

Prime Number

– large number factorization

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Abstract

The method of factoring large numbers is not known; however, using the method included in this document, it is possible to make a small number of judgments in a short time. The programming language is composed of Java.

1. Function() main

```
BigInteger bigValue = new
BigInteger("1143816257578888676692357799761466120102182967212423625625618429357
06935245733897830597123563958705058989075147599290026879543541");

BigInteger bigValueCompA = null;
BigInteger bigValueCompB = null;

String bigValueTempA = "";
String bigValueTempB = "";

if("1".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,3,9";
    bigValueTempB = "1,7,9";
}else if("2".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,3,6";
    bigValueTempB = "2,6,4,7";
}else if("3".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,7";
    bigValueTempB = "3,9";
}else if("4".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,3,4,6";
    bigValueTempB = "4,2,8,6,9";
}else if("5".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,5,3,5,5";
    bigValueTempB = "5,5,5,7,9";
}else if("6".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,6";
    bigValueTempB = "6,3,6";
}else if("7".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,3";
    bigValueTempB = "7,9";
}else if("8".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,6";
    bigValueTempB = "8,4,8";
}else if("9".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,3,7";
    bigValueTempB = "9,3,7";
}

boolean booNoPrimeNo = false;
boolean booPrimeNo = false;
for(int i = 1; i < bigValueLen/2+10; i ++){

    int mLen = bigValueTempAarr==null?1:bigValueTempAarr.length;

    for(int m = 0; m < mLen; m ++){
```

```

for(int j = 0; j < 10; j++){
    f(i != 0){
        bigValueCompA = new BigInteger(j + bigValueTempAarr[m]);
    } else{
        bigValueCompA = new BigInteger(j+"");
    }
    for(int k = 0; k < 10; k++){
        if(i != 0){
            bigValueCompB = new BigInteger(k +
            bigValueTempBarr[m]);
        } else{
            bigValueCompB = new BigInteger(k+"");
        }

        if(bigCompValue.compareTo(bigValue) == 1){

            booPrimeNo = true;
            System.out.println("prime Number :"+
            +bigValue.toString());
            break;

        }

        if(strComp.equals(bigValue.toString().substring(bigValueLen-i-1))){
            if(bigValueCompA.compareTo(BigInteger.ONE) == 1
            && bigValueCompB.compareTo(BigInteger.ONE) == 1
            &&
            (bigValue.remainder(bigValueCompA).compareTo(BigI
            nteger.ZERO) == 0 ||
            bigValue.remainder(bigValueCompB).compareTo(BigIn
            teger.ZERO) == 0)

            ){

                booNoPrimeNo = true;
                System.out.println("no prime
                bigValueCompA) :"+bigValueCompA);
                System.out.println("no prime
                bigValue.divide(bigValueCompA) :"+
                +bigValue.divide(bigValueCompA));

                System.out.println("no prime
                bigValue.divide(bigValueCompB) :"+
                +bigValue.divide(bigValueCompB));
                System.out.println("no prime
                bigValue.remainder(bigValueCompA) :"+
                +bigValue.remainder(bigValueCompA));
            }
        }
    }
}

```

```

                System.out.println("no prime
                bigValue.reminder(bigValueCompB) :"+
                +bigValue.reminder(bigValueCompB));
                break;
            }
            break;
        }
        if(booNoPrimeNo == true ||booPrimeNo == true) break;
    }
    if(booNoPrimeNo == true ||booPrimeNo == true) break;
}
if(booNoPrimeNo == true ||booPrimeNo == true) break;
}
}

```

2. Logic description

The result of the last number of values of 'bigValue' determines the values of 'bigValueTempA' and 'bigValueTempB'. Whenever the value of 'i' is increased by 1, the values of 'bigValueTempA' and 'bigValueTempB' are also increased by one digit, so that the product of 'bigValueTempA' and 'bigValueTempB' is added to the operation item if the number of 'i + 1' digits and the number of 'i' digits of 'bigValue' are the same. If only the condition 'if(strComp.equals(bigValue.toString().substring(bigValueLen-i-1)))' exists, the operation item increases exponentially by a factor of 10 when the value of 'i' increases by 1. Therefore, 'setCommVal3' added to the added condition source reduces the amount added to the operation item according to the first and second items of 'bigValue'.

