E26

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|  | Pros | Cons |
| Design 1 | 1. Simplicity of code: the code in design 1 is relatively simple and easy to understand, since we use instance variables to store polar and Cartesian coordinates.  2. Efficient when storing: It only stores one set of coordinates at a time which can be efficient when working with larger datasets. | 1. Computing Systems: when we are switching between polar and Cartesian coordinates this design requires us to switch the internal flag and recalculating the values which is not efficient. |
| Design 2 | 1. Simplicity of Code: By storing only polar coordinates, the needs for flags and calculation is eliminated.  2. Efficient computations: when polar coordinates are entered, the computations are simple and efficient | 1. Cartesian computations: When the user enters Cartesian coordinates or when operations are needed for Cartesian coordinates, this design is inefficient. |
| Design 3 | 1. Simplicity of Code: this code is simplified since it only stores Cartesian coordinates  2. Efficiency when Cartesian: when Cartesian coordinates are involved, the computations are efficient. | 1. Polar computation: when the user enters Polar coordinates, the computation is inefficient. |
| Design 5 | 1. Reusability: by having super classes and specific subclasses for polar and Cartesian we are providing peak reusability.  2. Efficient computation: Due to subclasses we are able to optimize computations for polar and cartesian coordinates. | 1. Complexity: More difficult to interpret and makes simple idea more complex than they need to be. |

E28

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|  | Total Elapsed Time (Range) | Median Time per Iteration | Average Time per Iteration (Range) | Max Time per Iteration (Range) | Min Time per Iteration |
| Design 1 | 8432.0 - 8493.0 | 800.0 | 0.00138941 - 0.001423811 | 1.204324E8 - 1.262551E8 | 5.7E-4 |
| Design 2 | 11079.0 - 12621.0 | 1100.0 | 0.001815669 - 0.001931637 | 1.237478E8 - 1.134747E8 | 800.0 |
| Design 3 | 10332.0 - 10821.0 | 1100.0 | 0.001712 - 0.001798 | 1.03466E8 - 1.131756E8 | 900.0 |
| Design 5 | 10481.0 - 10696.0 | 1100.0 | 0.001748724 - 0.001798 | 1.078194E8 - 1.141426E8 | 9.0E-4 |