```java
package gobalkrishnan_v_18_06_1995.dimension3;

import java.util.ArrayList;

public class gkiMatrix {
public double[][] m4=new double[4][4];

public gkiMatrix() {
    // TODO Auto-generated constructor stub

    for(int i=0;i<m4.length;i++) {
        for(int j=0;j<m4[i].length;j++) {
            if(i==j) {
                m4[i][j]=1;

            }else {
            m4[i][j]=0;
        }
            }
    }


}
public gkiMatrix(double a1 ,
              double a2 ,
              double a3 ,
              double a4 ,
              double a5 ,
              double a6 ,
              double a7 ,
              double a8 ,
              double a9 ,
              double a10,
              double a11,
              double a12,
              double a13,
              double a14,
              double a15,
              double a16) {
    m4[0][0] = a1 ;
    m4[0][1] = a2 ;
    m4[0][2] = a3 ;
    m4[0][3] = a4 ;
    m4[1][0] = a5 ;
    m4[1][1] = a6 ;
    m4[1][2] = a7 ;
    m4[1][3] = a8 ;
    m4[2][0] = a9 ;
    m4[2][1] = a10;
    m4[2][2] = a11;
    m4[2][3] = a12;
    m4[3][0] = a13;
    m4[3][1] = a14;
    m4[3][2] = a15;
    m4[3][3] = a16;

}

public gkiMatrix mul(gkiMatrix a) {
```

```
    double[][] v=a.m4;

    gkiMatrix n=new gkiMatrix();
    for(int i=0;i<4;i++) {
        for(int j=0;j<4;j++) {
            n.m4[i][j]=(m4[i][0]*v[0][j])+(m4[i][1]*v[1][j])+(m4[i][2]*v[2][j])+(m4[i]
[3]*v[3][j]);
        }
    }
    return n;
}

public gkiMatrix transposed() {
    gkiMatrix n=new gkiMatrix();
    for(int i=0;i<4;i++) {
        for(int j=0;j<4;j++) {
            n.m4[i][j]=m4[j][i];
        }
    }
    return n;
}


public gki3Point multVecMatrix(gki3Point s) {
    double a=0,b=0,c=0,w=0;


    a=(s.get(0)*m4[0][0])+(s.get(1)*m4[1][0])+(s.get(2)*m4[2][0])+m4[3][0];
    b=(s.get(0)*m4[0][1])+(s.get(1)*m4[1][1])+(s.get(2)*m4[2][1])+m4[3][1];
    c=(s.get(0)*m4[0][2])+(s.get(1)*m4[1][2])+(s.get(2)*m4[2][2])+m4[3][2];
    w=(s.get(0)*m4[0][3])+(s.get(1)*m4[1][3])+(s.get(2)*m4[2][3])+m4[3][3];

    a/=(double)w;
    b/=(double)w;
    c/=(double)w;

    return new gki3Point(a,b,c);
}

public gki3Point multDirMatrix(gki3Point s) {
    double a=0,b=0,c=0;
    a=(s.get(0)*m4[0][0])+(s.get(1)*m4[1][0])+(s.get(2)*m4[2][0]);
    b=(s.get(0)*m4[0][1])+(s.get(1)*m4[1][1])+(s.get(2)*m4[2][1]);
    c=(s.get(0)*m4[0][2])+(s.get(1)*m4[1][2])+(s.get(2)*m4[2][2]);
    return new gki3Point(a,b,c);
}


@Override
public String toString() {

ArrayList<ArrayList<String>> l=new ArrayList<>();
ArrayList<ArrayList<String>> ia=new ArrayList<>();

ArrayList<Integer> e=new ArrayList<Integer>();
ArrayList<Integer> e1=new ArrayList<Integer>();

for(int i=0;i<m4.length;i++) {
    ArrayList<String> se=new ArrayList<String>();
```

```
    for(int j=0;j<m4[i].length;j++) {
       se.add(String.valueOf(m4[i][j]));
       e.add(String.valueOf(m4[i][j]).length());
       e1.add(String.valueOf(m4[i][j]).length());

    }
    l.add(se);
}

for(int i=0;i<e.size();i++) {
    for(int j=0;j<e.size();j++) {

        if(e.get(i)<e.get(j)) {
            int t=e.get(i);
            e.set(i, e.get(j));
            e.set(j, t);
        }
    }
}

//System.out.println(e);
int ae=0;;
for(int i=0;i<l.size();i++) {
   for(int j=0;j<l.get(i).size();j++) {
      int max=e.get(e.size()-1);

      int space=max-e1.get(ae);
     // System.out.print(space);
       System.out.print(l.get(i).get(j)+" ");
       System.out.print(space(space));
       ae++;
   }
   System.out.println(" ");
}


return "";

}

private String space(int a) {
    String s="";
    for(int i=0;i<a;i++) {
        s= "";
        System.out.print(" ");
    }
    return s;
}


}
```