3. Source

```

import java.math.BigInteger;

public class SmallPrimeCalcu128 {

    public static void main(String[] args) {
        BigInteger bigValue = new
        BigInteger("1143816257578888676692357799761466120102182967212423625625618429357069
        35245733897830597123563958705058989075147599290026879543541");

        BigInteger bigNumber1 = new BigInteger("99");
        BigInteger bigNumber4 = new BigInteger("10");
        BigInteger bigNumber5 = new BigInteger("25");
    }
}

```

```

BigInteger bigNumber6 = new BigInteger("5");

int bigValueLen = bigValue.toString().length();

BigInteger bigValueCompA = null;
BigInteger bigValueCompB = null;

String bigValueTempA = "";
String bigValueTempB = "";

if("1".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,3,9";
    bigValueTempB = "1,7,9";
}else if("2".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,3,6";
    bigValueTempB = "2,6,4,7";
}else if("3".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,7";
    bigValueTempB = "3,9";
}else if("4".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,3,4,6";
    bigValueTempB = "4,2,8,6,9";
}else if("5".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,5,3,5,5";
    bigValueTempB = "5,5,5,7,9";
}else if("6".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,6";
    bigValueTempB = "6,3,6";
}else if("7".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,3";
    bigValueTempB = "7,9";
}else if("8".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,2,6";
    bigValueTempB = "8,4,8";
}else if("9".equals(bigValue.toString().substring(bigValueLen-1)) ){
    bigValueTempA = "1,3,7";
    bigValueTempB = "9,3,7";
}

boolean booNoPrimeNo = false;
boolean booPrimeNo = false;

String[] bigValueTempAarr = null;
String[] bigValueTempBarr = null;

for(int i = 1; i < bigValueLen/2+10; i++){
    System.out.println("iiiiiiiiiiii : " +i);

    if(i!=0 ){
        bigValueTempAarr = bigValueTempA.split(",");
    }
}

```

```

        bigValueTempBarr = bigValueTempB.split(",");
    }
    bigValueTempA = "";
    bigValueTempB = "";
    if(i!=0 ){
        System.out.println("bigValueTempAarr.length :"+
+bigValueTempAarr.length);
    }

    int mLen = bigValueTempAarr==null?1:bigValueTempAarr.length;

    for(int m = 0; m < mLen; m ++){

        for(int j = 0; j < 10; j ++){

            if(i != 0 ){
                bigValueCompA = new BigInteger(j +
bigValueTempAarr[m]);
            } else{
                bigValueCompA = new
BigInteger(j+"");
            }
            /*
            if(i ==0){
                bigValueCompA = new
BigInteger(j+"");
            }
            */
            for(int k = 0; k < 10; k ++){

                //System.out.println("bigValueTempBarr.length :"+bigValueTempBarr.length);

                if(i != 0 ){
                    bigValueCompB =
new BigInteger(k + bigValueTempBarr[m]);
                } else{
                    bigValueCompB =
new BigInteger(k+"");
                }

                BigInteger bigCompValue =
bigValueCompB.multiply(bigValueCompA);

                if(bigCompValue.compareTo(bigValue) == 1){
                    booPrimeNo = true;

```

```

        System.out.println("prime Number :"+bigValue.toString());
        break;
    }

    int compLen =
    bigCompValue.toString().length();

    int x = 0;
    if(compLen==i){
        x = i;
    }else if(compLen<i){
        x = i-(i-compLen);
    }else{
        x = i+1;
    }
    String strComp =
    bigCompValue.toString().substring(compLen-x);

    String strAllComp =
    bigCompValue.toString();

    String strOrgVal = "";
    int jj= 0;
    BigInteger bigNumber3 =
    new BigInteger("200");
    for(int ii= 0 ;ii <bigValueLen-
    compLen; ii++){
        bigValue.toString().substring(bigValueLen-(compLen==0?1:compLen+ii));
        strOrgVal =
        strOrgVal.substring(0,1);

        if("0".equals(strFirstVal)){
            strOrgVal =
            strOrgVal.replace("0", "9");

            bigNumber3 = new BigInteger("350");
            break;
        }else
        if("1".equals(strFirstVal)){
            bigNumber3 = new BigInteger("150");
            break;
        }else
        if("2".equals(strFirstVal)){
            bigNumber3 = new BigInteger("200");
            break;
        }
    }

