p4q4
MR

2 Data structures and algorithms 2002

Carefully describe how Shellsort works and state an estimate of its efficiency using big O notation. [8 marks]

Robert Sedgewick suggests that a good sequence of separations used in the algorithm is $\ldots, 121, 40, 13, 4, 1$. Explain why is this a good sequence. Under what circumstances would you recommend a sequence that approaches 1 more rapidly? [4 marks]

Describe how radix sort from the least significant end works and suggest a data structure that could be used in its implementation. [8 marks]

ANSWER:

This question is almost entirely bookwork.
Shell sort is easy. Published cost is O(n root n) but is in practice better.

The differrent separations should be mutally prime for best results. The faster the decrease the few the passes needed by more work has to done in each pass. The separation must be 1 for the last pass.

Radix sort is book work. A linked list is the easiest structure if space is available.