

Assignment 3: Cobol Re-engineering (20%)

THE CALCULATION OF EASTER

In 1962, Donald Knuth wrote a paper on the Calculation of Easter¹. He notes that “There are many indications that the sole important application of arithmetic in Europe during the Middle Ages was the calculation of Easter date”². In the paper he provides two programs, one in ALGOL and the other in Cobol. The Cobol program prepares a printed table of Easter from 500 to 4999 A.D. More information on the calculation of Easter, and Knuth’s algorithm are covered in a paper by Stansifer³.

TASK

The problem with the Cobol program is that it is designed to be programmed onto a punch-card! Re-write the legacy Cobol program into modern Cobol, writing the table output to file. Discuss your re-designed program in 2-3 page design document, explaining decisions you made in the re-engineering process. Properly document the program, and explain its algorithmic history in your design document.

SKILLS

This is an exercise in *dialect* re-engineering, converting a program from one dialect of Cobol to another. It requires some research into the algorithm, and documentation of the re-engineered code.

¹ Knuth, D., “The calculation of Easter”, *Communications of the ACM*, Vol.5(4), pp.209-210 (1962)

² Knuth, D., *The Art of Computer Programming*, vol. 1: Fundamental Algorithms.

³ Stansifer, R., “The calculation of Easter”, *ACM SIGPLAN Notices*, Vol.27(12), pp.61-65 (1992)