```

```

        } else
if("3".equals(strFirstVal)){
    bigNumber3 = new BigInteger("220");
} break;
else
if("4".equals(strFirstVal)){
    bigNumber3 = new BigInteger("230");
} break;
else
if("5".equals(strFirstVal)){
    bigNumber3 = new BigInteger("250");
} break;
else
if("6".equals(strFirstVal)){
    bigNumber3 = new BigInteger("280");
} break;
else
if("7".equals(strFirstVal)){
    bigNumber3 = new BigInteger("300");
} break;
else
if("8".equals(strFirstVal)){
    bigNumber3 = new BigInteger("330");
} break;
else
if("9".equals(strFirstVal)){
    bigNumber3 = new BigInteger("350");
} break;
}
String strCompMinVal = "";
for(int xx= 0 ;xx <compLen-
    strCompMinVal +=
}

BigInteger bigCompMinVal =
new BigInteger(strCompMinVal+strComp);

```



```

new BigInteger(strAllComp);
BigInteger(strOrgVal);

new BigInteger("100");

k);
setCommVal2(j, k);
setCommVal3(i, j, k, bigCompMinVal, bigOrgVal, bigValue.toString().substring(bigValueLen-i-1));

        BigInteger bigAllComp =
        BigInteger bigOrgVal = new
        BigInteger bigNumber2 =
        bigNumber1 = setCommVal(j,
        bigNumber5 =
        boolean booCheck =
        setCommVal3(i, j, k, bigCompMinVal, bigOrgVal, bigValue.toString().substring(bigValueLen-i-1));

        if(strComp.equals(bigValue.toString().substring(bigValueLen-i-1))
                && booCheck
                &&
bigAllComp.compareTo(bigOrgVal.multiply(bigNumber1.subtract(bigNumber5).add(bigNumber6)).d
ivide(bigNumber2)) == 1
                &&
bigAllComp.compareTo(bigOrgVal.multiply(bigNumber4).divide(bigNumber2)) == 1
                &&
(bigAllComp.compareTo(bigCompMinVal.multiply(bigNumber3).divide(bigNumber2)) == 1
                ||
                (i>=4 && bigOrgVal.compareTo(bigAllComp) == 1)
                )
        && !bigValueTempB.contains(j + bigValueTempAarr[m])
        && !bigValueTempA.contains(k + bigValueTempBarr[m])
        )
        {
            if(i == 0){

if("").equals(bigValueTempB)){

bigValueTempB = k+"" ;

bigValueTempA = j+"" ;

                }else{

bigValueTempB = bigValueTempB + "," + k ;

bigValueTempA = bigValueTempA + "," + j ;

```



```

break:                                     //if(booNoPrimeNo == true      )
                                           }

                                           if(booNoPrimeNo == true ||booPrimeNo ==
true) break:
                                           }

break:                                     if(booNoPrimeNo == true ||booPrimeNo == true)
                                           }

                                           if(booNoPrimeNo == true ||booPrimeNo == true) break:
                                           }
}
}

```

```

public static BigInteger setCommVal(int j, int k){
    BigInteger bigNumber1 = new BigInteger("99");
    if(j==0){
        if(k==0){
            bigNumber1 = new BigInteger("55");
        }else if(k==1){
            bigNumber1 = new BigInteger("60");
        }else if(k==2){
            bigNumber1 = new BigInteger("65");
        }else if(k==3){
            bigNumber1 = new BigInteger("70");
        }else if(k==4){
            bigNumber1 = new BigInteger("75");
        }else if(k==5){
            bigNumber1 = new BigInteger("80");
        }else if(k==6){
            bigNumber1 = new BigInteger("85");
        }else if(k==7){
            bigNumber1 = new BigInteger("90");
        }else if(k==8){
            bigNumber1 = new BigInteger("95");
        }else if(k==9){
            bigNumber1 = new BigInteger("100");
        }
    }else if(j==1){
        if(k==0){
            bigNumber1 = new BigInteger("60");
        }else if(k==1){
            bigNumber1 = new BigInteger("65");
        }else if(k==2){
            bigNumber1 = new BigInteger("70");
        }else if(k==3){

