

Applications of Backtracking: →

- ① N Queens → VTU *
 - ✓ * ② Rat in a Maze Medium
 - ✓ * ③ Subsets of Array, String
 - * ④ Sudoku Solver
- ↓ Hard ↓ Easy

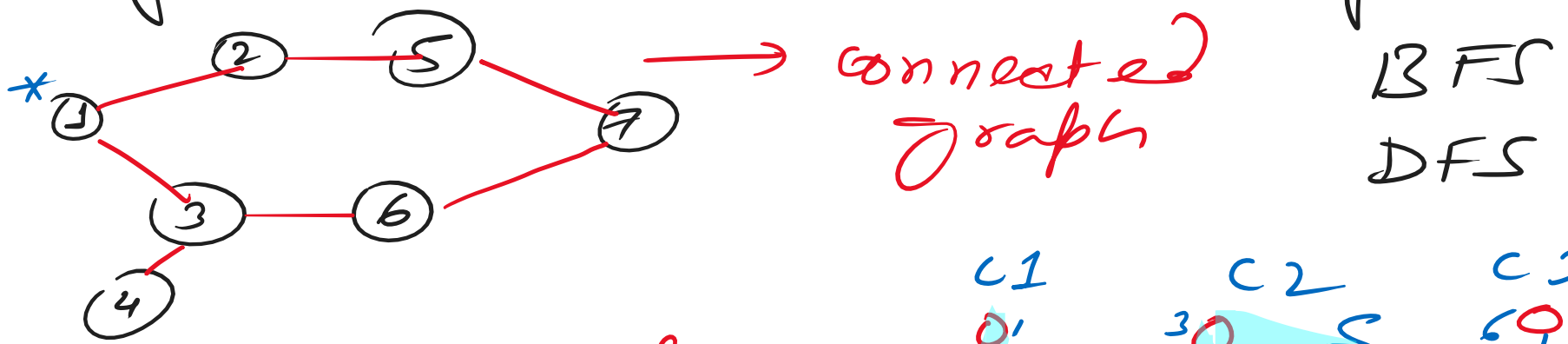
2D → m / c m / c

Rule: →

- Check → ① Each row
 Determinant ② Each col
 Transpose * ③ Each 3x3 matrix
 Adjoint
- * In all cases 1 to 9 should come only once.

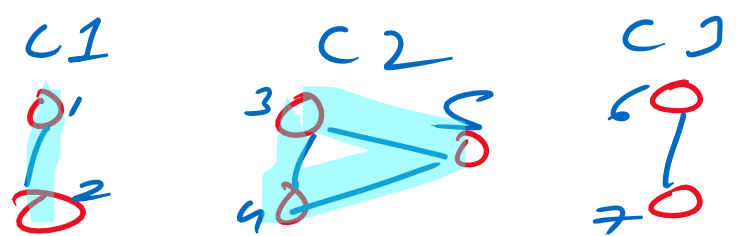
Graph Algorithms + Cycle Detections

(Cycle Detection) in Undirected Graphs

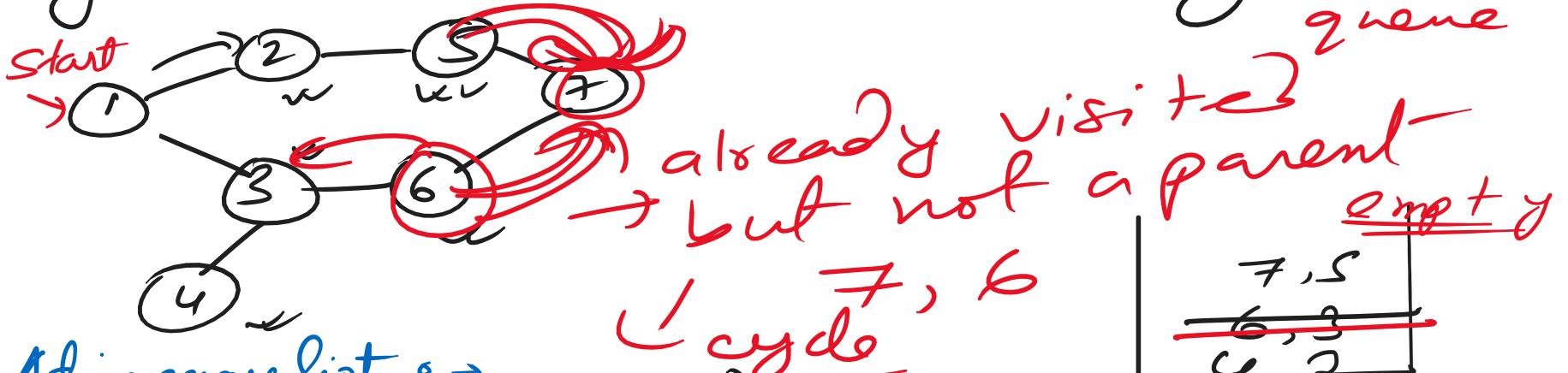


Disconnected graph: →

for (int i=1; i<=V; i++) dfs(i)



Cycle Detection Undirected using BFS



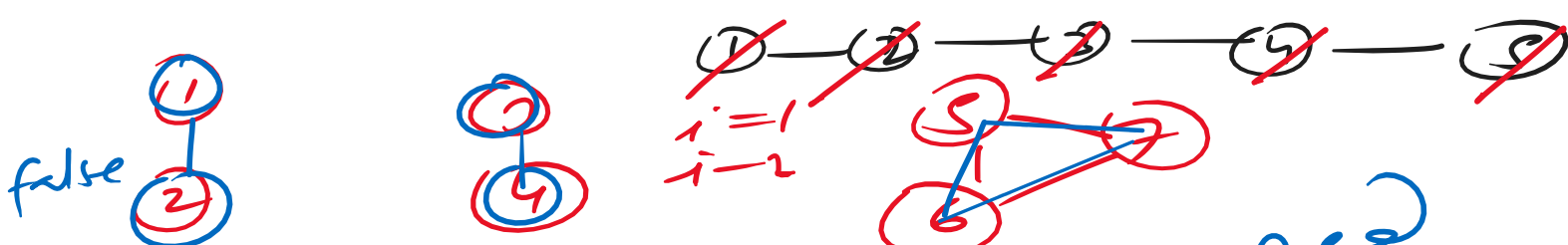
Adjacency list: →

1 → 2, 3
 2 → 1, 5
 3 → 1, 4, 6
 4 → 3
 5 → 2, 7
 6 → 3, 7
 7 → 5, 6

visited: 1 1 1 1 1 1 1

7, 5
6, 3
4, 3
5, 2
3, 1
2, 1
1, -1

node, parent queue



1 1 1 1 1 1 1

4 → skipped
3 → skipped
2 → skipped
1 →

for (int i=0; i<V; i++)
 {
 if (!visited[i])
 {
 detect(i);
 }
 }

pseudo code