Problem 7

Address Class: B

Default Subnet mask: 255.255.0.0

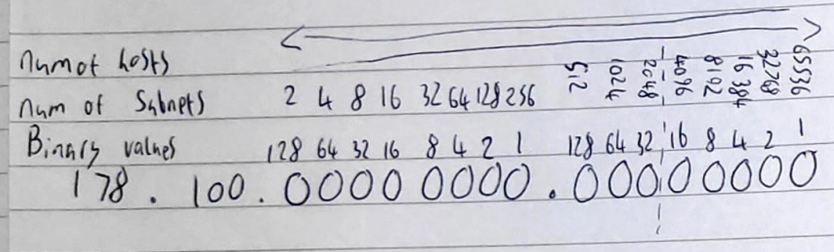
Custom Subnet mask: 255.255.255.224

Total number of Subnets: 2048

Total number of hosts/addresses: 32

Usable addresses: 30

bits borrowed: 11



128+64+32 = 224

addresses: 32 - 2 = 30

8+3 = 11

Problem 15

Address class: B

Default Subnet mask: 255.255.0.0

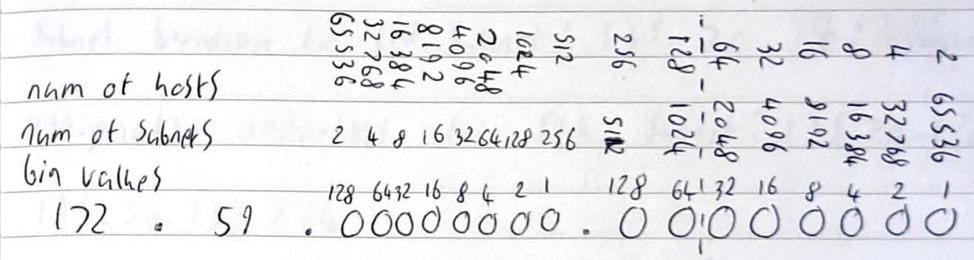
Custom Subnet mask: 255.255.255.192

Total Subnets: 1024

total host addresses: 64

Usable addresses: 62

bits borrowed: 10



128 + 64 = 192

addresses = 64 - 2 = 62

8+2 = 10

Problem 11

Class: B

Default Subnet mask: 255,255,0,0

Custom Subnet mask: 255,255,224,0

Total number of Subnets: 8

num of host addresses: 8192

usable addresses: 8190

bits borrowed: 3

135.70.000|00000.00000000

128+64+32 = 224

8192-2 = 8190

135.70.0.0 -> 135.70.31.255
135.70.32.0 -> 135.70.63.255
135.70.64.0 -> 135.70.95.255
135.70.96.0 -> 135.70.127.255
135.70.128.0 -> 135.70.159.255
135.70.160.0 -> 135.70.191.255
135.70.192.0 -> 135.70.223.255
135.70.224.0 -> 135.70.255.255

6th Subnet range: 135.70.160.0 -> 135.70.191.255

7th Subnet number: 135.70.192.0

Subnet broadcast for 3rd Subnet: 135.70.95.255

assignable addresses for 5th Subnet: 135.70.128.1 ->

135.70.159.254

Problem 12

address class: C

Default Subnet mask: 255.255.255.0

Custom Subnet mask: 255.255.255.192

num of Subnets: 4

num of host addresses: 64

num of usable addresses: 64 - 2 = 62

num of borrowed bits: 2

num of hosts	256	128	64	32	16	8	4	2
num of Subnets	2	4	8	16	32	64	128	256
Binary values	128	64	32	16	8	4	2	1

198.125.50. 0 1 0 0 0 0 0 0

128 + 64 = 192

198.125.50.0 -> 198.125.50.63

198.125.50.64 -> 198.125.50.127

198.125.50.128 -> 198.125.50.191

198.125.50.192 -> 198.125.50.255

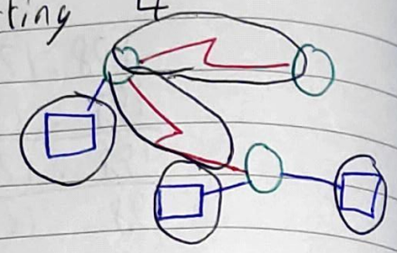
2nd Subnet range: 198.125.50.64 -> 198.125.50.127

Subnet number for 2nd subnet: 198.125.50.64

Subnet broadcast address for 4th Subnet: 198.125.50.255

assignable addresses for 3rd subnet: 198.125.50.129 -> 198.125.50.190

Practical Subnetting 4



Address class: B

Custom Subnet mask: 255.255.240.0

min Subnets: 5

extra Subnets 70% growth %: 4

Total Subnets: 9

$2^3 = 9$ Subnets

$2^4 = 16$ Subnets

4 bits borrowed

Num of host addresses in largest Subnet group: 325

70% growth in largest Subnet: 228

325 x 1.7 = 552.5

552.5 - 325 = 227.5

num of hosts	65536	32768	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1
num of subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32,768	65,536	
binary values	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	

135.126.0000|0000.0000.0000

Total number of address for largest Subnet:

228 + 325 = 553

+16

135.126.0.0	->	135.126.15.255
135.126.16.0	->	135.126.31.255
135.126.32.0	->	135.126.47.255
135.126.48.0	->	135.126.63.255
135.126.64.0	->	135.126.79.255

IP address range for:

new york: 135.126.0.0 -> 135.126.15.255

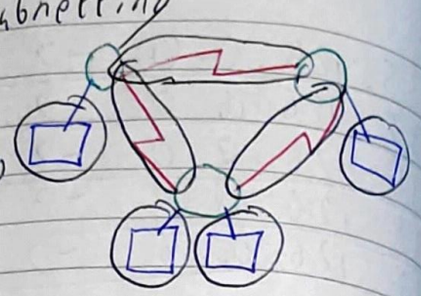
D.C: 135.126.16.0 -> 135.126.31.255

Dallas: 135.126.32.0 -> 135.126.47.255

Router A to Router B: 135.126.48.0 -> 135.126.63.255

Router A to Router C: 135.126.64.0 -> 135.126.79.255.

Practical Subnetting



address class: A

Custom Subnet mask: 255.240.0.0

min num of Subnets: 7

extra Subnets: 2

total Subnets needed: 7+2 = 9

$2^3 = 9$ Subnets

$2^4 = 16$ Subnets

4 bits borrowed

128+64+32+16 = 240

$2^4 = 16$

num of bits borrowed are 4

10.0000,0000.00000000.0000000

0	10.0.0.0	-> 10.15.255.255
1	10.16.0.0	-> 10.31.255.255
2	10.32.0.0	-> 10.47.255.255
3	10.48.0.0	-> 10.63.255.255
4	10.64.0.0	-> 10.79.255.255
5	10.80.0.0	-> 10.95.255.255
6	10.96.0.0	-> 10.111.255.255
7	10.112.0.0	-> 10.128.255.255

IP address range for:

Technology: 10.0.0.0 -> 10.15.255.255

Science: 10.16.0.0 -> 10.31.255.255

arts and drama: 10.32.0.0 -> 10.47.255.255

administration: 10.48.0.0 -> 10.63.255.255

Router A to Router B: 10.64.0.0 -> 10.79.255.255

Router A to Router C: 10.80.0.0 ->

Router B to Router C: 10.96.0.0 -> 10.111.255.255