```

```

        bigNumber1 = new BigInteger("75");
    }else if(k==4){
        bigNumber1 = new BigInteger("80");
    }else if(k==5){
        bigNumber1 = new BigInteger("85");
    }else if(k==6){
        bigNumber1 = new BigInteger("90");
    }else if(k==7){
        bigNumber1 = new BigInteger("95");
    }else if(k==8){
        bigNumber1 = new BigInteger("100");
    }else if(k==9){
        bigNumber1 = new BigInteger("105");
    }
}
}else if(j==2){
    if(k==0){
        bigNumber1 = new BigInteger("65");
    }else if(k==1){
        bigNumber1 = new BigInteger("70");
    }else if(k==2){
        bigNumber1 = new BigInteger("75");
    }else if(k==3){
        bigNumber1 = new BigInteger("80");
    }else if(k==4){
        bigNumber1 = new BigInteger("85");
    }else if(k==5){
        bigNumber1 = new BigInteger("90");
    }else if(k==6){
        bigNumber1 = new BigInteger("95");
    }else if(k==7){
        bigNumber1 = new BigInteger("100");
    }else if(k==8){
        bigNumber1 = new BigInteger("105");
    }else if(k==9){
        bigNumber1 = new BigInteger("110");
    }
}
}else if(j==3){
    if(k==0){
        bigNumber1 = new BigInteger("70");
    }else if(k==1){
        bigNumber1 = new BigInteger("75");
    }else if(k==2){
        bigNumber1 = new BigInteger("80");
    }else if(k==3){
        bigNumber1 = new BigInteger("85");
    }else if(k==4){
        bigNumber1 = new BigInteger("90");
    }else if(k==5){
        bigNumber1 = new BigInteger("95");
    }else if(k==6){

```

```

        bigNumber1 = new BigInteger("100");
    }else if(k==7){
        bigNumber1 = new BigInteger("105");
    }else if(k==8){
        bigNumber1 = new BigInteger("110");
    }else if(k==9){
        bigNumber1 = new BigInteger("115");
    }
}else if(j==4){
    if(k==0){
        bigNumber1 = new BigInteger("75");
    }else if(k==1){
        bigNumber1 = new BigInteger("80");
    }else if(k==2){
        bigNumber1 = new BigInteger("85");
    }else if(k==3){
        bigNumber1 = new BigInteger("90");
    }else if(k==4){
        bigNumber1 = new BigInteger("95");
    }else if(k==5){
        bigNumber1 = new BigInteger("100");
    }else if(k==6){
        bigNumber1 = new BigInteger("105");
    }else if(k==7){
        bigNumber1 = new BigInteger("110");
    }else if(k==8){
        bigNumber1 = new BigInteger("115");
    }else if(k==9){
        bigNumber1 = new BigInteger("120");
    }
}
}else if(j==5){
    if(k==0){
        bigNumber1 = new BigInteger("80");
    }else if(k==1){
        bigNumber1 = new BigInteger("85");
    }else if(k==2){
        bigNumber1 = new BigInteger("90");
    }else if(k==3){
        bigNumber1 = new BigInteger("95");
    }else if(k==4){
        bigNumber1 = new BigInteger("100");
    }else if(k==5){
        bigNumber1 = new BigInteger("105");
    }else if(k==6){
        bigNumber1 = new BigInteger("110");
    }else if(k==7){
        bigNumber1 = new BigInteger("115");
    }else if(k==8){
        bigNumber1 = new BigInteger("120");
    }else if(k==9){

