.35.157.208/28 |
| 4 | 16 | 16.35.157.224/28 |
| 5 | 8 | 16.35.157.240/29 |

1. Divide 16.35.157.0/26 into sub-blocks of sizes: 32, 8, 8

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 32 | 16.35.157.0/27 |
| 2 | 8 | 16.35.157.32/29 |
| 3 | 8 | 16.35.157.40/29 |

1. Divide 16.35.157.64/26 into sub-blocks of sizes: 16, 16, 8, 8

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 16 | 16.35.157.64/28 |
| 2 | 16 | 16.35.157.80/28 |
| 3 | 8 | 16.35.157.96/29 |
| 4 | 8 | 16.35.157.204/29 |

1. Divide 16.35.157.128/26 into sub-blocks of sizes: 32, 16, 8, 8

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 32 | 16.35.157.128/27 |
| 2 | 16 | 16.35.157.160/28 |
| 3 | 8 | 16.35.157.176/29 |
| 4 | 8 | 16.35.157.184/29 |

1. Divide 16.35.157.128/26 into sub-blocks of sizes: 16, 16, 16

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 16 | 16.35.157.128/28 |
| 2 | 16 | 16.35.157.144/28 |
| 3 | 16 | 16.35.157.160/28 |

1. Divide 16.35.157.192/26 into sub-blocks of sizes: 32, 16, 4, 4

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 32 | 16.35.157.192/27 |
| 2 | 16 | 16.35.157.224/28 |
| 3 | 4 | 16.35.157.240/30 |
| 4 | 4 | 16.35.157.244/30 |

1. Divide 16.35.157.192/26 into sub-blocks of sizes: 32, 8, 8, 8, 4

|  |  |  |
| --- | --- | --- |
| Number | Block size | NetID/mask |
| 1 | 32 | 16.35.157.192/27 |
| 2 | 8 | 16.35.157.224/29 |
| 3 | 8 | 16.35.157.232/29 |
| 4 | 8 | 16.35.157.240/29 |
| 5 | 4 | 16.35.157.248/30 |

**Question2 (68 points):**

Divide the network **144.37.128.0/17** among 10 buildings of CSUSM. The table bellow gives the name of each building and the size of network required at each building. Divide the given network range into different-size subnets following the given info. In the second step divide the SBSB building network into smaller networks following the given info. **Complete the tables.**

**Step1:** Subnets of CSUSM (25 points)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number | Building | Block size | NetID/mask | Bcast | Range of valid IP addresses |
| 1 | SCI1 | 214 | 144.37.128.0/18 | 144.37. 191.255 | 16.382 IP addresses  From 144.37.128.1  To 144.37.191.254 |
| 2 | SCI2 | 213 | 144.37.192.0/19 | 144.37.223.255 | 8190 IP addresses  From 144.37.192.1  To 144.37.223.254 |
| 3 | SBSB | 211 | 144.37.224.0/21 | 144.37.231.255 | 2046 IP addresses  From 144.37.224.1  To 144.37.231.254 |
| 4 | CRA | 210 | 144.37.232.0/22 | 144.37.235.255 | 1022 IP addresses  From 144.37.232.1  To 144.37.235.254 |
| 5 | UNV | 210 | 144.37.236.0/22 | 144.37.239.255 | 1022 IP addresses  From 144.37.236.1  To 144.37.239.254 |
| 6 | KEL | 210 | 144.37.240.0/22 | 144.37.243.255 | 1022 IP addresses  From 144.37.240.1  To 144.37.243.254 |
| 7 | MARK | 29 | 144.37.244.0/23 | 144.37.245.255 | 510 IP addresses  From 144.37.244.1  To 144.37.245.254 |
| 8 | ACD | 29 | 144.37.246.0/23 | 144.37.247.255 | 510 IP addresses  From 144.37.246.1  To 144.37.247.254 |
| 9 | ARTS | 29 | 144.37.248.0/23 | 144.37.249.255 | 510 IP addresses  From 144.37.248.1  To 144.37.249.254 |
| 10 | PSB | 27 | 144.37.250.0/25 | 144.37.250.127 | 126 IP addresses  From 144.37.250.1  To 144.37.250.126 |

