```
from itertools import *

def grid_permutations():
  loop_unroll = list(product(
      range(0,24), range(0,24), range(0,24), range(0,24)))
  Ps = list(permutations(range(1,5)))
  for i in range(0,len(loop_unroll)):
    S = [Ps[loop_unroll[i][j]] for j in range(0,4)]
    yield S
  raise StopIteration

def sudoku():
  p = grid_permutations()
  while True:
    s = next(p)
    if test_columns(s) and test_squares(s): yield s

def test_columns(s):
  for j in range(0,4):
     if len({s[i][j] for i in range(0,4)}) < 4:
        return False
  return True

def test_squares(s):
  for offx in [0,2]:
    for offy in [0,2]:
      if len({s[x+offx][y+offy] for x in range(0,2) for y in range(0,2)})< 4:
        return False
  return True
```