COMPUTER SCIENCE TRIPOS Part IA – 2026 – Paper 1

10 Algorithms 2 (jkf21)

(*a*) Give a clear and concise description of an algorithm to determine one topological sort of a directed acyclic graph represented using adjacency lists. Include pseudocode. [6 marks]

(*b*) Derive the asymptotic running time of your algorithm from Part (*a*). [4 marks]

(*c*) Devise an algorithm to find the transitive closure of a directed acyclic graph that exploits the nature of this type of graph. [6 marks]

(*d*) Derive the asymptotic running time of your algorithm from Part (*c*). [4 marks]