2008 Paper 1 Question 4

Algorithms

(*a*) Briefly describe the update operations supported by a *priority queue*.

[2 marks]

(*b*) Explain the data structure known as a *heap* and describe how a heap can be implemented using a simple linear block of memory.   [2 marks]

(*c*) Describe, and estimate the costs of, procedures to

    (*i*)   find the parent and offspring of a given node;   [2 marks]

    (*ii*) insert a new item into an existing heap;   [2 marks]

    (*iii*) delete the topmost item from a non-empty heap.   [2 marks]