```

```

        bigNumber1 = new BigInteger("125");
    }
}else if(j==6){
    if(k==0){
        bigNumber1 = new BigInteger("85");
    }else if(k==1){
        bigNumber1 = new BigInteger("90");
    }else if(k==2){
        bigNumber1 = new BigInteger("95");
    }else if(k==3){
        bigNumber1 = new BigInteger("100");
    }else if(k==4){
        bigNumber1 = new BigInteger("105");
    }else if(k==5){
        bigNumber1 = new BigInteger("110");
    }else if(k==6){
        bigNumber1 = new BigInteger("115");
    }else if(k==7){
        bigNumber1 = new BigInteger("120");
    }else if(k==8){
        bigNumber1 = new BigInteger("125");
    }else if(k==9){
        bigNumber1 = new BigInteger("130");
    }
}else if(j==7){
    if(k==0){
        bigNumber1 = new BigInteger("90");
    }else if(k==1){
        bigNumber1 = new BigInteger("95");
    }else if(k==2){
        bigNumber1 = new BigInteger("100");
    }else if(k==3){
        bigNumber1 = new BigInteger("105");
    }else if(k==4){
        bigNumber1 = new BigInteger("110");
    }else if(k==5){
        bigNumber1 = new BigInteger("115");
    }else if(k==6){
        bigNumber1 = new BigInteger("120");
    }else if(k==7){
        bigNumber1 = new BigInteger("125");
    }else if(k==8){
        bigNumber1 = new BigInteger("130");
    }else if(k==9){
        bigNumber1 = new BigInteger("135");
    }
}else if(j==8){
    if(k==0){
        bigNumber1 = new BigInteger("95");
    }else if(k==1){

```

```

        bigNumber1 = new BigInteger("100");
    }else if(k==2){
        bigNumber1 = new BigInteger("105");
    }else if(k==3){
        bigNumber1 = new BigInteger("110");
    }else if(k==4){
        bigNumber1 = new BigInteger("115");
    }else if(k==5){
        bigNumber1 = new BigInteger("120");
    }else if(k==6){
        bigNumber1 = new BigInteger("125");
    }else if(k==7){
        bigNumber1 = new BigInteger("130");
    }else if(k==8){
        bigNumber1 = new BigInteger("135");
    }else if(k==9){
        bigNumber1 = new BigInteger("140");
    }
}else if(j==9){
    if(k==0){
        bigNumber1 = new BigInteger("100");
    }else if(k==1){
        bigNumber1 = new BigInteger("105");
    }else if(k==2){
        bigNumber1 = new BigInteger("110");
    }else if(k==3){
        bigNumber1 = new BigInteger("115");
    }else if(k==4){
        bigNumber1 = new BigInteger("120");
    }else if(k==5){
        bigNumber1 = new BigInteger("125");
    }else if(k==6){
        bigNumber1 = new BigInteger("130");
    }else if(k==7){
        bigNumber1 = new BigInteger("135");
    }else if(k==8){
        bigNumber1 = new BigInteger("140");
    }else if(k==9){
        bigNumber1 = new BigInteger("145");
    }
}
return bigNumber1;
}

public static BigInteger setCommVal2(int j, int k){
    BigInteger bigNumber4 = new BigInteger("10");
    if(j==0){
        if(k==0){
            bigNumber4 = new BigInteger("121");
        }else if(k==1){

```

```

        bigNumber4 = new BigInteger("119");
    }else if(k==2){
        bigNumber4 = new BigInteger("117");
    }else if(k==3){
        bigNumber4 = new BigInteger("115");
    }else if(k==4){
        bigNumber4 = new BigInteger("113");
    }else if(k==5){
        bigNumber4 = new BigInteger("111");
    }else if(k==6){
        bigNumber4 = new BigInteger("109");
    }else if(k==7){
        bigNumber4 = new BigInteger("107");
    }else if(k==8){
        bigNumber4 = new BigInteger("105");
    }else if(k==9){
        bigNumber4 = new BigInteger("103");
    }
}else if(j==1){
    if(k==0){
        bigNumber4 = new BigInteger("119");
    }else if(k==1){
        bigNumber4 = new BigInteger("117");
    }else if(k==2){
        bigNumber4 = new BigInteger("115");
    }else if(k==3){
        bigNumber4 = new BigInteger("113");
    }else if(k==4){
        bigNumber4 = new BigInteger("111");
    }else if(k==5){
        bigNumber4 = new BigInteger("109");
    }else if(k==6){
        bigNumber4 = new BigInteger("107");
    }else if(k==7){
        bigNumber4 = new BigInteger("105");
    }else if(k==8){
        bigNumber4 = new BigInteger("103");
    }else if(k==9){
        bigNumber4 = new BigInteger("101");
    }
}else if(j==2){
    if(k==0){
        bigNumber4 = new BigInteger("117");
    }else if(k==1){
        bigNumber4 = new BigInteger("115");
    }else if(k==2){
        bigNumber4 = new BigInteger("113");
    }else if(k==3){
        bigNumber4 = new BigInteger("111");
    }else if(k==4){

