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**SOURCE CODE: -**

**import textwrap**

**ip=input("Enter the IP address : ")**

**x=ip.split("/")**

**ip\_add=x[0]**

**num\_network\_bits=int(x[1])**

**num\_host\_bits=32-num\_network\_bits**

**ip\_split=ip\_add.split('.')**

**ip\_split\_class=int(ip\_split[0])**

**bin\_ip\_split=[]**

**for i in ip\_split:**

**bin\_ip\_split.append(format(int(i),'08b'))**

**bin\_ip=''.join(bin\_ip\_split)**

**def bin\_to\_dotted\_decimal(val):**

**seg\_ip=textwrap.wrap(val,8)**

**val\_ip\_split=[]**

**for j in seg\_ip:**

**val\_ip\_split.append(int(j,2))**

**val\_ip='.'.join(map(str,val\_ip\_split))**

**return val\_ip**

**def network\_id(bin\_ip,num\_network\_bits,num\_host\_bits):**

**lhs=bin\_ip[:num\_network\_bits]**

**rhs='0'\*num\_host\_bits**

**val=lhs+rhs**

**print("Network ID : "+bin\_to\_dotted\_decimal(val)+"/"+str(num\_network\_bits))**

**def direct\_broadcast\_address(bin\_ip,num\_network\_bits,num\_host\_bits):**

**lhs=bin\_ip[:num\_network\_bits]**

**rhs='1'\*num\_host\_bits**

**val=lhs+rhs**

**print("Direct Broadcast ID : "+bin\_to\_dotted\_decimal(val)+"/"+str(num\_network\_bits))**

**def num\_address(num\_host\_bits):**

**print("Number of IP Addresses : "+str(pow(2,num\_host\_bits)))**

**i=0**

**while i<=2:**

**n=int(input("Enter 1 to display the first IP Address in the block\nEnter 2 to display the last IP Address in the block\nEnter 3 to display the total number of address in the block\nCHOICE : "))**

**if n==1:**

**network\_id(bin\_ip,num\_network\_bits,num\_host\_bits)**

**elif n==2:**

**direct\_broadcast\_address(bin\_ip, num\_network\_bits, num\_host\_bits)**

**else:**

**num\_address(num\_host\_bits)**

**i=i+1**

**OUTPUT: -**

**runfile('D:/computer networks/ASSIGNMENT 2(b)/classless.py', wdir='D:/computer networks/ASSIGNMENT 2(b)')**

**Enter the IP address : 200.10.20.40/28**

**Enter 1 to display the first IP Address in the block**

**Enter 2 to display the last IP Address in the block**

**Enter 3 to display the total number of address in the block**

**CHOICE : 1**

**Network ID : 200.10.20.32/28**

**Enter 1 to display the first IP Address in the block**

**Enter 2 to display the last IP Address in the block**

**Enter 3 to display the total number of address in the block**

**CHOICE : 2**

**Direct Broadcast ID : 200.10.20.47/28**

**Enter 1 to display the first IP Address in the block**

**Enter 2 to display the last IP Address in the block**

**Enter 3 to display the total number of address in the block**

**CHOICE : 3**

**Number of IP Addresses : 16**

**runfile('D:/computer networks/ASSIGNMENT 2(b)/classless.py', wdir='D:/computer networks/ASSIGNMENT 2(b)')**

**Enter the IP address : 125.21.19.55/23**

**Enter 1 to display the first IP Address in the block**

**Enter 2 to display the last IP Address in the block**

**Enter 3 to display the total number of address in the block**

**CHOICE : 1**

**Network ID : 125.21.18.0/23**

**Enter 1 to display the first IP Address in the block**

**Enter 2 to display the last IP Address in the block**

**Enter 3 to display the total number of address in the block**

**CHOICE : 2**

**Direct Broadcast ID : 125.21.19.255/23**

**Enter 1 to display the first IP Address in the block**

**Enter 2 to display the last IP Address in the block**

**Enter 3 to display the total number of address in the block**

**CHOICE : 3**

**Number of IP Addresses : 512**