Transposing a matrix. Consider a point set \( \{(x_i, i)\} \) of \( k^2 \) points on a \( k^2 \times k^2 \) lattice representing the access sequence. For each point \((x_i, i)\) we introduce three new points at \((x_i - 1, i)\), \((k \left\lfloor \frac{x_i}{k} \right\rfloor , i)\) and \((k \left\lceil \frac{x_i}{k} \right\rceil , i)\).

The newly formed set is \textit{Abortally Satisfied}, hence it represents a valid BST execution. The set contains \( O(k^2) \), giving amortized cost of \( O(1) \) per access.

Logarithmic redux. Consider the access sequence, the point set \( X = \{(x_i, i)\} \) of \( m \) points on a \( n \times m \) lattice. Let \( \hat{x} \) be the median of all \( x \in X \). Inserting \( m \) points \((\hat{x}, i)\) will ensure that each rectangle connecting a point left of or at \( \hat{x} \) and a point right of or at \( \hat{x} \) contains a point.

Now consider the two subsets of \( X \), \( X_{x \leq \hat{x}} \) and \( X_{x \geq \hat{x}} \), each with at most \( m \) points, and at most \( n \) distinct \( x \) values.

We recursively apply the same technique, to obtained point set that is \textit{Abortally Satisfied}. We get the number of newly inserted points by solving the recursion \( N(m, \frac{n}{2}) = 2N(m, \frac{n}{2}, n) + m \).

The total number of accesses is then \( O(N(m, n) + m) = O(m \log n + m) = O(m \log n) \).