CLASSMATE
Date
Page

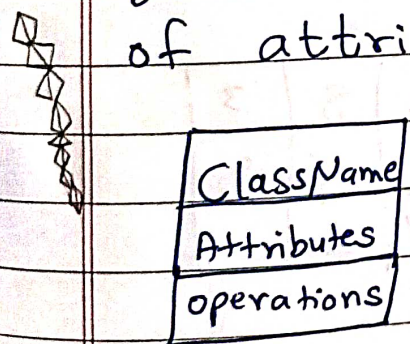
* Use Case Diagram
Model → Add dig → Use Case dig
Actor : click → click on page

* Class Diagram
Model → Add dig → Class dig
Class: click → click on pg to paste

* Sequence Diagram
Model → Add dig → Sequence dig Name: ✓
Model (Right) → Right Click → Add → Actor

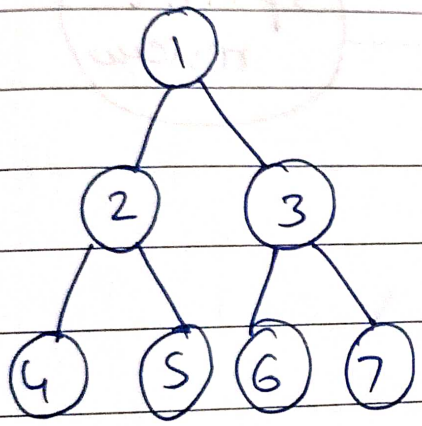
1) Use Case Diagram
Use case dig is a collection of use cases and actors and relationships among them.

2) Class dig.
It describes the objects that have common set of attributes, operations and relationship.



3) Sequence dig
Sequence of instructions is maintained.

