In the worst-case scenario, the grid is a square in which its length (l) and width (w), or both dimensions of the array which is stored in memory, are approximately equal to one another, and subsequently grow at an equal rate. In this case, the asymptotic space complexity takes the form of a quadratic: l * w, where l ≈ w. Therefore, the upper bound of IntGrid2D is $O(n^2)$.

In the best-case scenario, the length of the grid is infinitely greater than its width, or vice-versa, and subsequently the greater dimension grows at an infinitely faster rate than the other. In this case, the asymptotic space complexity is linear, because either l or w increases at a slow enough rate to be inconsequential. Therefore, the lower bound of IntGrid2D is $\Omega(n)$.