**Subnet.java :-**

**import** java.util.Scanner;

**import** java.net.InetAddress;

**class** Subnet

{

**public** **static** **void** main(String args[])

{

Scanner sc= **new** Scanner(System.***in***);

System.***out***.print("Enter the ip address=");

String ip=sc.nextLine();

//----Split the Ip Address-------

String split\_ip[] = ip.split("\\.");

//----- Converting the Ip Address to binary----

String split\_bip[]= **new** String[4];

String bip = "";

**for**(**int** i=0;i<4;i++)

{

split\_bip[i]=*appendZeroes*(Integer.*toBinaryString*(Integer.*parseInt*(split\_ip[i])));

bip+=split\_bip[i];

}

System.***out***.println("The binary IpAddress is="+bip);

//----- Finding the Subent mask-----

System.***out***.println("Enter the number of address");

**int** n=sc.nextInt();

**int** bits=(**int**)Math.*ceil*(Math.*log*(n)/Math.*log*(2));

System.***out***.println("The number of bits required="+bits);

**int** mask=32-bits;

**int** total\_address=(**int**)Math.*pow*(2,bits);

System.***out***.println("Subnet mask is "+mask);

//---- Finding the first and last address----

//---- First address Calculation--------

**int** fbip[]=**new** **int**[32];

**for**(**int** i=0;i<32;i++)

{

//Convert to the character 1,0 to integer 1,0

fbip[i]=(**int**)bip.charAt(i)-48;

}

**for**(**int** i=31;i>31-bits;i--)

{

//Get first address by anding the last bits with 0

fbip[i] &=0;

}

String fip[]={"","","",""};

**for**(**int** i=0;i<32;i++)

{

fip[i/8]=**new** String(fip[i/8]+fbip[i]);

}

**int** first\_offset=0;

**int** ipAddr[]=**new** **int**[4]; ;

System.***out***.println("Group 1 \nThe First Address is:");

**for**(**int** i=0;i<4;i++)

{

System.***out***.print(ipAddr[i]=first\_offset=Integer.*parseInt*(fip[i],2));

**if**(i!=3)

System.***out***.print(".");

}

System.***out***.println();

//--- Last address Calculation----

**int** lbip[]=**new** **int** [32];

**for**(**int** i=0;i<32;i++)

{

// Convert the character 1,0 to integer 1,0

lbip[i]=(**int**)bip.charAt(i)-48;

}

**for**(**int** i=31;i>31-bits;i--)

{

// Get last address by oring with last bits with 1

lbip[i]|= 1;

}

String lip[]={"","","",""};

**for**(**int** i=0;i<32;i++)

{

lip[i/8]=**new** String(lip[i/8]+lbip[i]);

}

**int** ipLast[]=**new** **int**[4];

System.***out***.println("The Last Address is:");

**for**(**int** i=0;i<4;i++)

{

System.***out***.print(ipLast[i]=Integer.*parseInt*(lip[i],2));

**if**(i!=3)

System.***out***.print(".");

}

System.***out***.println();

System.***out***.println("How many subnets do you want to form?");

**int** scount=sc.nextInt();

**for**(**int** j=1;j<scount;j++)

{

System.***out***.println(" GROUP "+ (j+1)+" FIRST ADDRESS:");

**for**(**int** i=0;i<4;i++)

{

**if**(i<3)

{

System.***out***.print(ipAddr[i]+".");

}

**else**

System.***out***.println(ipAddr[i]=ipAddr[i]+total\_address);

}

System.***out***.println(" GROUP "+ (j+1)+" LAST ADDRESS:");

**for**(**int** i=0;i<4;i++)

{

**if**(i<3)

{

System.***out***.print(ipLast[i]+".");

}

**else**

System.***out***.println(ipLast[i]=ipLast[i]+total\_address);

}

System.***out***.println();

}

**try**

{

System.***out***.println("Enter the Ip address to ping=");

Scanner s=**new** Scanner(System.***in***);

String ip\_add=s.nextLine();

InetAddress inet = InetAddress.*getByName*(ip\_add);

**if**(inet.isReachable(5000))

{

System.***out***.println("The ip address is reachable"+ip\_add);

}

**else**

{

System.***out***.println("The ip address is not reachable"+ip\_add);

}

}

**catch**( Exception e)

{

System.***out***.println("Exception:"+e.getMessage());

}

}

**static** String appendZeroes(String s)

{

String temp= **new** String("00000000");

**return** temp.substring(s.length())+ s;

}

}

**Output :-**

Enter the ip address=192.168.56.1

The binary IpAddress is=11000000101010000011100000000001

Enter the number of address

12

The number of bits required=4

Subnet mask is 28

Group 1

The First Address is:

192.168.56.0

The Last Address is:

192.168.56.15

How many subnets do you want to form?

12

GROUP 2 FIRST ADDRESS:

192.168.56.16

GROUP 2 LAST ADDRESS:

192.168.56.31

GROUP 3 FIRST ADDRESS:

192.168.56.32

GROUP 3 LAST ADDRESS:

192.168.56.47

GROUP 4 FIRST ADDRESS:

192.168.56.48

GROUP 4 LAST ADDRESS:

192.168.56.63

GROUP 5 FIRST ADDRESS:

192.168.56.64

GROUP 5 LAST ADDRESS:

192.168.56.79

GROUP 6 FIRST ADDRESS:

192.168.56.80

GROUP 6 LAST ADDRESS:

192.168.56.95

GROUP 7 FIRST ADDRESS:

192.168.56.96

GROUP 7 LAST ADDRESS:

192.168.56.111

GROUP 8 FIRST ADDRESS:

192.168.56.112

GROUP 8 LAST ADDRESS:

192.168.56.127

GROUP 9 FIRST ADDRESS:

192.168.56.128

GROUP 9 LAST ADDRESS:

192.168.56.143

GROUP 10 FIRST ADDRESS:

192.168.56.144

GROUP 10 LAST ADDRESS:

192.168.56.159

GROUP 11 FIRST ADDRESS:

192.168.56.160

GROUP 11 LAST ADDRESS:

192.168.56.175

GROUP 12 FIRST ADDRESS:

192.168.56.176

GROUP 12 LAST ADDRESS:

192.168.56.191

Enter the Ip address to ping=

172.16.0.1

The ip address is not reachable 172.16.0.1