2004 Paper 4 Question 4

Comparative Programming Languages

(*a*) Briefly describe the concept of coroutines as provided in BCPL, and outline the effect of the library functions `createco(f, size)`, `deleteco(cptr)`, `callco(cptr, val)`, and `cowait(val)`.   [6 marks]

(*b*) Discuss the relative merits of BCPL coroutines *versus* those of threads such as provided in Java.   [6 marks]

(*c*) Outline the overall design and organisation of a BCPL program to perform discrete event simulation using coroutines to implement the simulated activities. Concentrate on the design of the simulation event loop, the organisation of the priority queue and what functions you would provide to simplify the implementation of the activities. It would probably be sensible to adopt a programming style similar to that used in Simula 67. You should hold simulated time as a global (integer) variable.   [8 marks]