We consider the I/O-efficient rectangular segment search problem in 2D. The problem involves storing a given set $S$ of $N$ line segments in a data structure such that an axis aligned rectangular range query $R$ can be performed efficiently; i.e., report all line segments in $S$ which intersect $R$. We give a data structure requiring space $O\left(\frac{N}{B} \log_{B} N + \lambda/B\right)$ disk blocks that can answer a range query $R$ using $O(\log_{B} N + K/B)$ I/Os, where $\lambda$ is the number of intersection points among the line segments in $S$, $B$ is the number of line segments transferred in one I/O, and $K$ is the number of line segments intersecting $R$. We also consider the problem of finding all the line segments which are entirely within the rectangle $R$ if the set $S$ contains only vertical and horizontal line segments. For this problem, an optimal data structure is presented with size $O\left(\frac{N}{B} \log_{B} N\right)$ disk blocks that requires $O(\log_{B} N + K/B)$ I/Os to answer the query.

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