

```
def is_sudoku(s):  
    return test_columns(s) and test_squares(s) and test_rows(s)  
  
def test_rows(s):  
    return all([len(set(s[i]))==9 for i in range(9)])  
  
def test_columns(s):  
    return all([len({s[i][j] for i in range(9)})==9 for j in range(9)])  
  
def test_squares(s):  
    idx = [(x, y, offx, offy)  
            for offy in [0,3,6] for offx in [0,3,6]  
            for x in range(3) for y in range(3)]  
    return all([  
        len(  
            {s[idx[i][0]+idx[i][2]][idx[i][1]+idx[i][3]] for i in range(j,j+9)}  
        )==9 for j in range(0,81,9)])
```