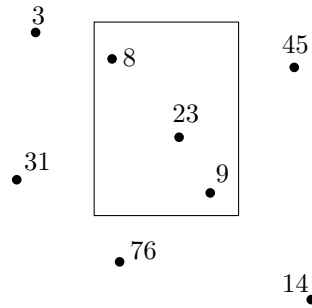


## Fudan Summer Course: Assignment 2 (Due Day: 11:59pm, 7 Aug)

**Problem.** Let  $P$  be a set of  $n$  points in  $\mathbb{R}^2$ , each of which is associated with a real-valued *weight*. Given an axis-parallel rectangle  $q$ , a *range sum* query reports the sum of the weights of the points in  $q \cap P$ . Describe a data structure of  $O(n)$  size that answers such a query in  $O(\sqrt{n})$  time.



For example, if  $q$  is the rectangle show above, then the query should return  $8 + 23 + 9 = 40$ .