

Code:

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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);
            }
        }
    }
}
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    }
    }
    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');
                    }
                }
            }
        }
    }
}

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        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");

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                                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