

## Homework 2 (due Tuesday Feb 7, 11 AM)

Write a MATLAB class **Point** with properties "**X**" and "**Y**", both with a default value of 0. The functionality of the class should allow the following calls:

**>> pt = Point** — creates an instance of the class with default property values.

**>> pt = Point(xval,yval)** — creates an object and assigns values to both properties.

**>> distance(pt1,pt2)** — returns the Euclidean distance between the two points.

**>> pt1 + pt2** — returns a point whose **X** and **Y** are the sum of the respective properties in **pt1** and **pt2**.

**>> pt1 - pt2** — returns a point whose **X** and **Y** are the difference of the respective properties in **pt1** and **pt2**.

**>> display(pt1)** — displays the point object as an ordered pair ("pt1 = <x,y>"). Note that also just entering **pt** on the command line (if you have a **Point** object named that) will call this method.

Now, write a MATLAB class **LineSegment** with properties "**Start**" and "**Finish**". These properties should only be assigned **Point** objects: (Hint: use the set method that checks the class of the object being assigned). The class should have a constructor method that assigns two points, **pt1** and **pt2**, to the properties "**Start**" and "**Finish**" and a method called **length** that returns the length of the line segment. It should not calculate the length directly, but rather use methods from the **Point** class. **LineSegment** should also have a **display** method that plots the line connecting the Start and Finish.

- Submit the homework on bCourses. You should create a folder named **lastname\_firstname\_hw2**. Place all of your m-files in this folder and zip it. Please upload this single zip file.
- The submitted material must contain the following:
  - working versions of the classes
  - an explanation of how to use *your* classes, along with your name and SID, displayed by

**>> help Point**

**>> help LineSegment**