Vasylyshyn Danylo 256711

Nykonchuk Illia 245693

Lab5

Task 1

No.	Ip address	fault	Corrected ip	Class of addresses	Net bit number	Host bit number
1	1.100.200.30	no		A	8	24
2	144.61.72.83	no		B	16	16
3	220.91.122.23	no		C	24	8
4	230.31.32.33	Yes	It's a multicast ip			
5	250.51.52.53	Yes	Class E network, not used	E		
6	11.255.255.255	yes	It's a broadcast address the correct one should be something which is not all host 1 bytes	A	8	24
7	128.0.0.0	Yes	It's a network address, not a host address	B	16	16
8	225.255.255.0	Yes	Multicast			
9	224.0.0.3	Yes	multicast			
10	254.255.5.6	Yes	Class E			

No.		binary	decimal
1	Ip address	00000001.01100100.11001000.00011110	1.100.200.30
	Network mask	11111111.00000000.00000000.00000000	255.0.0.0
	Network address	00000001.00000000.00000000.00000000	1.0.0.0
	First host address	00000001.00000000.00000000.00000001	1.0.0.1
	Last host address	00000001.11111111.11111111.11111110	1.255.255.254
	Broadcast address	00000001.11111111.11111111.11111111	1.255.255.255
2	Ip address	10010000.00111101.01001000.01010011	144.61.72.83
	Network mask	11111111.11111111.00000000.00000000	255.255.0.0
	Network address	10010000.00111101.00000000.00000000	114.61.0.0
	First host address	10010000.00111101.00000000.00000001	114.61.0.1
	Last host address	10010000.00111101.11111111.11111110	114.61.255.254

	Broadcast address	10010000.00111101.11111111.11111111	114.61.255.254
3	Ip address	11011100.01011011.01111010.00010111	220.91.122.23
	Network mask	11111111.11111111.11111111.00000000	255.255.255.0
	Network address	11011100.01011011.01111010.00000000	220.91.122.0
	First host address	11011100.01011011.01111010.00000001	220.91.122.12
	Last host address	11011100.01011011.01111010.11111110	220.91.122.254
	Broadcast address	11011100.01011011.01111010.11111111	220.91.122.255

Task 2

No.	Ip address	fault	Corrected ip	Net bit number	Host bit number
1	1.100.200.30/12	no		12	20
2	144.61.72.83/20	no		20	12
3	220.91.122.23/28	no		28	4
4	30.31.255.255/16	Yes	It's a broadcast ip		
5	50.51.52.63/26	no		26	6
6	11.255.255.204/30	no		30	2
7	128.0.0.0/29	Yes	It's a network address, not a host address 128.0.0.1 - 128.0.0.6 are hosts on this network	29	3
8	25.255.255.0/22	no		22	10
9	114.0.0.3/23	no		23	9
10	204.255.5.6/25	no		25	7

No.		binary	decimal
1	Ip address	10010000.00111101.01001000.01010011	144.61.72.83/20
	Network mask	11111111.11111111.11110000.00000000	255.255.240.0
	Network address	10010000.00111101.01000000.00000000	144.61.64.0
	First host address	10010000.00111101.01000000.00000001	144.61.64.1
	Last host address	10010000.00111101.01001111.11111110	144.61.79.254
	Broadcast address	10010000.00111101.01001111.11111111	144.61.79.255
	Number of subnets		4 (20 – class a 16 bits)
	Hosts per subnet	111111111110	2^12 - 2
2	Ip address	11011100.01011011.01111010.00010111	220.91.122.23/28
	Network mask	11111111.11111111.11111111.11110000	255.255.255.240
	Network address	11011100.01011011.01111010.00010000	220.91.122.16
	First host address	11011100.01011011.01111010.00010001	220.91.122.17
	Last host address	11011100.01011011.01111010.00011110	220.91.112.30

	Broadcast address	11011100.01011011.01111010.00011111	220.91.112.31
	Number of subnets		4
	Hosts per subnet	1110	2^4 - 2
3	Ip address	01110010.00000000.00000000.00000011	114.0.0.3/23
	Network mask	11111111.11111111.11111110.00000000	255.255.254.0
	Network address	01110010.00000000.00000000.00000000	114.0.0.0
	First host address	01110010.00000000.00000000.00000001	114.0.0.1
	Last host address	01110010.00000000.00000001.11111110	114.0.1.254
	Broadcast address	11011100.01011011.01111010.11111111	114.0.1.255
	Number of subnets		15
	Hosts per subnet	111111110	2^9 - 2

