

CYSE-270- Linux System For Cybersecurity

Assignment –10

Networking Basics - Subnetting

Understanding subnetting takes time and practice. Using the methods covered during the class, fill in the following tables for **Network**, **broadcast**, **first IP**, **Last IP** and **Max. Hosts in the network**.

The column for IP address should be in Decimal format for each, except number of hosts. (Refer to the examples in the slide for week 10-Networking Basics)

Task-A: (50 Points)

Category	IP Address	Binary Format
Address	192.168.100.4	11000000.10101000.01100100.00000100
Netmask	28 (255.255.255.240)	11111111.11111111.11111111.11110000
Network address	192.168.100.0	11000000.10101000.01100100.00000000
Broadcast address	192.168.100.15	11000000.10101000.01100100.00001111
First IP	192.168.100.1	11000000.10101000.01100100.00000001
Last IP	192.168.100.14	11000000.10101000.01100100.00001110
Maximum host in the network	14	$2^4 - 2 = 16$ $16 - 2 = 14$ (Usable hosts)

Task-B: (50 points)

Category	IP Address	Binary Format
Address	170.1.0.0	10101010.00000001.00000000.00000000
Netmask	26 (255.255.255.192)	11111111.11111111.11111111.11000000
Network address	170.1.0.0	10101010.00000001.00000000.00000000
Broadcast address	170.1.0.63	10101010.00000001.00000000.00111111
First IP	170.1.0.1	10101010.00000001.00000000.00000001
Last IP	170.1.0.62	10101010.00000001.00000000.00111110
Maximum host in the network	62	$2^6 - 2 = 64$ $64 - 2 = 62$ (Usable hosts)

Extra Credit (10 points)

Write a bash script to print out 0~10 in shell scripts by using for loop and while loop, respectively. Please submit the screenshot for the script and its output, both.

1. **Open terminal**
2. **touch extra_credit10.sh**
3. **nano extra_credit10.sh**

```
#!/bin/bash
```

```
echo "Using for loop:"
```

```
for i in {0..10}
```

```
do
```

```
    echo $i
```

```
done
```

```
echo "Using while loop:"
```

```
i=0
```

```
while [ i -le 10 ]
```

```
do
```

```
    echo $i
```

```
    ((i++))
```

```
done
```

* 'CTRL + O' to save and 'ENTER' to confirm filename*

* 'CTRL + X' to exit

4. **chmod +x extra_credit10.sh**
5. **./extra_credit10.sh**

```
jcwilhelm@jcran011: ~  
File Actions Edit View Help  
(jcwilhelm@jcran011)-[~]  
$ touch extra_credit10.sh  
(jcwilhelm@jcran011)-[~]  
$ nano extra_credit10.sh  
(jcwilhelm@jcran011)-[~]  
$ chmod +x extra_credit10.sh  
jcwilhelm@jcran011: ~  
File Actions Edit View Help  
GNU nano 8.0 extra_credit10.sh  
#!/bin/bash  
  
echo "Using for loop:"  
for i in {0..10}  
do  
    echo $i  
done  
  
echo "Using while loop:"  
i=0  
while [ $i -le 10 ]  
do  
    echo $i  
    ((i++))  
done  
  
(jcwilhelm@jcran011)-[~]  
$ ./extra_credit10.sh  
Using for loop:  
0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
Using while loop:  
0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
10
```