

MA 225 Prob & Random Process

Syllabus

Axiomatic def of Prob

Independence

Conditional Prob

Random Variables

Diff Prob distributions

(Discrete & Cont.)

Law of large nos

Central lim Th.

Dr YMT

Random Process

Timing

Tue 9 am

Wed 5 pm

Th 9 am

Fri 9 am

Books

1. A first Course in Prob

Sheldon Ross

2. Introduction to Prob.

D. P. Bertsekas & J N Tsitsiklis

Evaluation Scheme (Tentative)

Quiz 1, 2, 3, 4, 10 marks

Before
Midsem

After

Midsem

(Best 3 quiz)

Midsem 25

End sem 35

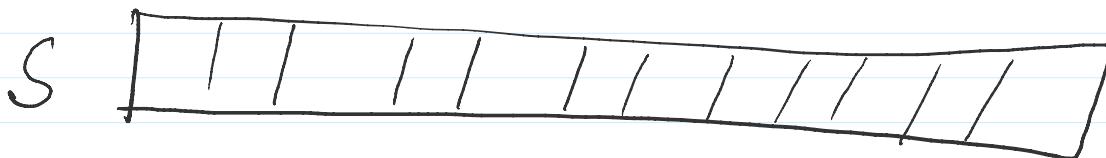
Attendance = 10

Prob Finding k -th ~~largest~~ ^{smallest} element

Input : "n" nos and $1 \leq k \leq n$

Output : k -th smallest no.

Sort $\rightarrow O(n \log n)$



Pick a_i
 l

Uniformly at random



$$\frac{< a_i}{S^-} \quad \overline{q} \quad > a_i \quad S^+$$



If $|S^-| = k-1$, output a_i .

If $|S^-| > k-1$,

~~Find k -th smallest no in S^-~~

If $|S^-| \leq k-1$
 $= l$

~~Find $(k-1-l)$ -th smallest ele~~

$\leftarrow \text{Find } (k-i-k) - n$ max in S^+

$O(n)$ Expected running time

$O(n^2)$ running time (Worst case)