

Midterm Topics

100 pt exam

Note Title

10/12/2007

Review Hws + practice problems.

Bring one $8\frac{1}{2} \times 11$ crib sheet

Divide-and-Conquer Algorithms

15-20

Should be able to design with
good hints

Should be able to analyze (master^{use} method)

You should be able to go from
alg to recurrence

$$T(n) = aT(n/b) + f(n)$$

↓ then solve with master
method

10-16 pts

Asymptotic Notation

understand + be able to

compare asymptotic growth rate
of functions

$l_1 > l_2$

$$n^{l_1} (\log n)^{k_1} \text{ vs } n^{l_2} (\log n)^{k_2}$$

if $l_1 > l_2$

left grow faster

if $l_1 = l_2$

based on k_1 vs k_2

10-15 pts Make design decisions between types of positional collections

Make design decisions between
Set ADT (Mapping ADT)
tag \rightarrow element
element

Bucket Mapping ADT)
tag \rightarrow {elements}

10-15 pts

Priority Queue ADT
Ordered Collection ADT
Digitized Ordered Collection ADT
Spatial Collection ADT

Sorting Algs

insertion sort

merge sort

15-20

quicksort (randomized or median
of three partitioning)

radix sort

When each is best

15-20 pts Adversary lower bound
Technique

Set ADT (basic level)
of imp.

10-15 pts

85-120

Direct Addressing
Open Addressing
Separate chaining