# Code:

import java.io.\*;

import java.util.\*;

class CC{

boolean checkBD(char a){

if(Character.isDigit(a)&&(a-'0')<2)

return true;

else

return false;

}

boolean checkDD(char a){

if(Character.isDigit(a))

return true;

else

return false;

}

byte[] DtoBf(byte [] a,Integer n){

byte ab,rem=0,result[];

int temp=50;

result=new byte[50];

Arrays.fill(result,(byte)0);

/\*for(byte i:result){

System.out.print(i+" ");

}\*/

for(int j=1;j<50;j++){

boolean t=false;

rem=0;

for(int i=n-1;i>=0;i--){

ab=(byte)(a[i]\*2+rem);

a[i]=(byte)(ab%10);

if(ab%10!=0)

t=true;

rem=(byte)(ab/10);

}

result[j]=rem;

if(!t){

result[0]=(byte)j;

System.out.println("Unfi" +result[0]);

return result;

}

result[0]=(byte)j;

}

return result;

}

double BtoD(String ab,boolean flag,boolean fractional){

double result=0d,temp;

int id=ab.length();

long a=Long.parseLong(ab);

if(fractional){

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

temp=(a/(long)Math.pow(10,id-i-1));

a%=(long)Math.pow(10,id-i-1);

result+=temp\*Math.pow(2,-i-1);

}

}

else if(!fractional){

if(!flag){

a=-a;

for(int i=0;i<id-1;i++){

temp=a%10;

a/=10;

result+=temp\*Math.pow(2,i);

} }

else{

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

temp=a%10;

a/=10;

result+=temp\*Math.pow(2,i);

}

}

}

return result;

}

public static void main(String [] args){

Scanner sc=new Scanner(System.in);

CC cc=new CC();

String input;

byte integer[]=new byte[100],fractional[]=new byte[50];

/\*for(byte i:fractional){

System.out.print(i+" ");

}\*/

boolean t=true;

while(t){

System.out.println("Which operation would you like to do?\n1:Convert Decimal to Binary\n2:Convert Binary to Decimal\n3:Exit");

byte abc=sc.nextByte();

int a,j,k;

boolean checkValid,flag,sign;

switch(abc){

case 1:

System.out.println("Enter a decimal number :");

input=sc.next();

a=input.length();

j=0;k=0; //length of integer and fractional part...

checkValid=true;

flag=false;//to check for decimal point

sign=true; //true for +ve & 0 and false for -ve

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

char d=input.charAt(i);

if(cc.checkDD(d)&&!flag){

integer[j++]=(byte)(d-'0');

}

else if(cc.checkDD(d)&&flag){

fractional[k++]=(byte)(d-'0');

}

else if(d=='-'&&sign)

sign=false;

else if(d=='.'&&!flag)

flag =true;

else{

System.out.println("Wrong Input entered.......Try again");

checkValid=false;

break;

}

}

if(checkValid){

System.out.println("The Decimal number entered is:"+input);

StringBuilder builder = new StringBuilder();

Integer K=k;

/\*for(byte i:fractional){

System.out.print(i+" ");

}\*/

byte []abd=cc.DtoBf(fractional,K);

//System.out.println(K);

for (int i=1;i<=abd[0];i++) {

builder.append(abd[i]);

}

String text = builder.toString();

System.out.println("The Equivalent Binary number is:"+Long.toBinaryString(new Long(new StringTokenizer(input,".").nextToken()))+"."+text);

}

break;

case 2:

System.out.println("Enter a Binary number :");

input=sc.next();

a=input.length();

j=0;k=0; //length of integer and fractional part...

checkValid=true;

flag=false;//to check for decimal point

sign=true; //true for +ve & 0 and false for -ve

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

char d=input.charAt(i);

if(cc.checkBD(d)&&!flag){

integer[j++]=(byte)(d-'0');

}

else if(cc.checkBD(d)&&flag){

fractional[k++]=(byte)(d-'0');

}

else if(d=='-'&&sign)

sign=false;

else if(d=='.'&&!flag)

flag =true;

else{

System.out.println("Wrong Input entered.......Try again");

checkValid=false;

break;

}

}

if(checkValid){

System.out.println("The Binary number entered is:"+input);

StringTokenizer st =new StringTokenizer(input,".");

int ab1=(int)cc.BtoD(st.nextToken(),sign,false);

double ab2=0d;

if(st.hasMoreTokens())

ab2=cc.BtoD(st.nextToken(),sign,true);

System.out.println("The Equivalent decimal number is"+((double)ab1+ab2));

}

break;

case 3:

t=false;

break;

default:

System.out.println("Entered wrong choice...\nTry again");

break;

}

}

}

}

# Output:

C:\Users\OWNER\Desktop\final sem 4>java CC

Which operation would you like to do?

1:Convert Decimal to Binary

2:Convert Binary to Decimal

3:Exit

1

Enter a decimal number :

32.5

The Decimal number entered is:32.5

Unfi1

The Equivalent Binary number is:100000.1

Which operation would you like to do?

1:Convert Decimal to Binary

2:Convert Binary to Decimal

3:Exit

2

Enter a Binary number :

10101.101

The Binary number entered is:10101.101

The Equivalent decimal number is21.625

Which operation would you like to do?

1:Convert Decimal to Binary

2:Convert Binary to Decimal

3:Exit

3