```



```

        bigNumber4 = new BigInteger("109");
    }else if(k==5){
        bigNumber4 = new BigInteger("107");
    }else if(k==6){
        bigNumber4 = new BigInteger("105");
    }else if(k==7){
        bigNumber4 = new BigInteger("103");
    }else if(k==8){
        bigNumber4 = new BigInteger("101");
    }else if(k==9){
        bigNumber4 = new BigInteger("99");
    }
}else if(j==3){
    if(k==0){
        bigNumber4 = new BigInteger("115");
    }else if(k==1){
        bigNumber4 = new BigInteger("113");
    }else if(k==2){
        bigNumber4 = new BigInteger("111");
    }else if(k==3){
        bigNumber4 = new BigInteger("109");
    }else if(k==4){
        bigNumber4 = new BigInteger("107");
    }else if(k==5){
        bigNumber4 = new BigInteger("105");
    }else if(k==6){
        bigNumber4 = new BigInteger("103");
    }else if(k==7){
        bigNumber4 = new BigInteger("101");
    }else if(k==8){
        bigNumber4 = new BigInteger("99");
    }else if(k==9){
        bigNumber4 = new BigInteger("97");
    }
}else if(j==4){
    if(k==0){
        bigNumber4 = new BigInteger("113");
    }else if(k==1){
        bigNumber4 = new BigInteger("111");
    }else if(k==2){
        bigNumber4 = new BigInteger("109");
    }else if(k==3){
        bigNumber4 = new BigInteger("107");
    }else if(k==4){
        bigNumber4 = new BigInteger("105");
    }else if(k==5){
        bigNumber4 = new BigInteger("103");
    }else if(k==6){
        bigNumber4 = new BigInteger("101");
    }else if(k==7){

```



```

}else if(j==7){
    if(k==0){
        bigNumber4 = new BigInteger("107");
    }else if(k==1){
        bigNumber4 = new BigInteger("105");
    }else if(k==2){
        bigNumber4 = new BigInteger("103");
    }else if(k==3){
        bigNumber4 = new BigInteger("101");
    }else if(k==4){
        bigNumber4 = new BigInteger("99");
    }else if(k==5){
        bigNumber4 = new BigInteger("97");
    }else if(k==6){
        bigNumber4 = new BigInteger("95");
    }else if(k==7){
        bigNumber4 = new BigInteger("93");
    }else if(k==8){
        bigNumber4 = new BigInteger("91");
    }else if(k==9){
        bigNumber4 = new BigInteger("89");
    }
}
}else if(j==8){
    if(k==0){
        bigNumber4 = new BigInteger("105");
    }else if(k==1){
        bigNumber4 = new BigInteger("103");
    }else if(k==2){
        bigNumber4 = new BigInteger("101");
    }else if(k==3){
        bigNumber4 = new BigInteger("99");
    }else if(k==4){
        bigNumber4 = new BigInteger("97");
    }else if(k==5){
        bigNumber4 = new BigInteger("95");
    }else if(k==6){
        bigNumber4 = new BigInteger("93");
    }else if(k==7){
        bigNumber4 = new BigInteger("91");
    }else if(k==8){
        bigNumber4 = new BigInteger("89");
    }else if(k==9){
        bigNumber4 = new BigInteger("87");
    }
}
}else if(j==9){
    if(k==0){
        bigNumber4 = new BigInteger("103");
    }else if(k==1){
        bigNumber4 = new BigInteger("101");
    }else if(k==2){

```

```

        bigNumber4 = new BigInteger("99");
    }else if(k==3){
        bigNumber4 = new BigInteger("97");
    }else if(k==4){
        bigNumber4 = new BigInteger("95");
    }else if(k==5){
        bigNumber4 = new BigInteger("93");
    }else if(k==6){
        bigNumber4 = new BigInteger("91");
    }else if(k==7){
        bigNumber4 = new BigInteger("89");
    }else if(k==8){
        bigNumber4 = new BigInteger("87");
    }else if(k==9){
        bigNumber4 = new BigInteger("85");
    }
    }
    return bigNumber4;
}
}

