**Write a program to demonstrate Sub-netting and find subnet masks.**

import java.util.Scanner;

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();

String split\_ip[] = ip.split("\\."); //SPlit the string after every .

String split\_bip[] = new String[4]; //split binary ip

String bip = "";

String mask1="";

int firstoctet = Integer.parseInt(split\_ip[0]);

if(firstoctet<=127)

{

mask1 = "255.0.0.0";

System.out.println("Class A IP Address");

System.out.println("Default mask is: "+mask1);

}

else if(firstoctet>=128 && firstoctet<=191)

{

mask1 = "255.255.0.0";

System.out.println("Class B IP Address");

System.out.println("Default mask is: "+mask1);

}

else if(firstoctet>=192 && firstoctet<=223)

{

mask1 = "255.255.255.0";

System.out.println("Class C IP Address");

System.out.println("Defaultt mask is: "+mask1);

}

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

{

split\_bip[i] = appendZeros(Integer.toBinaryString(Integer.parseInt(split\_ip[i]))); // "18" => 18 => 10010 => 00010010

bip += split\_bip[i];

}

System.out.println("IP in binary is "+bip);

System.out.print("Enter the number of subnets: ");

int n = sc.nextInt();

//Calculation of mask

double bits = (int)Math.ceil(Math.log(n)/Math.log(2)); /\*eg if address = 120, log 120/log 2 gives log to the base 2 => 6.9068, ceil gives us upper integer \*/

int y=(int) bits;

System.out.println("Number of bits borrowd from host to network are = "+y);

int z=8-y;

System.out.println("Number of host bits are = "+z);

//int mask = 32-bits;

double mask=256-(Math.pow(2.0,z));

int x = (int) mask;

System.out.println("New subnet mask is = "+x);

int sub\_size=256-x;

System.out.println("Subnet Size = "+sub\_size);

//Calculation of first address and last address

int fbip[] = new int[32];

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

fbip[i] = (int)bip.charAt(i)-48; //convert cahracter 0,1 to integer 0,1

for(int i=31;i>31-z;i--)//Get first address by ANDing last n 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]);

System.out.println("first Subnet Details");

System.out.print("first N/W address is = ");

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

System.out.print(Integer.parseInt(fip[i],2));

if(i!=3) System.out.print(".");

}

System.out.println();

int lbip[] = new int[32];

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

lbip[i] = (int)bip.charAt(i)-48; //convert cahracter 0,1 to integer 0,1

for(int i=31;i>31-z;i--)//Get last address by ORing last n 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]);

System.out.print("Broadcast address is = ");

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

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

if(i!=3) System.out.print(".");

}

System.out.println();

}

static String appendZeros(String s)

{

String temp = new String("00000000");

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

}

}

\*\*\*OUTPUT\*\*\*

[Student@localhost Assg7\_Subnetting]$ java Subnet

Enter the ip address: 192.168.1.1

Class C IP Address

Defaultt mask is: 255.255.255.0

IP in binary is 11000000101010000000000100000001

Enter the number of subnets: 255.255.255.0

ABRT problem creation: 'success'

Exception in thread "main" java.util.InputMismatchException

at java.util.Scanner.throwFor(Scanner.java:909)

at java.util.Scanner.next(Scanner.java:1530)

at java.util.Scanner.nextInt(Scanner.java:2160)

at java.util.Scanner.nextInt(Scanner.java:2119)

at Subnet.main(Subnet.java:39)

[Student@localhost Assg7\_Subnetting]$ java Subnet

Enter the ip address: 172.16.0.51

Class B IP Address

Default mask is: 255.255.0.0

IP in binary is 10101100000100000000000000110011

Enter the number of subnets: 2

Number of bits borrowd from host to network are = 1

Number of host bits are = 7

New subnet mask is = 128

Subnet Size = 128

first Subnet Details

first N/W address is = 172.16.0.0

Broadcast address is = 172.16.0.127

[Student@localhost Assg7\_Subnetting]$

/\*\*\*\*\* A7. A. Arithmatic client \*\*\*\*\*/

// Client

import java.io.\*;

import java.net.\*;

public class arithtcpclient

{

public static void main(String[] args) throws IOException

{

System.out.println();

System.out.println("ARITHMETIC CLIENT");

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

try

{

Socket clientsoc = new Socket("localhost", 6666);

System.out.println("Enter the inputs");

PrintWriter out = new PrintWriter(clientsoc.getOutputStream(), true);

BufferedReader in = new BufferedReader(new InputStreamReader(clientsoc.getInputStream()));

BufferedReader stdin = new BufferedReader(new InputStreamReader(System.in));

String userinput;

while (true)

{

do

{

userinput = stdin.readLine();

out.println(userinput);

}while(!userinput.equals("."));

System.out.println("Sever Says : " + in.readLine());

}

}

catch(Exception e)

{

System.exit(0);

}

}

}