Assignment 5

Project

Write a class called Point that contains two doubles that represent its x- and y-coordinates. It should have get and set methods for both fields. It should have a constructor that takes two double parameters and passes those values to the set methods to initialize its fields. It should have a default constructor that initializes both coordinates to 0. It should also contain a method called distanceTo that takes as a parameter a **constant reference** to another Point and returns the distance from the Point that was passed as a parameter to the Point that we called the method of. You will need to use sqrt(). For example at the end of the following, dist should be equal to 5.0:

```
Point p1(-1.5, 0.0);
Point p2(1.5, 4.0);
double dist = p1.distanceTo(p2);
```

Next, write a class called LineSegment that contains two Points that represent its two endpoints. It should have get and set methods for both fields and a constructor that takes two Point parameters and passes them to the set methods to initialize the data members. It should also contain a method called length that returns the length of the LineSegment – by using the distanceTo method on its endpoints – and a method called slope that returns the slope of the LineSegment (if the LineSegment is vertical, go ahead and return the value you get when dividing doubles by zero, which is infinity). The LineSegement class might be used as follows:

```
Point p1(4.3, 7.52);
Point p2(-17.0, 1.5);
LineSegment ls1(p1, p2);
double length = ls1.length();
double slope = ls1.slope();
```

The functions for the Point class should have the following names:

- setXCoord, getXCoord
- setYCoord, getYCoord
- distanceTo

The functions for the LineSegment class should have the following names:

- setEnd1, getEnd1
- setEnd2, getEnd2

- length
- slope

The files must be named:
Point.hpp, **Point.cpp**, **LineSegment.hpp** and **LineSegment.cpp**