Sistemas Informáticos (Computer Systems)

Unit 11. Activities 01

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UNIT 11. ACTIVITIES 01

1. EXERCISE 01

Indicate if these IPs are right or not

a) 1.1.1.1

b) 2.2.2.200

c) 200.260.0.3

d) 4.4.4.4.4

e) 5.0.0.300

f) 256.244.244.4

g) 700.1000.100

2. EXERCISE 02

Indicate if these IPs are masks or not. For IP that are masked, calculate the number of computers that we can connect to them.

a) 255.0.0.0

b) 255.255.0.1

c) 255.255.128.0

d) 255.255.127.0

e) 255.255.128.15

3. EXERCISE 03

Given an IP and a mask, calculate network ID and broadcast address. If a mask is not provided, use the default mask for IP class:

a) 18.120.16.250: Mask not provided

b) 18.120.16.255 / 255.255.0.0:

c) 155.4.220.39: Mask not provided

d) 194.209.14.33: Mask not provided

e) 190.33.109.133 / 255.255.255.0:

4. EXERCISE 04

We have a 255.255.0.0 mask, and we want to create as many subnets as we can. Each subnet needs at least 47 hosts.

How many subnets can we create?

5. EXERCISE 05

Our computer has IP 194.100.129.120. If there are 8 subnets, indicate:

a) IP class and default mask

IP class: C

Default mask: 255.255.255.0

b) Mask when net is divided in 8 subnets

To obtain 8 subnets, we have to add 3 bits (2^3=8) to the default mask.

11111111.11111111.11111111.11100000 = 255.255.255.224 = \27

c) Network ID and broadcast IP of each subnet

Network ID of each subnet:

11000010.01100100.10000001.00000000 = 194.100.129.0

11000010.01100100.10000001.00100000 = 194.100.129.32

11000010.01100100.10000001.01000000 = 194.100.129.64

11000010.01100100.10000001.01100000 = 194.100.129.96

11000010.01100100.10000001.10000000 = 194.100.129.128

11000010.01100100.10000001.10100000 = 194.100.129.160

11000010.01100100.10000001.11000000 = 194.100.129.192

11000010.01100100.10000001.11100000 = 194.100.129.224

Broadcast IP of each subnet:

11000010.01100100.10000001.00011111 = 194.100.129.31

11000010.01100100.10000001.00111111 = 194.100.129.63

11000010.01100100.10000001.01011111 = 194.100.129.95

11000010.01100100.10000001.01111111 = 194.100.129.127

11000010.01100100.10000001.10011111 = 194.100.129.159

11000010.01100100.10000001.10111111 = 194.100.129.191

11000010.01100100.10000001.11011111 = 194.100.129.223

11000010.01100100.10000001.11111111 = 194.100.129.255

d) Subnet that our IP belongs to

Our IP 11000010.01100100.10000001.01111000 = 194.100.129.120

Is in subnet11000010.01100100.10000001.01100000 = 194.100.129.96

e) Number of host available to each subnet

There are 5 bits for the host. We cannot use Network ID IP and Broadcast IP.

The number of host available is 2^5 – 2 = 30

6. EXERCISE 06

Our computer has IP 172.10.130.4. If there are 4 subnets, indicate:

a) IP class and default mask

b) Mask when net is divided in 4 subnets

c) Network ID and broadcast IP of each subnet

d) Subnet that our IP belongs to

e) Number of host available to each subnet

7. EXERCISE 07

Our computer has IP 170.10.133.2. If there are 5 subnets, indicate:

a) IP class and default mask

b) Mask when net is divided in 5 subnets

c) Network ID and broadcast IP of each subnet

d) Subnet that our IP belongs to

e) Number of host available to each subnet