**Homework#3**

1)

192.168.10.254

|  |  |
| --- | --- |
| 192 | 168 |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | |
| 11000000 | 10101000 |

|  |  |
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| 10 | 254 |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | |
| 00001010 | 11111110 |

192.168.10.254=11000000101010000000101011111110

2)

1000000001011101110000111110000

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | |
| 1+0+0+0+0+0+0+0=128 | 0+64+0+16+8+4+0+1=93 |

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | |
| 128+64+0+0+0+0+2+1=195 | 128+64+32+0+0+0+0+0=224 |

1000000001011101110000111110000= 128.93.195.224

3)

11100010101111001000001011

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | |
| 128+64+32+0+0+0+2+0=226 | 128+0+32+16+8+4+0+0=188 |

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | |
| 128+0+0+0+0+0+2+0=130 | 128+64+0+0+0+0+0+0=192 |

11100010101111001000001011= 226.188.130.192

4)

Network: 172.20.10.0/23

Subnet mask: 255.255.254.0

First IP: 172.20.10.1

Last IP: 172.20.11.254

5(

Network: 192.168.10.0/25

Subnet mask: 255.255.255.128

First IP: 192.168.10.1

Last IP: 172.20.11.126

6)

Network: 100.100.0.0/23

Subnet mask: 255.255.254.0

510 IPs

7)

Network: 128.168.20.0/28

Subnet mask: 255.255.255.240

14 IPs

8)

50 IPs

Network: 192.168.50.0/26

Subnet Mask: 255.255.255.192

First IP: 192.168.50.1

Last IP: 192.168.50.62

9) 10000 IPs

Network: 172.27.0.0/18

Subnet Mask: 255.255.192.0

First IP: 172.27.0.1

Last IP: 172.27.63.254

10)

عندما نريد إضافة أجهزة الى شبكه، مثلا تستوعب هذه الشبكه 62 جهاز ونريد إضافة اجهزه لشبكه ليكون مجموع الأجهزة أكثر من 62 مثلا راح يكون المجموع 100 جهاز في هذي الحالة علينا تغيير قناع الشبكة من

From 255.255.255.192 to be 255.255.255.128

11)

1-تصميم الشبكة الموجودة في المبنى لابد تكون مجهزه لي نمو الشبكة مستقبلا

2-حساب كم غرفه للموظفين موجودة في هذا الطابق الجديد وكم جهاز بيكون في كل غرفه

3-تمديد الكيابل من الغرفة المركزيه التي يوجد بها السويتش والراوتر الى المكاتب التي بطابق الجديد

4-إذا كانت الشبكه الموجده في المبنى لا تستوعب إضافة اجهزه أكثر عليها في هذه الحاله نغير قناع الشبكه لكي نتمكن من زيادة عدد الاجهزه على الشبكه وربط الاجهزه الجديد التي سوف تكون في الطابق الجديد