Task3

NO	IP	CLASS	PUBLIC/ PRIVATE	HOT OR NOT	TYPE OF ADDRESS	SUBNET BITS	HOST BISTS
1	127.1.2.3/8	A	PRIVATE	YES	LOOPBACK	0	24
2	10.61.72.83/20	A	PRIVATE	YES	HOST	12	12
3	172.20.122.23/28	B	PRIVATE	YES	HOST	12	16
4	192.168.0.255/18	C	PRIVATE	YES	HOST	-6	8
5	192.169.1.10/26	C	PUBLIC	YES	HOST	2	8
6	172.15.255.204/27	B	PUBLIC	YES	HOST	11	16
7	228.0.0.20/29	D	PUBLIC	YES	MULTICAST	UNDEFINED	UNDEFINED
8	245.45.55.0/22	E	PUBLIC	YES	HOST	UNDEFINED	UNDEFINED
9	169.254.0.1/16	B	PUBLIC	YES(MIN)	SPECIAL(APIPA)	0	16
10	169.254.255.254/16	B	PUBLIC	YES(MAX)	SPECIAL(APIPA)	0	16

Task 4

1	IPv6 address	2000:3000:4000:5000:6000:7000:8000:9000/64
	Compressed IPv6 address	2000:3000:4000:5000:6000:7000:8000:9000/64
	Network mask	ffff:ffff:ffff:ffff::
	Network address	2000:3000:4000:5000::
	First host address	2000:3000:4000:5000::1
	Last host address	2000:3000:4000:5000:ffff:ffff:ffff:ffff
	Subnetwork ID	5000
2	IPv6 address	3000:0003:0004:0005:0006:0007:0008:0009/64
	Compressed IPv6 address	3000:3:4:5:6:7:8:9/64
	Network mask	ffff:ffff:ffff:ffff::
	Network address	3000:3:4:5::
	First host address	3000:3:4:5::1
	Last host address	3000:3:4:5:ffff:ffff:ffff:ffff
	Subnetwork ID	5

3	IPv6 address	2000:3000:4000:5000:6000:7000:8000:9000/64
	Compressed IPv6 address	**2:3:4:5:6:7:8:9/64**
	Network mask	ffff:ffff:ffff:ffff::
	Network address	2: 3: 4: 5::
	First host address	2: 3: 4: 5::1
	Last host address	2: 3: 4: 5:ffff:ffff:ffff:ffff
	Subnetwork ID	5
4	IPv6 address	2000:0000:1234:0000:0000:0056:0000:0001/64
	Compressed IPv6 address	2000:0:1234::56/64
	Network mask	ffff:ffff:ffff:ffff::
	Network address	2000:0000:1234::
	First host address	2000:0000:1234::1
	Last host address	2000:0000:1234:0:ffff:ffff:ffff:ffff
	Subnetwork ID	0
5	IPv6 address	2222:0100:0200:0004:0000:0000:0000:fffe/64
	Compressed IPv6 address	2222:100:200:4::fffe
	Network mask	ffff:ffff:ffff:ffff::
	Network address	2222:100:200:4::
	First host address	2222:100:200:4::1
	Last host address	2222:100:200:4:ffff:ffff:ffff:ffff
	Subnetwork ID	4
6	IPv6 address	3232:0000:0000:1010:1:0000:0000:0000
	Compressed IPv6 address	3232::1010:1::/64
	Network mask	ffff:ffff:ffff:ffff::
	Network address	3232:0:0:1010::
	First host address	3232:0:0:1010::1
	Last host address	3232:0:0:1010:ffff:ffff:ffff:ffff
	Subnetwork ID	1010

No:	Ip:	Type:
1	::/0	Uncpecified address
2	::/128	Uncpecified network?
3	::1/128	Loopback
4	fe80::10/64	Link-local
5	ff02::1	Multicast
6	2001:db8:0:304::1/64	Documentation
7	3000:0000:0000:0128:1234:5678:aaaa:0029/64	GUA(global unicast)
8	fc00:0:3:4::72/64	Unique local
9	fcff:0:10:6::1/64	Unique local
10	febf::2/64	Link local address

Task 5

Following the requirements given below, design the enterprise network subnetting scheme using a fixed mask length method. Use the address 193.17.130.0/24.

Max number of hosts needed In any subnet is 14 so 4 host bits should be enough

So the subnets: 193:17:130:0/28

193:17:130:16/28

193:17:130:32/28

…

193:17:130:234/28

Therefore we have 28 network bits.

