

1994 Paper 11 Question 6

Data Structures and Algorithms

Give an algorithm which selects the *median* value from an array of n values explaining how the possible execution time depends on n . (You should clarify the word “possible”.) [10 marks]

Describe two tests. The first should determine whether two line segments intersect. The second should determine whether a given (half-infinite) straight line from a point (x, y) in the direction (u, v) [thus the points on the line are $(x + \mu u, y + \mu v)$ for $\mu \geq 0$] intersects a given polygon *other than at a vertex*. [10 marks]