

**Homework #8**

**01286120 Elementary Systems Programming**

**Software Engineering Program**

**Faculty of Engineering, KMITL**

By

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**1. Write functions that convert between coordinate systems**

The first thing you need to do in this homework exercise is to define the structure Point for storing a point with cartesian coordinates (x, y) and the structure PolarPoint for storing a point with polar coordinates (r, t) , and then use it to write the following functions.

* 1. Write the function to\_polar(pt\_list) that converts each point with cartesian coordinates (x, y) in a point list pt\_list to a new point list with polar coordinates (r, t) as a result.

A computer screen with white text

Description automatically generated

* 1. Write the function to\_cartesian(pt\_list) that converts each point with polar coordinates (r, t) in a point list pt\_list to a new point list with cartesian coordinates (x, y) as a result.

A screen shot of a computer

Description automatically generated

**2. Write programs that convert between coordinate systems**

2.1) Write a program to read a point list in cartesian coodinates (x, y) from a CSV file and convert the list to polar coordinates (r, t) , then save it as another CSV file.

A screenshot of a computer

Description automatically generated

2.2) Write a program to read a point list in polar coodinates (r, t) from a CSV file and convert the list to cartesian coordinates (x, y) , then save it as another CSV file.

A screenshot of a computer

Description automatically generated

**3. Adapt programs to generate HTML table**

3.1) Modify the program in 2.1) to save the output as a HTML table instead of a CSV file.

A white rectangular object with black lines

Description automatically generated

3.2) Modify the program in 2.2) to save the output as a HTML table instead of a CSV file.

A black and white line

Description automatically generated