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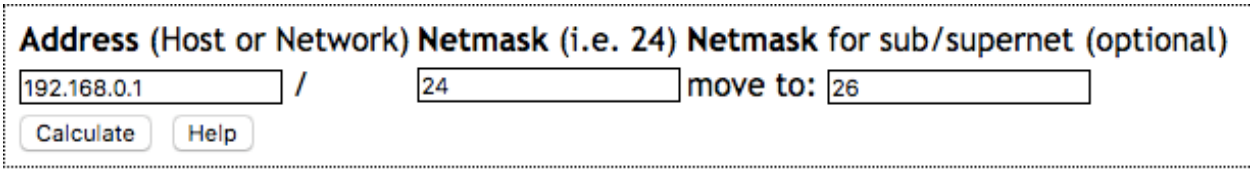
HW3, Subnetting, 100 points

Note: You can use online subnetting tools like 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.



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

2. 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

3. 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

4. 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

5. 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

6. 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

7. 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

8. 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	2^{14}	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	2^{13}	144.37.192.0/19	144.37.223.255	8190 IP addresses From 144.37.192.1 To 144.37.223.254
3	SBSB	2^{11}	144.37.224.0/21	144.37.231.255	2046 IP addresses From 144.37.224.1 To 144.37.231.254
4	CRA	2^{10}	144.37.232.0/22	144.37.235.255	1022 IP addresses From 144.37.232.1 To 144.37.235.254
5	UNV	2^{10}	144.37.236.0/22	144.37.239.255	1022 IP addresses From 144.37.236.1 To 144.37.239.254
6	KEL	2^{10}	144.37.240.0/22	144.37.243.255	1022 IP addresses From 144.37.240.1

					To 144.37.243.254
7	MARK	2^9	144.37.244.0/23	144.37.245.255	510 IP addresses From 144.37.244.1 To 144.37.245.254
8	ACD	2^9	144.37.246.0/23	144.37.247.255	510 IP addresses From 144.37.246.1 To 144.37.247.254
9	ARTS	2^9	144.37.248.0/23	144.37.249.255	510 IP addresses From 144.37.248.1 To 144.37.249.254
10	PSB	2^7	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	2^{10}	144.37.224.0/22	144.37.227.255	1022 IP Addresses From 144.37.224.1 To 144.37.227.254
2	2^{9}	144.37.228.0/23	144.37.229.255	510 IP addresses From 144.37.228.1 To 144.37.229.254
3	2^{9}	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 numbe	Block size	NetID/mask	Bcast	Range of valid IP addresses
101	2^{8}	144.37.224.0/24	144.37.224.255	254 IP addresses From 144.37.224.1 To 144.37.224.254
102	2^{7}	144.37.225.0/25	144.37.225.127	126 IP addresses From 144.37.225.1 144.37.225.126
103	2^{6}	144.37.225.128/26	144.37.225.191	62 IP addresses From 144.37.225.129 To 144.37.225.190
104	2^{6}	144.37.225.192/26	144.37.225.255	62 IP addresses From 144.37.225.193 To 144.37.225.254
105	2^{6}	144.37.226.0/26	144.37.226.63	62 IP addresses From 144.37.226.1 To 144.37.226.62
106	2^{5}	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 numbe	Block size	NetID/mask	Bcast	Range of valid IP addresses
201	2^{7}	144.37.228.0/25	144.37.228.127	126 IP addresses

				From 144.37.228.1 To 144.37.228.126
202	2^6	144.37.228.128/26	144.37.228.191	62 IP addresses From 144.37.228.129 To 144.37.228.190
203	2^5	144.37.228.192/27	144.37.228.223	30 IP addresses From 144.37.228.193 To 144.37.228.222
204	2^4	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	2^7	144.37.230.0/25	144.37.230.127	126 IP addresses From 144.37.230.1 To 144.37.230.126
302	2^5	144.37.230.128/27	144.37.230.159	30 IP addresses From 144.37.230.129 To 144.37.230.158
303	2^5	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