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Programme	BTECH CSE	Slot	L1+L2
Course		Semester	IV

EXPERIMENT 11

Question:

Consider a classless IP address with mask value is assigned for an organization. The organization wants to assign the IP addresses for a group of its customer organizations.

Each customer organization has its own IP address requirement. Check the possibility for assigning these IP addresses and assign the IP addresses accordingly.

Input:

1. IP address with /mask value

2. Number of Groups, Customers in each group, Addresses for each customer.

Output:

1. Check the validity of the mask value

   [Calculate the number of available address and the required addresses.

   Available addresses should be greater than required addresses]

2. Print First and last address for first and last customer in each group.

Code:

```
ip = input("Enter the IP address: ")
ip_array = ip.split(".")
ipa = ([int(x) for x in ip_array])
print("IP Address: ", ipa)

sub = int(input("Enter the subnet mask: "))
avail = 2 ** sub
groups = int(input("Enter the number of groups: "))

cus = []
add = []
use = 0

for i in range(0, groups):
    print("For group", i+1)
    cust = int(input("Enter the number of customers: "))
    cus.append(cust)
    addr = int(input("Enter the number of addresses: "))
    add.append(addr)
    use += cust * addr

if(use <= avail):
    print("\nValid!! Can be used.\n")

    for i in range(0, groups):
        print("For group", i+1," first customer")

        ipa[3] = 0
        ipa1=ipa[2]
        print("First address: {}.{}.{}.{}".format(ipa[0], ipa[1], ipa[2],
ipa[3]))

        xy = 256 / cus[i]
        ipa[3] = add[i] - 1
        print("Last address: {}.{}.{}.{}".format(ipa[0], ipa[1], ipa[2],
ipa[3]))

        ipa[2] += int(add[i] / xy)-1

        print()

        print("For group", i+1," last customer")

        if (ipa[3]==255):
            ipa[3] = 0
        else:
            ipa[3]=(256-add[i])
```

```
        print("First address: {}.{}.{}.{}".format(ipa[0], ipa[1], ipa[2],
ipa[3]))

        xy = 256 / cus[i]
        ipa[3] = 255
        ipa1 += int(add[i] / xy)-1

        print("Last address: {}.{}.{}.{}".format(ipa[0], ipa[1], ipa1,
ipa[3]))
        ipa[2]+=1

        print()
else:
    print("Invalid! Cannot be used.")
```

```
PS C:\Users\vaibh> python -u "c:\Users\vaibh\OneDrive\Desktop\lab11.py"
Enter the IP address: 191.100.0.0
IP Address:  [191, 100, 0, 0]
Enter the subnet mask: 16
Enter the number of groups: 3
For group 1
Enter the number of customers: 64
Enter the number of addresses: 256
For group 2
Enter the number of customers: 128
Enter the number of addresses: 128
For group 3
Enter the number of customers: 128
Enter the number of addresses: 64

Valid!! Can be used.

For group 1  first customer
First address: 191.100.0.0
Last address: 191.100.0.255

For group 1  last customer
First address: 191.100.63.0
Last address: 191.100.63.255

For group 2  first customer
First address: 191.100.64.0
Last address: 191.100.64.127

For group 2  last customer
First address: 191.100.127.128
Last address: 191.100.127.255

For group 3  first customer
First address: 191.100.128.0
Last address: 191.100.128.63

For group 3  last customer
First address: 191.100.159.192
Last address: 191.100.159.255
```

```
PS C:\Users\vaibh>
PS C:\Users\vaibh>  python -u "c:\Users\vaibh\OneDrive\Desktop\lab11.py"
Enter the IP address: 191.100.0.0
IP Address:  [191, 100, 0, 0]
Enter the subnet mask: 8
Enter the number of groups: 3
For group 1
Enter the number of customers: 64
Enter the number of addresses: 256
For group 2
Enter the number of customers: 128
Enter the number of addresses: 128
For group 3
Enter the number of customers: 128
Enter the number of addresses: 64
Invalid! Cannot be used.
PS C:\Users\vaibh>
```