

Prompt	Scratchpad	Our Solution(s)	Video Explanation	Run Code
--------	------------	-----------------	-------------------	----------

Solution 1	Solution 2	Solution 3	Solution 4
<pre>1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved. 2 3 ▾ class Program { 4     // O(n^4) time   O(n^3) space - where n is the height and width of the matrix 5     ▾ static func squareOfZeroes(_ matrix: [[Int]]) -&gt; Bool { 6         var lastIdx = matrix.count - 1 7         var mat = matrix 8         var cache = [String: Bool]() 9         return hasSquareOfZeroes(&amp;mat, 0, 0, lastIdx, lastIdx, &amp;cache) 10    } 11 12    // r1 is the top row, c1 is the left column 13    // r2 is the bottom row, c2 is the right column 14    static func hasSquareOfZeroes(_ matrix: inout [[Int]], _ r1: Int, _ c1: Int, 15    ▾ _ r2: Int, _ c2: Int, _ cache: inout [String: Bool]) -&gt; Bool { 16    ▾     if r1 &gt;= r2    c1 &gt;= c2 { 17         return false 18     } 19 20     let key = String(r1) + "-" + String(c1) + "-" + String(r2) + "-" + String(c2) 21     ▾ if let out = cache[key] { 22         return out 23     } 24 25     let out = isSquareOfZeroes(&amp;matrix, r1, c1, r2, c2)    26         hasSquareOfZeroes(&amp;matrix, r1 + 1, c1 + 1, r2 - 1, c2 - 1, &amp;cache)    27         hasSquareOfZeroes(&amp;matrix, r1, c1 + 1, r2 - 1, c2, &amp;cache)    28         hasSquareOfZeroes(&amp;matrix, r1 + 1, c1, r2, c2 - 1, &amp;cache)    29         hasSquareOfZeroes(&amp;matrix, r1 + 1, c1 + 1, r2, c2, &amp;cache)    30         hasSquareOfZeroes(&amp;matrix, r1, c1, r2 - 1, c2 - 1, &amp;cache) 31     cache[key] = out 32     return out 33 } 34 35 // r1 is the top row, c1 is the left column 36 // r2 is the bottom row, c2 is the right column 37 ▾ static func isSquareOfZeroes(_ matrix: inout [[Int]], _ r1: Int, _ c1: Int, _ r2: Int, _ c2: Int) -&gt; Bool { 38 ▾     for row in r1 ..&lt; r2 + 1 { 39     ▾         if matrix[row][c1] != 0    matrix[row][c2] != 0 { 40             return false 41         } 42     } 43 44     ▾ for col in c1 ..&lt; c2 + 1 { 45     ▾         if matrix[r1][col] != 0    matrix[r2][col] != 0 { 46             return false 47         } 48     } 49     return true 50 } 51 } 52</pre>			