**Step 2:** Subnets of SBSB Building (40 points)

SBSB Building Network: NetID/mask 144.37.224.0/21

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Floor number | Block size | NetID/mask | Bcast | Range of valid IP addresses |
| 1 | 210 | 144.37.224.0/22 | 144.37.227.255 | 1022 IP Addresses  From 144.37.224.1  To 144.37.227.254 |
| 2 | 29 | 144.37.228.0/23 | 144.37.229.255 | 510 IP addresses  From 144.37.228.1  To 144.37.229.254 |
| 3 | 29 | 144.37.230.0/23 | 144.37.231.255 | 510 IP addresses  From 144.37.230.1  To 144.37.231.254 |

SBSB Building, first floor Network: NetID/mask 144.37.224.0/22

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Room number | Block size | NetID/mask | Bcast | Range of valid IP addresses |
| 101 | 28 | 144.37.224.0/24 | 144.37.224.255 | 254 IP addresses  From 144.37.224.1  To 144.37.224.254 |
| 102 | 27 | 144.37.225.0/25 | 144.37.225.127 | 126 IP addresses  From 144.37.225.1  144.37.225.126 |
| 103 | 26 | 144.37.225.128/26 | 144.37.225.191 | 62 IP addresses  From 144.37.225.129  To 144.37.225.190 |
| 104 | 26 | 144.37.225.192/26 | 144.37.225.255 | 62 IP addresses  From 144.37.225.193  To 144.37.225.254 |
| 105 | 26 | 144.37.226.0/26 | 144.37.226.63 | 62 IP addresses  From 144.37.226.1  To 144.37.226.62 |
| 106 | 25 | 144.37.226.64/27 | 144.37.226.95 | 30 IP addresses  From 144.37.226.65  To 144.37.226.94 |

SBSB Building, second floor Network: NetID/mask 144.37.228.0/23

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Room number | Block size | NetID/mask | Bcast | Range of valid IP addresses |
| 201 | 27 | 144.37.228.0/25 | 144.37.228.127 | 126 IP addresses  From 144.37.228.1  To 144.37.228.126 |
| 202 | 26 | 144.37.228.128/26 | 144.37.228.191 | 62 IP addresses  From 144.37.228.129  To 144.37.228.190 |
| 203 | 25 | 144.37.228.192/27 | 144.37.228.223 | 30 IP addresses  From 144.37.228.193  To 144.37.228.222 |
| 204 | 24 | 144.37.228.224/28 | 144.37.228.239 | 14 IP addresses  From 144.37.228.225  To 144.37.228.238 |

SBSB Building, third floor Network: NetID/mask 144.37.230.0/23

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Room number | Block size | NetID/mask | Bcast | Range of valid IP addresses |
| 301 | 27 | 144.37.230.0/25 | 144.37.230.127 | 126 IP addresses  From 144.37.230.1  To 144.37.230.126 |
| 302 | 25 | 144.37.230.128/27 | 144.37.230.159 | 30 IP addresses  From 144.37.230.129  To 144.37.230.158 |
| 303 | 25 | 144.37.230.160/27 | 144.37.230.191 | 30 IP addresses  From 144.37.230.161  To 144.37.230.190 |

**Step 3:** Collect some information about CSUSM servers (3 points)

Use <http://whatismyipaddress.com/ip-lookup> and lookup the address given below. What is the hostname for this address?

|  |  |
| --- | --- |
| IP address | Hostname |
| 144.37.5.117 | cc.csusm.edu |

Use DNS Lookup type (A) IPv4 at <https://www.whatsmyip.org/whois-dns-lookup/> and lookup hostnames given below. What is the IP address for each hostname?

|  |  |
| --- | --- |
| Hostname | IP address |
| my.csusm.edu | 144.37.5.150 |
| cascade.csusm.edu | 144.37.5.42 |