p10q6 p3q5
MR

Data Structures and Algorithms 2001

Answer notes:

(a) Quicksort program is bookwork. Median of three, use insertion sort when number of elements less than about 15, only recurse on smaller partition. Implement partition carefully.

	time	space
expected	O(n log n)	O(log n)
worst	O(n^2)	O(log n)

(b) Form histogram hist[i] = no of occureences of i
or
fill vector of 4*10^6+100 elements withs -1s then
for each value x put it in v[4*x] movings occupied positions up.
or
perform radix sort in two phases (10 bits) using linked lists.

(c) Put each element in a 200 element (closed) hash table histogram, and for vector of entrites (n1,k1), (nr,kr). Sort on increasing ni using shellsort, add ki s until sum >= 500000, return corresponding ni