```

```

public static boolean setCommVal3(int i, int j, int k, BigInteger bigCompMinVal, BigInteger
bigOrgVal, String orgVal){

```

```

    BigInteger orgNumber = (new BigInteger(orgVal)).divide(new BigInteger("10"));
    String chkVal = "8,9,0,1,2,3,4,5,6";
    String chkVal100 = "2,7";
    String chkVal101 = "";
    String chkVal102 = "5,8";
    String chkVal103 = "3,4";
    String chkVal104 = "0,8";
    String chkVal105 = "1,4,6,9";
    String chkVal106 = "6,9";
    String chkVal107 = "6,7";
    String chkVal108 = "";
    String chkVal109 = "7,9";
    String chkVal110 = "1,3,7,9";
    String chkVal111 = "4,7,8,9";
    String chkVal112 = "1,3,8,9";
    String chkVal113 = "";
    String chkVal114 = "6,9";
    String chkVal115 = "";
    String chkVal116 = "0,3";
    String chkVal117 = "";
    String chkVal118 = "";
    String chkVal119 = "4,6";
    String chkVal120 = "0,1,2,3,4,6";
    String chkVal121 = "";
    String chkVal122 = "8,9";
    String chkVal123 = "3,4,8";
    String chkVal124 = "5,9";

```

String chkVal125 = "";
String chkVal126 = "3,4";
String chkVal127 = "1,2,5,9";
String chkVal128 = "8,9";
String chkVal129 = "2,3,9";
String chkVal130 = "3,4,9";
String chkVal131 = "4";
String chkVal132 = "0,3,7,9";
String chkVal133 = "4,5,6,9";
String chkVal134 = "2,4,8";
String chkVal135 = "8,9,0,2,3";
String chkVal136 = "7";
String chkVal137 = "0,5";
String chkVal138 = "6,7";
String chkVal139 = "1,9,0,4";
String chkVal140 = "";
String chkVal141 = "1,3,6,9";
String chkVal142 = "";
String chkVal143 = "8,2,3,4,5";
String chkVal144 = "0,4,7,8";
String chkVal145 = "9,1,6";
String chkVal146 = "";
String chkVal147 = "3,6,9";
String chkVal148 = "1,9";
String chkVal149 = "";
String chkVal150 = "8,1";
String chkVal151 = "1,2,4";
String chkVal152 = "9,2";
String chkVal153 = "1,6,7,9";
String chkVal154 = "2,5,6,8,9";
String chkVal155 = "1,8";
String chkVal156 = "1,6";
String chkVal157 = "0,2,3,8,9";
String chkVal158 = "0,1,3";
String chkVal159 = "1,4,8,9";
String chkVal160 = "";
String chkVal161 = "2,8";
String chkVal162 = "";
String chkVal163 = "9,1";
String chkVal164 = "";
String chkVal165 = "5,8";
String chkVal166 = "6,7";
String chkVal167 = "4,6";
String chkVal168 = "9,3";
String chkVal169 = "9,0";
String chkVal170 = "7,8,4";
String chkVal171 = "7,1";
String chkVal172 = "0,1,2,3,7,9";
String chkVal173 = "9,8,2,0";
String chkVal174 = "5,9";

```

String chkVal175 = "7,8,4,6,2,1";
String chkVal176 = "";
String chkVal177 = "";
String chkVal178 = "9,0";
String chkVal179 = "9";
String chkVal180 = "";
String chkVal181 = "";
String chkVal182 = "";
String chkVal183 = "5,9";
String chkVal184 = "";
String chkVal185 = "";
String chkVal186 = "";
String chkVal187 = "3,4,6,7,9";
String chkVal188 = "";
String chkVal189 = "1,3,6,7";
String chkVal190 = "4,7,8,9";
String chkVal191 = "";
String chkVal192 = "2,3";
String chkVal193 = "1,5,7";
String chkVal194 = "2,3";
String chkVal195 = "0,3,6,7,8,9";
String chkVal196 = "2,7";
String chkVal197 = "0,4,5,6";
String chkVal198 = "1,4";
String chkVal199 = "3,9";
if(i <4) return true;
if(i == 55){
    //System.out.println("@@@@@@@@@@@@@@@@@@orgVal :"+
+orgVal+" ,i :"+i+" ,k :"+k+" ,j :"+j);
}

if((chkVal100.contains(j+"") && chkVal100.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "0".equals(orgVal.substring(1,2))) return true;
else if((chkVal101.contains(j+"") && chkVal101.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "1".equals(orgVal.substring(1,2))) return true;
else if((chkVal102.contains(j+"") && chkVal102.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "2".equals(orgVal.substring(1,2))) return true;
else if((chkVal103.contains(j+"") && chkVal103.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "3".equals(orgVal.substring(1,2))) return true;
else if((chkVal104.contains(j+"") && chkVal104.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "4".equals(orgVal.substring(1,2))) return true;
else if((chkVal105.contains(j+"") && chkVal105.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "5".equals(orgVal.substring(1,2))) return true;
else if((chkVal106.contains(j+"") && chkVal106.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "6".equals(orgVal.substring(1,2))) return true;
else if((chkVal107.contains(j+"") && chkVal107.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "7".equals(orgVal.substring(1,2))) return true;
else if((chkVal108.contains(j+"") && chkVal108.contains(k+"")) &&
"0".equals(orgVal.substring(0,1)) && "8".equals(orgVal.substring(1,2))) return true;