* BFS



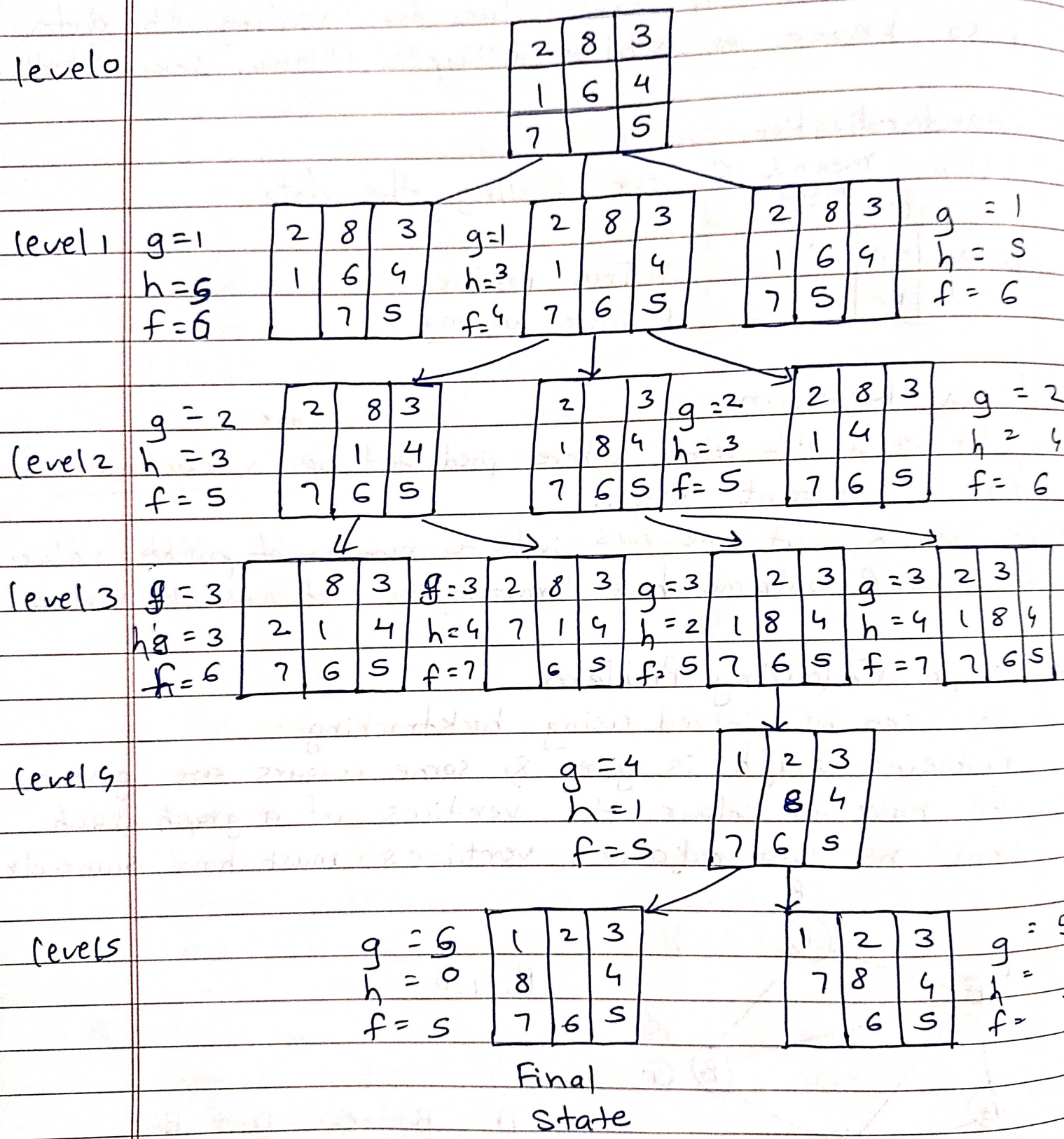
1, 2, 3, 4, 5, 6, 7

* DFS: 1, 2, 4, 5, 3, 6, 7

BFS: level wise order

DFS: pre order

h - no. of misplaced
g - no. of nodes traversed (depth of node)



Selection Sort

Find the minimum element in unsorted array and swap it with element at beginning.

array : 12, 45, 23, 51, 19, (8)

Pick up mini element & swap

8, 45, 23, 51, 19, (12)

8, 12, 23, 51, 19, 45

8, 12, 19, 51, 23, 45

8, 12, 19, 23, 51, 45

8, 12, 19, 23, 45, 51

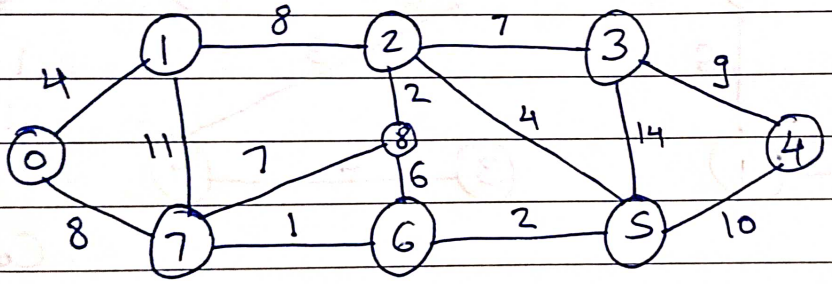
→ Unsorted array

← Sorted array

* Spanning Tree: Sub graph of a graph. $G \equiv (V, E)$
  All vertices, & $(n-1)$ edges ... n-no. of vertices
* Weighted Graph: A graph in which edges have weights

