public class Segment {

double x1,x2;

double y1,y2;

double y3,y4;

double x3,x4;

Point start, end;

public Segment(Point start, Point end) {

if(start == null && end == null) {

throw new IllegalArgumentException("null");

}

if( start.getX() == end.getX() && start.getY()== end.getY() ) {

throw new IllegalArgumentException("null");

}

this.start = start;

this.end = end;

x1 = this.start.getX();

x2 = this.end.getX();

y1 = this.start.getY();

y2 = this.end.getY();

}

double length() {

double d;

d= Math.sqrt(((x2-x1) \* (x2-x1)) + ((y2-y1) \* (y2- y1)) );

return d;

}

Point middle() {

double x=(x1+x2)/2.0;

double y=(y1+y2)/2.0;

return new Point(x,y);

}

Point intersection(Segment another) {

/\* double d1=(this.start.getX()-this.end.getX())\*(another.start.getY()-another.end.getY());

double d2=(this.start.getY()-this.end.getY())\*(another.start.getX()-another.end.getX());

double d = d1-d2;

if(d == 0)

return null;

else\*/

x3 = another.start.getX();

x4 = another.end.getX();

y3 = another.start.getY();

y4 = another.end.getY();

if(start == end)

return null;

else {

/\* double p1 = (this.start.getX() \* this.end.getY()) - (this.start.getY() \* this.end.getX());

double p2 = (another.start.getX() \* another.end.getY()) - (another.start.getY() \* another.end.getX());

double x = ((p1 \* (another.start.getX() - another.end.getX()) - (this.start.getX() - this.end.getX()) \* p2)) / d;

double y = ((p1 \* (another.start.getY() - another.end.getY()) - (this.start.getY() - this.end.getY()) \* p2)) / d;

return new Point(x, y);

} \*/

double t1 = ((x1-x3) \* (y3-y4)) - ((y1-y3) \* (x3-x4));

double t2 = ((x1-x2) \* (y3-y4)) - ((y1-y2) \* (x3-x4));

double t = t1 / t2;

double u1 = ((x1-x3) \* (y1-y2)) - ((y1-y3) \* (x1-x2));

double u2 = ((x1-x2) \* (y3-y4)) - ((y1-y2) \* (x3-x4));

double u = u1 / u2;

if ((t >= 0.0 && t <= 1.0) && (u >= 0.0 && u <= 1.0)) {

double x = x1 + (t \* (x2-x1));

double y = y1 + (t \* (y2-y1));

return new Point(x, y);

} else {

return null;

}

}

}

}