```



```

        else if((chkVal184.contains(j+"") && chkVal184.contains(k+"")) &&
"8".equals(orgVal.substring(0,1)) && "4".equals(orgVal.substring(1,2))) return true;
        else if((chkVal185.contains(j+"") && chkVal185.contains(k+"")) &&
"8".equals(orgVal.substring(0,1)) && "5".equals(orgVal.substring(1,2))) return true;
        else if((chkVal186.contains(j+"") && chkVal186.contains(k+"")) &&
"8".equals(orgVal.substring(0,1)) && "6".equals(orgVal.substring(1,2))) return true;
        else if((chkVal187.contains(j+"") && chkVal187.contains(k+"")) &&
"8".equals(orgVal.substring(0,1)) && "7".equals(orgVal.substring(1,2))) return true;
        else if((chkVal188.contains(j+"") && chkVal188.contains(k+"")) &&
"8".equals(orgVal.substring(0,1)) && "8".equals(orgVal.substring(1,2))) return true;
        else if((chkVal189.contains(j+"") && chkVal189.contains(k+"")) &&
"8".equals(orgVal.substring(0,1)) && "9".equals(orgVal.substring(1,2))) return true;
        else if((chkVal190.contains(j+"") && chkVal190.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "0".equals(orgVal.substring(1,2))) return true;
        else if((chkVal191.contains(j+"") && chkVal191.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "1".equals(orgVal.substring(1,2))) return true;
        else if((chkVal192.contains(j+"") && chkVal192.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "2".equals(orgVal.substring(1,2))) return true;
        else if((chkVal193.contains(j+"") && chkVal193.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "3".equals(orgVal.substring(1,2))) return true;
        else if((chkVal194.contains(j+"") && chkVal194.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "4".equals(orgVal.substring(1,2))) return true;
        else if((chkVal195.contains(j+"") && chkVal195.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "5".equals(orgVal.substring(1,2))) return true;
        else if((chkVal196.contains(j+"") && chkVal196.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "6".equals(orgVal.substring(1,2))) return true;
        else if((chkVal197.contains(j+"") && chkVal197.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "7".equals(orgVal.substring(1,2))) return true;
        else if((chkVal198.contains(j+"") && chkVal198.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "8".equals(orgVal.substring(1,2))) return true;
        else if((chkVal199.contains(j+"") && chkVal199.contains(k+"")) &&
"9".equals(orgVal.substring(0,1)) && "9".equals(orgVal.substring(1,2))) return true;
        //else if(chkVal.contains(j+"") && chkVal.contains(k+"") || chkVal.contains(k+"") &&
chkVal.contains(j+"")) return true;
        else return false;
    }
}

```