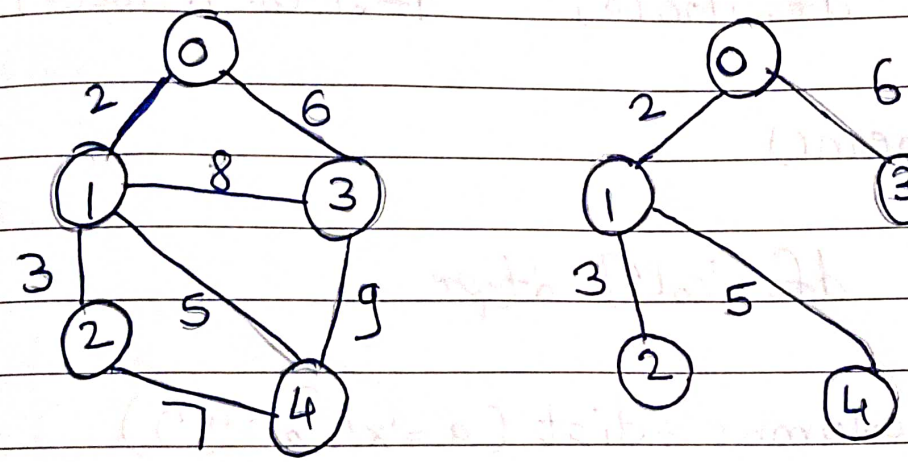
1) Dijkstra's Algorithm

Gives the shortest path from the fixed node to every other node



2) Prim's Algorithm :

Select a minimum cost (weight edge for the rest of edges, always select a minimum edge graph but it should be connected



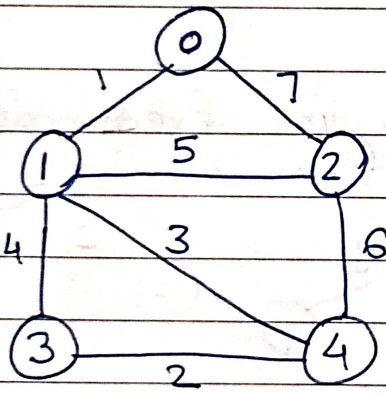
Edge	wt
0 - 1	2
1 - 2	3
0 - 3	6
1 - 4	5

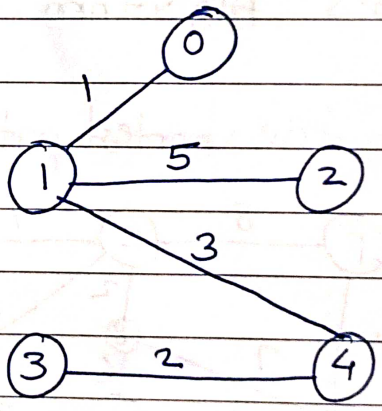
	0	1	2
0	0	1	10
1	0	2	6
2	0	3	5
3	1	3	15
4	2	3	4

* Experiment 11

3) Kruskals Algorithms

Select smallest edge, & always select a mini cost/smallest edge but it if is forming a cycle don't include it in solution discard that edge





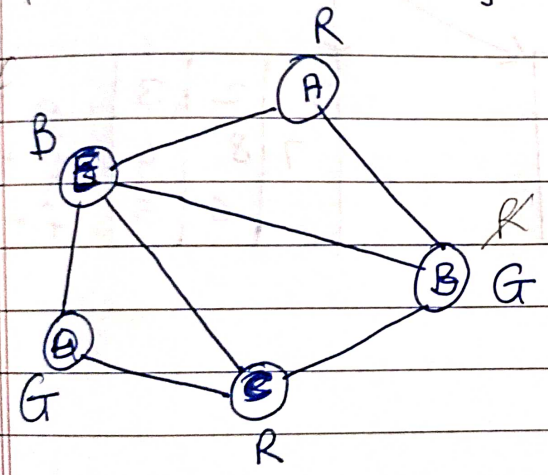
0-1	1
3-4	2
1-4	3
1-2	5

Cost = 11

* Graph Colouring Problem.

This can be solved using backtracking

Problem: Graph is given & some colours are given. We have to colour the vertices of a graph such that no two adjacent vertices must have same clr.



R, G, B

A	B	C	D	E
↓	↓	↓	↓	↓
R	G	R	G	B