

Prompt	Scratchpad	Our Solution(s)	Video Explanation	Run Code
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Solution 1	Solution 2	Solution 3	Solution 4
<pre>1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved. 2 3 package main 4 5 // O(n^3) time   O(n^2) space - where n is the height and width of the matrix 6 ▾ func SquareOfZeroes(matrix [][]int) bool { 7     infoMatrix := preComputeNumOfZeroes(matrix) 8     n := len(matrix) 9     ▾ for topRow := 0; topRow &lt; n; topRow++ { 10 ▾     for leftCol := 0; leftCol &lt; n; leftCol++ { 11         squareLength := 2 12     ▾     for squareLength &lt;= n-leftCol &amp;&amp; squareLength &lt;= n-topRow { 13         bottomRow := topRow + squareLength - 1 14         rightCol := leftCol + squareLength - 1 15     ▾     if isSquareOfZeroes(infoMatrix, topRow, leftCol, bottomRow, rightCol) { 16         return true 17     } 18     squareLength += 1 19     } 20     } 21 } 22 return false 23 } 24 25 ▾ type InfoEntry struct { 26     NumZeroesRight int 27     NumZeroesBelow int 28 } 29 30 // r1 is the top row, c1 is the left column 31 // r2 is the bottom row, c2 is the right column 32 ▾ func isSquareOfZeroes(infoMatrix [][]InfoEntry, r1, c1, r2, c2 int) bool { 33     squareLength := c2 - c1 + 1 34     hasTopBorder := infoMatrix[r1][c1].NumZeroesRight &gt;= squareLength 35     hasLeftBorder := infoMatrix[r1][c1].NumZeroesBelow &gt;= squareLength 36     hasBottomBorder := infoMatrix[r2][c1].NumZeroesRight &gt;= squareLength 37     hasRightBorder := infoMatrix[r1][c2].NumZeroesBelow &gt;= squareLength 38     return hasTopBorder &amp;&amp; hasLeftBorder &amp;&amp; hasBottomBorder &amp;&amp; hasRightBorder 39 } 40 41 ▾ func preComputeNumOfZeroes(matrix [][]int) [][]InfoEntry { 42     infoMatrix := make([][]InfoEntry, len(matrix)) 43     ▾ for i, row := range matrix { 44         infoMatrix[i] = make([]InfoEntry, len(row)) 45     } 46 47     n := len(matrix) 48     ▾ for row := 0; row &lt; n; row++ { 49     ▾     for col := 0; col &lt; n; col++ { 50         numZeroes := 0 51     ▾     if matrix[row][col] == 0 { 52         numZeroes = 1 53     } 54     ▾     infoMatrix[row][col] = InfoEntry{ 55         NumZeroesBelow: numZeroes, 56         NumZeroesRight: numZeroes, 57     } 58     } 59     } 60 61     lastIdx := len(matrix) - 1 62     ▾ for row := n - 1; row &gt;= 0; row-- { 63     ▾     for col := n - 1; col &gt;= 0; col-- { 64     ▾     if matrix[row][col] == 1 { 65         continue 66     } 67 68     ▾     if row &lt; lastIdx { 69         infoMatrix[row][col].NumZeroesBelow += infoMatrix[row+1][col].NumZeroesBelow 70     } 71 72     ▾     if col &lt; lastIdx { 73         infoMatrix[row][col].NumZeroesRight += infoMatrix[row][col+1].NumZeroesRight 74     } 75     } 76     } 77     return infoMatrix 78 } 79</pre>			

