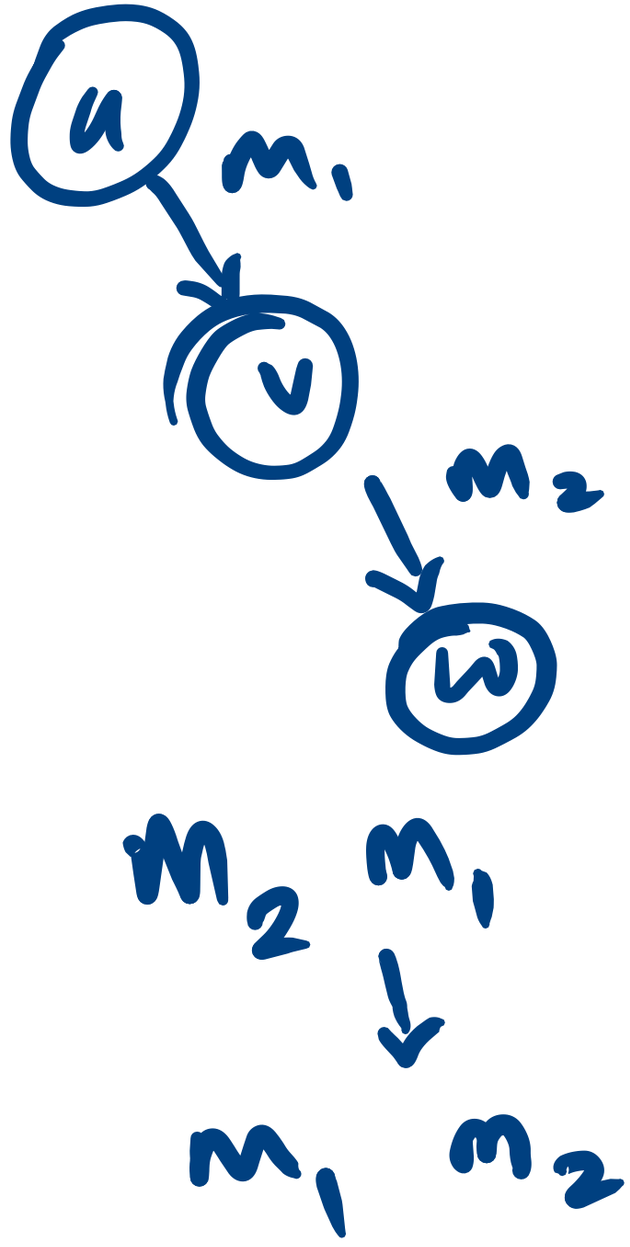


move[w] = m_2

Parent[w] = v

Parent[v] = u

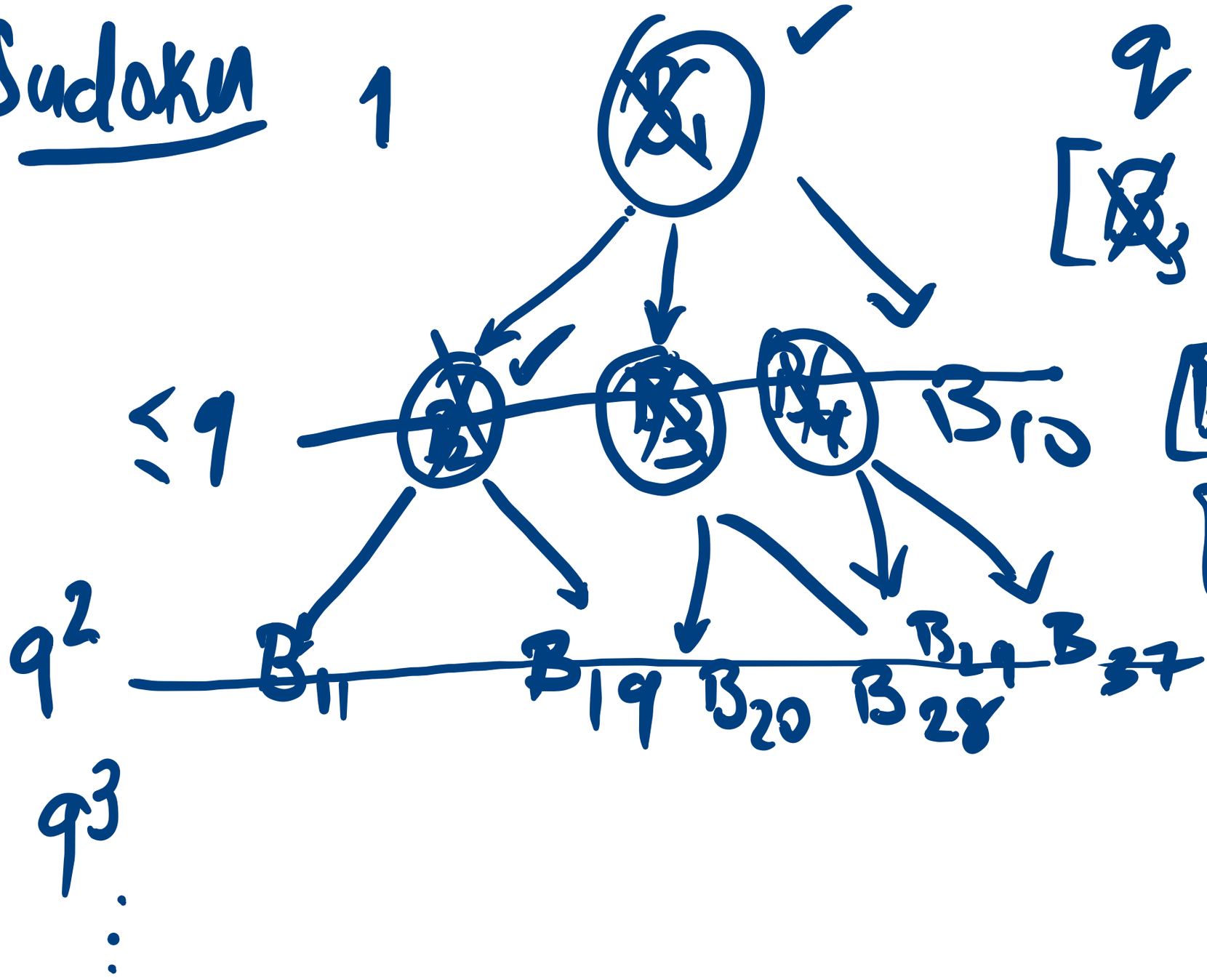
move[v] = m_1

Sudoku — DFS
- All paths have same length.

8-puzzle — BFS
- want to find shortest paths

BFS & DFS have $O(n+m)$-time complexity

Sudoku



$q: [B_2 \dots B_{10}]$

$[B_3 \dots B_{10} B_{11} \dots B_{19}]$

$[B_4 \dots B_{28}]$