1	Group name	Designers
	Network address	193:17:130:0/28
	Subnet bits number	4
	Required IP address count	13
	First host address	193:17:130:1
	Last host address	193:17:130:14
	Broadcast address	193:17:130:15
2	Group name	Accounting
	Network address	193.17.130.16/28
	Subnet bits number	4
	Required IP address count	14
	First host address	193.17.130.17
	Last host address	193.17.130.30
	Broadcast address	193.17.130.31
3	Group name	Marketing
	Network address	193.17.130.32
	Subnet bits number	4
	Required IP address count	7
	First host address	193.17.130.33
	Last host address	193.17.130.46
	Broadcast address	193.17.130.47
4	Group name	Security

	Network address	193.17.130.48
	Subnet bits number	4
	Required IP address count	9
	First host address	193.17.130.49
	Last host address	193.17.130.62
	Broadcast address	193.17.130.63
5	Group name	Secretariat
	Network address	193.17.130.64
	Subnet bits number	4
	Required IP address count	6
	First host address	193.17.130.65
	Last host address	193.17.130.78
	Broadcast address	193.17.130.79
6	Group name	Managemnt
	Network address	193.17.130.80
	Subnet bits number	4
	Required IP address count	12
	First host address	193.17.130.81
	Last host address	193.17.130.94
	Broadcast address	193.17.130.95
7	Group name	Public wi-fi network
	Network address	193.17.130.96
	Subnet bits number	4
	Required IP address count	8
	First host address	193.17.130.97
	Last host address	193.17.130.110
	Broadcast address	193.17.130.111
8	Group name	Point to point connections between routers – 8 (7 connections between 8 routers require 14 ip's)
	Network address	193.17.130.112/28 193.17.130.128/28 … 193.17.130.208/28
	Subnet bits number	4
	Required IP address count	2 per network
	First host address	193.17.130.113 193:17:130:129 193:17:130:145 193:17:130:161 193:17:130:177

		193:17:130:193
		193:17:130:209
	Last host address	193.17.130.126
		193:17:130:142
		193:17:130:158
		193:17:130:174
		193:17:130:190
		193:17:130:206
		193:17:130:222
	Broadcast address	193.17.130.127
		193:17:130:143
		193:17:130:159
		193:17:130:175
		193:17:130:191
		193:17:130:207
		193:17:130:223

Task 6

Following the requirements given below, design the enterprise network subnetting scheme using a variable length subnet mask. Use the address 193.17.130.0/24.

1	Group name	Designers
	Network address	193.17.130.0/26
	Subnet bits number	2
	Required IP address count	33
	First host address	193:17:130:1
	Last host address	193:17:130:62
	Broadcast address	193:17:130:63
2	Group name	Accounting
	Network address	193:17:130:64/27
	Subnet bits number	3
	Required IP address count	16
	First host address	193:17:130:65
	Last host address	193:17:130:94
	Broadcast address	193:17:130:95
3	Group name	Marketing

	Network address	193:17:130:96/28
	Subnet bits number	4
	Required IP address count	7
	First host address	193:17:130:97
	Last host address	193:17:130:110
	Broadcast address	193:17:130:111
4	Group name	Security
	Network address	193:17:130:112/28
	Subnet bits number	3
	Required IP address count	9
	First host address	193:17:130:113
	Last host address	193:17:130:126
	Broadcast address	193:17:130:127
5	Group name	Secretariat
	Network address	193:17:130:128/29
	Subnet bits number	5
	Required IP address count	6
	First host address	193:17:130:129
	Last host address	193:17:130:134
	Broadcast address	193:17:130:135
6	Group name	Managemnt
	Network address	193:17:130:136/28
	Subnet bits number	4
	Required IP address count	12
	First host address	193:17:130:137
	Last host address	193:17:130:150
	Broadcast address	193:17:130:151
7	Group name	Public wi-fi network
	Network address	193:17:130:152/26
	Subnet bits number	2
	Required IP address count	40
	First host address	193:17:130:153
	Last host address	193:17:130:214
	Broadcast address	193:17:130:215
8	Group name	Point to point connections between routers – 8
	Network address	193:17:130:216/30 193:17:130:220/30

		193:17:130:224/30
		193:17:130:228/30
		193:17:130:232/30
		193:17:130:236/30
		193:17:130:240/30
		193:17:130:244/30
	Subnet bits number	6
	Required IP address count	2
	First host address	193:17:130:217
		193:17:130:221
		193:17:130:225
		193:17:130:229
		193:17:130:233
		193:17:130:237
		193:17:130:241
		193:17:130:245
	Last host address	193:17:130:218
		193:17:130:222
		193:17:130:226
		193:17:130:230
		193:17:130:234
		193:17:130:238
		193:17:130:242
		193:17:130:246
	Broadcast address	193:17:130:219
		193:17:130:223
		193:17:130:227
		193:17:130:231
		193:17:130:235
		193:17:130:239
		193:17:130:243
		193:17:130:247