

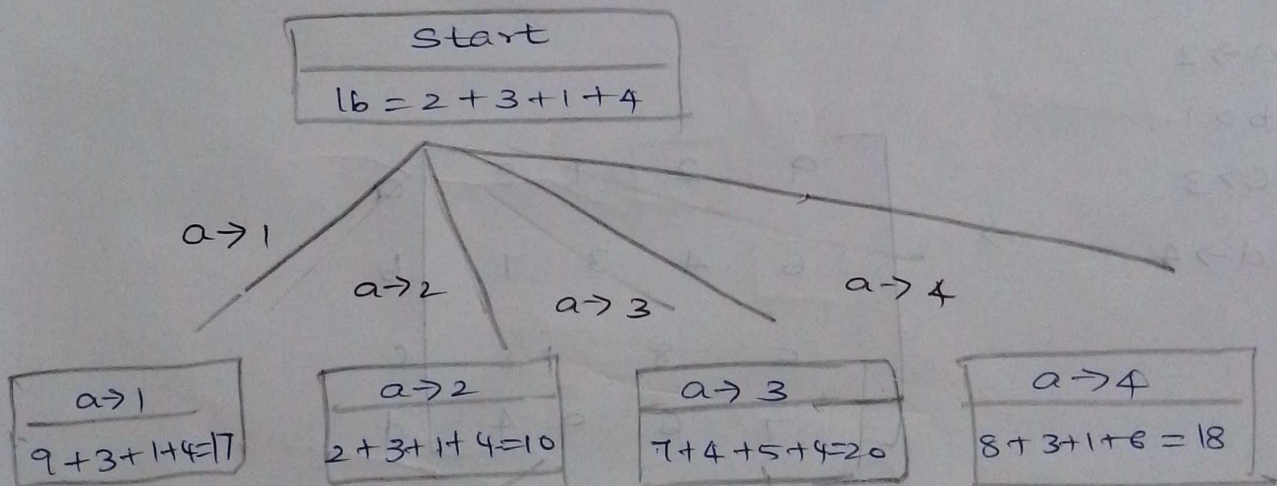
Assignment Problem - Branch & Bound

Branch and Bound is an algorithm used to find the optimal solution.

	J ₁	J ₂	J ₃	J ₄
Person a	9	2	7	8
Person b	6	4	3	7
Person c	5	8	1	8
Person d	7	6	9	4

Select the lower bound in each row

⇒ Generate state space tree



Here, 10 is minimum, we extend the tree from 10.

as lb of 1 lies in the same column of a → 3 (ie) 7, we move on to next lower bound which is 5

as, $a \rightarrow 2$, we assigned 2 for a, So, Remaining shld be taken

$$\begin{array}{|l} b \rightarrow 1 \\ \hline 6+2+1+4=13 \end{array}$$

$$\begin{array}{|l} b \rightarrow 3 \\ \hline 3+2+5+4=14 \end{array}$$

$$\begin{array}{|l} b \rightarrow 4 \\ \hline 7+2+1+6=17 \end{array}$$

Here, Instead of 4, we move on to next lower bound (i.e) 6.

Here, b is declared with 1. So Remaining will be 3 and 4.

$$\begin{array}{|l} c \rightarrow 3 \\ \hline 1+2+6+4=13 \end{array}$$

$$\begin{array}{|l} c \rightarrow 4 \\ \hline 8+2+6+9=25 \end{array}$$

(b \rightarrow 1 value)

AS 13 is minimum,

So, we conclude that

$$a \rightarrow 2$$

$$b \rightarrow 1$$

$$c \rightarrow 3$$

$$d \rightarrow 4$$

\Rightarrow

9	2	7	8	a
6	4	3	7	b
5	8	1	8	c
7	6	9	4	d