$[B_5 \dots B_{37}]$

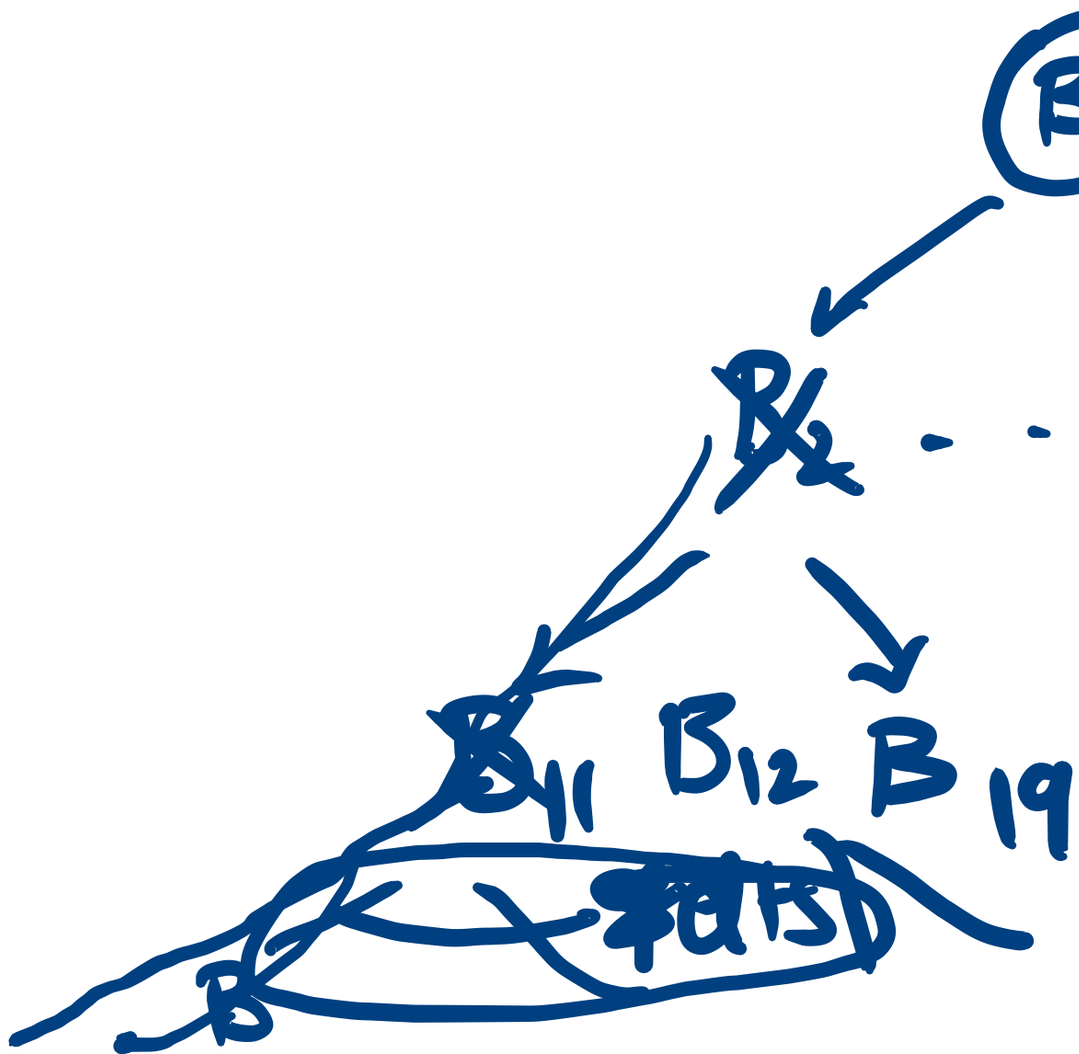
Queue size is 9^i for ith level.

17-clue Sudoku puzzles exist

9^{81-17} = more than all memory on earth!

Problem is space usage!

Space Usage of DFS ~ depth of subtoku graph (only for stack)



B_{10} ← $\leq \varepsilon$ elts from each level

```
f():
    if ( )
        g()

g():
    f()
    h()

h():
    f()
```

f g h ⊥.