

# Lab 1

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**Due** Feb 9 by 8am    **Points** 10    **Submitting** a file upload    **File Types** pdf and tgz  
**Available** until Feb 9 at 8am

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This assignment was locked Feb 9 at 8am.

## Exercise 1

Define a structure `Point`. A point has an `x`- and a `y`-coordinate. Write a function

**`double distance(Point a, Point b)`**

that computes the distance from `a` to `b`. Write a program that *reads* the coordinates of the points, *calls* your function, and *displays* the result.

## Exercise 2

Using the `Point` structure from the previous exercise, write a function

**`Point midpoint(Point a, Point b)`**

that computes the point that is halfway between `a` and `b`. Write a program that *reads* the coordinates of the points, *calls* your function, and *displays* the result.

## Exercise 3

Define a structure `Triangle` that contains three `Point` members. Write a function that computes the **perimeter** of a `Triangle`. Write a program that *reads* the coordinates of the points, *calls* your function, and *displays* the result.

## Exercise 4

Re-implement the `Triangle` structure (and the **perimeter** function) of previous exercise so that it contains two arrays of three double values each, one for the `x`-coordinates and one for the `y`-coordinates.

For each of these exercises, run your program and capture the output into a png file. Then include that image in block comments of your program using the `Latex includegraphics` command. Add comments to each function of your programs explaining what the function does.

Use `cpp2pdf` to create the PDF that will have all source, code, images and comments nicely formatted and easy to read. Use the `Latex newline` command where needed to make logical breaks in the program structure. Change author to your name, not mine.

Save your work by using this command in the working directory (lab1), retrieve the tgz and pdf file using the web server, and upload and submit to Canvas.