

The upper bound is $O(n^2)$,
Because it is a 2D array (n, m)
(assuming n and m are about equal) the
memory grows by $n \cdot m$.

$$(2, 2) \text{ memory size} = 2 \cdot 2 \text{ or } 2^2$$

$$(40, 40) \text{ memory size} = 40 \cdot 40 \text{ or } 40^2$$