

SEG2105 Assignment #1
PART 1

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E26

Type of design	Advantages	Disadvantages
Design 1	-efficient use of memory	-complicated design -inefficient creation of instances -inefficient calculation for both coordinate systems
Design 2	-efficient creation of instances -efficient calculation for both coordinate systems	-inefficient use of memory
Design 3	-efficient creation of instances -efficient calculation if given both coordinate systems	-inefficient use of memory
Design 4	-simple design -efficient calculation for both coordinate systems	-inefficient use of memory -inefficient creation of instances
Design 5	-simple design -efficient calculation if given both coordinate systems -efficient creation of instances	-inefficient use of memory

Performance Analysis(running all methods)

E28-30

Design	Time in seconds averaged
Design 1	9.305
Design 5 (CP2)	8.057
Design 5 (CP3)	6.934

Conclusion

According to time trials, Pointcp is inefficient when creating instances. This is because *the* type of coordinate does not need to be specified for cp3 and cp3, whereas for pointcp, the original design, it has to be assigned. Storage wise, cp2 and cp3 are inefficient because they might create new instances when calling convert.

All in all, Pointcp 3 runs the fastest when calculating coordinate systems. The method *convertToCartesian is done quickly* since the instance stores values as x and y. Get methods only return the values that are already, thus computations for rotatePoint and getDistance will be minimal.