The recurrence

"Handling" one character of x or y

i.e. choosing one of insert, delete, or substitution and increasing the "distance" by 1

OR realizing the characters are the same and matching for free.

Delete Insert Sub and matching

$$OPT(i,j) = \begin{cases} \min\{1 + OPT(i-1,j), 1 + OPT(i,j-1), \mathbb{I}[x_i \neq y_j] + OPT(i-1,j-1)\} \\ j & \text{if } i = 0 \\ i & \text{if } j = 0 \end{cases}$$

Edit Distance

Fill in the next two entries. Be careful with the sub/match distinction!

$OPT(i,j)$		0	B, 1	A, 2	B, 3	Y, 4	Y, 5	O, 6	D, 7	A, 8	S, 9
0		0	1	2	3	4	5	6	7	8	9
T	1	1	1	2	3	4	5	6	7	8	9
A	2	2	2	1	2	3	4	5	6	7	8
S	3	3	3	2	2	3	4	5	6	7	7
T	4	4	4	3	3	3	4	5	6	7	8
Y	5	5	5	4	4	3					
S	6										
O	7										
D	8										
A	9										

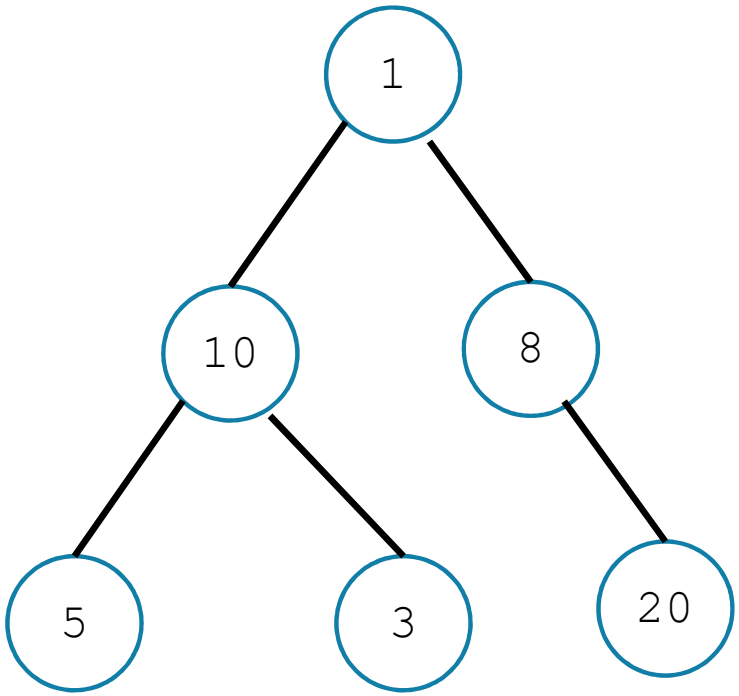
Vertex Cover

Vertex Cover

A set S of vertices is a vertex cover if for every edge (u, v): u is in S, or v is in S, (or both)

Find the minimum vertex cover in a tree.

Give every **vertex** a weight, find the minimum weight vertex cover



Vertex Cover – Recursively

Let's try to write a recursive algorithm first.

What information do we need to decide if we include u?

If we don't include u then to be a valid vertex cover we need…

If we do include u then to be a valid vertex cover we need…