sudoku

December 22, 2021

[67]:
```
import pandas as pd
```

[68]:
```
import numpy as np
```

[ ]:
```
##grid=[[8,0,0,0,0,0,0,0,0], [0,0,3,6,0,0,0,0,0], [0,7,0,0,9,0,2,0,0],␣
↪[0,5,0,0,0,7,0,0,0], [0,0,0,0,4,5,7,0,0], [0,0,0,1,0,0,0,3,0],␣
↪[0,0,0,1,0,0,0,3,0], [0,0,8,5,0,0,0,1,0]
    #, [0,9,0,0,0,0,4,0,0]]
```

[69]:
```
grid=[[5,3,0,0,7,0,0,0,0], [6,0,0,1,9,5,0,0,0], [0,9,8,0,0,0,0,6,0],␣
↪[8,0,0,0,6,0,0,0,3], [4,0,0,8,0,3,0,0,1], [7,0,0,0,2,0,0,0,6],␣
↪[0,6,0,0,0,0,2,8,0], [0,0,0,4,1,9,0,0,5]
    , [0,0,0,0,8,0,0,0,0]]
```

[70]:
```
print(np.matrix(grid))
```

```
[[5 3 0 0 7 0 0 0 0]
 [6 0 0 1 9 5 0 0 0]
 [0 9 8 0 0 0 0 6 0]
 [8 0 0 0 6 0 0 0 3]
 [4 0 0 8 0 3 0 0 1]
 [7 0 0 0 2 0 0 0 6]
 [0 6 0 0 0 0 2 8 0]
 [0 0 0 4 1 9 0 0 5]
 [0 0 0 0 8 0 0 0 0]]
```

[71]:
```
def possible(y,x,n):
    global grid
    for i in range(0,9) :
        if grid[y][i] == n :
            return False
    for i in range(0,9) :
        if grid[i][x] == n :
            return False
    x_o=(x//3)*3
    y_o=(y//3)*3
    for i in range(0,3) :
```

```
        for j in range(0,3) :
            if grid[y_o+i][x_o+j] == n :
                return False
    return True
```

[72]:
```
possible(1,2,3)
```

[72]:
```
False
```

[73]:
```
def solve():
    global grid
    for y in range(9):
        for x in range(9):
            if grid[y][x]==0:
                for n in range(1,10):
                    if possible(y,x,n):
                        grid[y][x]=n
                        solve()
                        grid[y][x]=0
                return
    print(np.matrix(grid))
    input("More?")
```

[ ]:
```
solve()
```

```
[[5 3 4 6 7 8 1 9 2]
 [6 7 2 1 9 5 3 4 8]
 [1 9 8 3 4 2 5 6 7]
 [8 5 9 7 6 1 4 2 3]
 [4 2 6 8 5 3 9 7 1]
 [7 1 3 9 2 4 8 5 6]
 [9 6 1 5 3 7 2 8 4]
 [2 8 7 4 1 9 6 3 5]
 [3 4 5 2 8 6 7 1 9]]
More?
[[5 3 4 6 7 8 9 1 2]
 [6 7 2 1 9 5 3 4 8]
 [1 9 8 3 4 2 5 6 7]
 [8 5 9 7 6 1 4 2 3]
 [4 2 6 8 5 3 7 9 1]
 [7 1 3 9 2 4 8 5 6]
 [9 6 1 5 3 7 2 8 4]
 [2 8 7 4 1 9 6 3 5]
```

```
[3 4 5 2 8 6 1 7 9]]
```

[ ]:

[ ]: