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# SEG 2105 - ASSIGNMENT 1

## WRITTEN ANSWERS

*5. Hand in your answers to exercises E26 (table of what you think will be the advantages and disadvantages of each design), and E28-E30 (performance analysis, comparing all three designs you have implemented instead of Design 1 with Design 5 as the book says).*

Initialization Testing: The primary goal here is to ensure the accurate initialization and representation of a point with specific coordinates by the respective classes according to their coordinate systems.

- Design 2:

  Input: Creating an instance with rho = 3.5 and theta = 1.2.

  Expected Output: The instance should initialize accurately, and when displaying the coordinates in both Cartesian and Polar forms, the values should be precise.

- Design 3 :
  - Input: Creating an instance, for example with x = -2.8 and y = 1.7.
  - Expected Output: The instance should initialize correctly, and when displaying the coordinates, the values should be precise.

Input Validation Testing: This phase encompasses testing the classes with a variety of input values, encompassing both valid and invalid ones, to ensure that the classes handle them correctly and provide meaningful error messages when necessary.

To test the conversion, with design 2, the testing involves validating the polar coordinates first to then be able to process an accurate conversion between Polar and Cartesian coordinates. With design, the emphasis is on verifying that the coordinates entered are exclusively cartesian and then proceed to the conversion between Cartesian and Polar coordinates. For example, in design 2, the input would be : rho = 2.0 and theta = PI ; and the conversion to Cartesian coordinates should yield (x = -2.0, y = 0.0).