Algorithms

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

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

(c) Describe, and estimate the costs of, procedures to
   
   (i) find the parent and offspring of a given node;

   (ii) insert a new item into an existing heap;

   (iii) delete the topmost item from a non-empty heap.