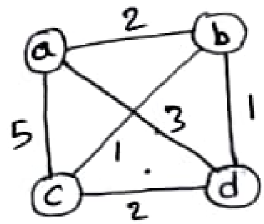
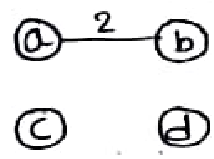
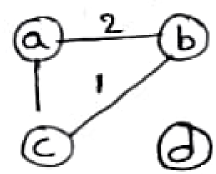
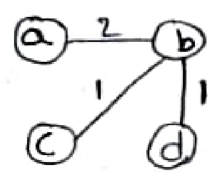
1) Apply prims algorithm to solve the minimum spanning tree for the given graph. Also compute the total cost of all edges.

Sol



Treevertices	Remainingvertices	Illustration
a(-,∞)	b(a,2), c(a,5), d(a,3)	
b(a,2)	c(b,1), d(b,1)	
c(b,1)	d(c,2)	

∴ The total cost of all edges is a-b-c and b-d is

2+1+1 = 3

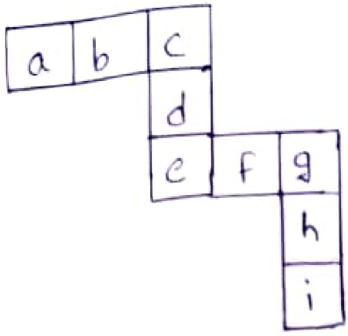
2) To compute the sum of subsets for the following graph and then satisfy the given constrants set S{} = (a, b, c, d, e, f, g, h, i) values used are V[i]=(1,2, 3......9)

used all values only one time

constraints hold such as

a+b+c = c+d+e = e+f+g = g+h+i

Sol



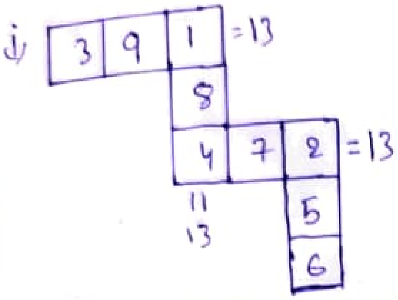
$S\{\} = (a, b, c, d, e, f, g, h, i)$

$V\{i\} = (1, 2, 3, 4, 5, 6, 7, 8, 9)$

Given that $a+b+c = c+d+e = e+f+g = g+h+i$

By using the Values $V\{i\}$ and adding equal to other three values of sum.

i)

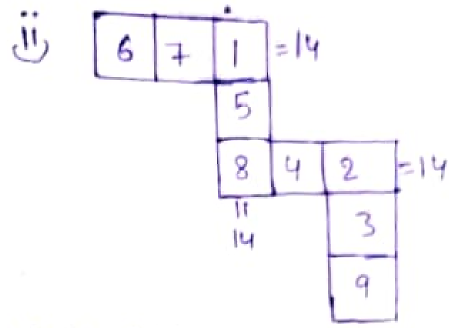


$a+b+c = c+d+e = e+f+g = g+h+i$

$3+9+1 = 1+8+4 = 4+7+2 = 2+5+6$

$13 = 13 = 13 = 13$

ii)

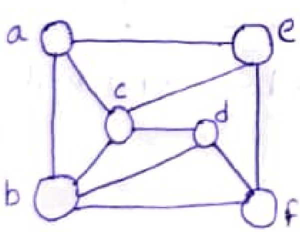


$6+7+1 = 1+5+8 = 8+4+2 = 2+3+9$

$14 = 14 = 14 = 14$

3) Calculate the chromatic no for the following Graph Coloring.

Sol

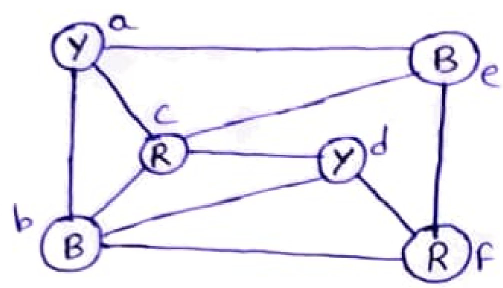


Greedy colouring algorithm

1) initiate all the nodes
2) set the node for the first coloring, the Priority is the node with the largest degree.
3) choose the color candidate with the selection color function with no adjacent node having the same color.

* Check the eligibility of the color, if it's able to save to the solution set.
* is the solution complete? Go to step 2 if not yet.

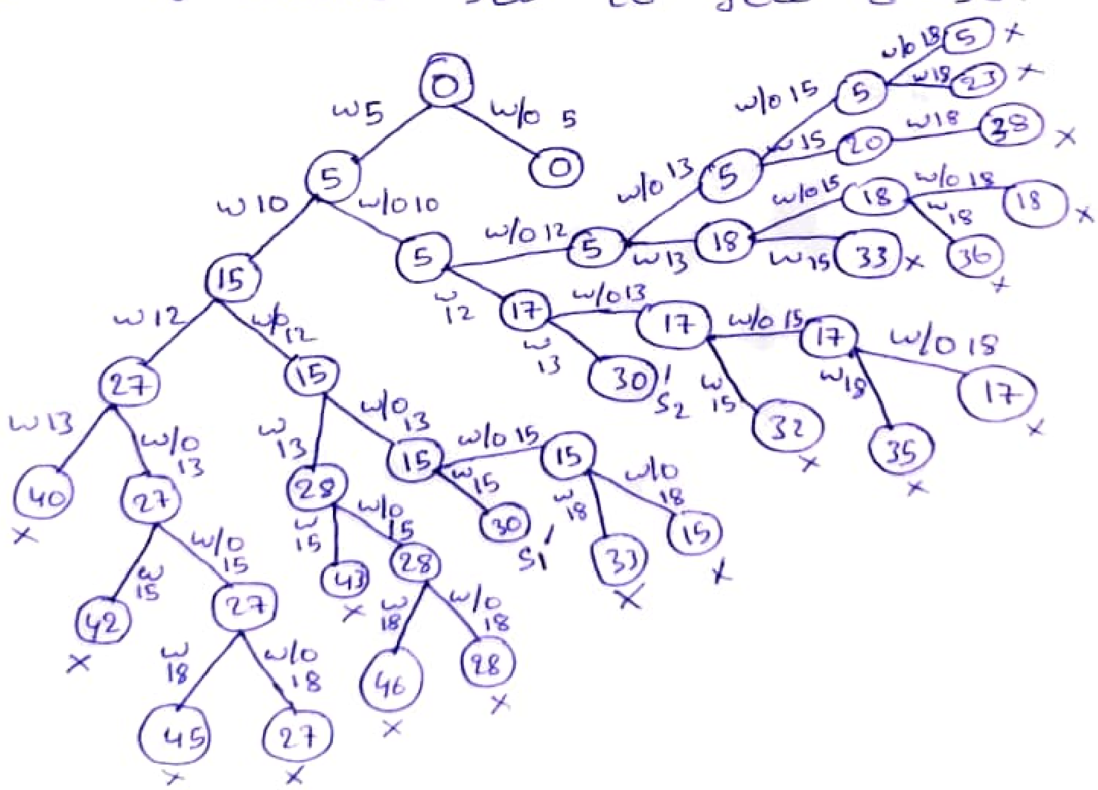
Choose the four colours
Bue, red, yellow, Green

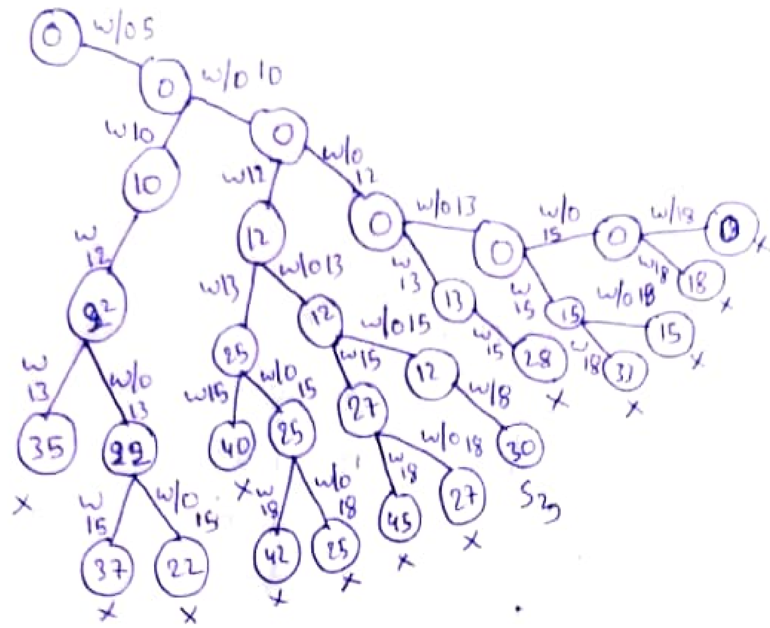


a = Yellow
b = Blue
c = Red
d = Yellow
e = Blue
f = Red

4) Consider a set S = (5, 10, 12, 13, 15, 18) and d = 30. Solve it for obtaing a sum of subset.

Sol Given a set S = {5, 10, 12, 13, 15, 18)
by adding above set to ged d = 30.





we get three solution

Solutions $S_1 = 15 + 10 + 5 = 30$

$S_2 = 18 + 12 = 30$

$S_3 = 5 + 12 + 13 = 30$

Time Complexity $= O(2^n)$.