Design and Analysis of Algorithms

Assignment: 3

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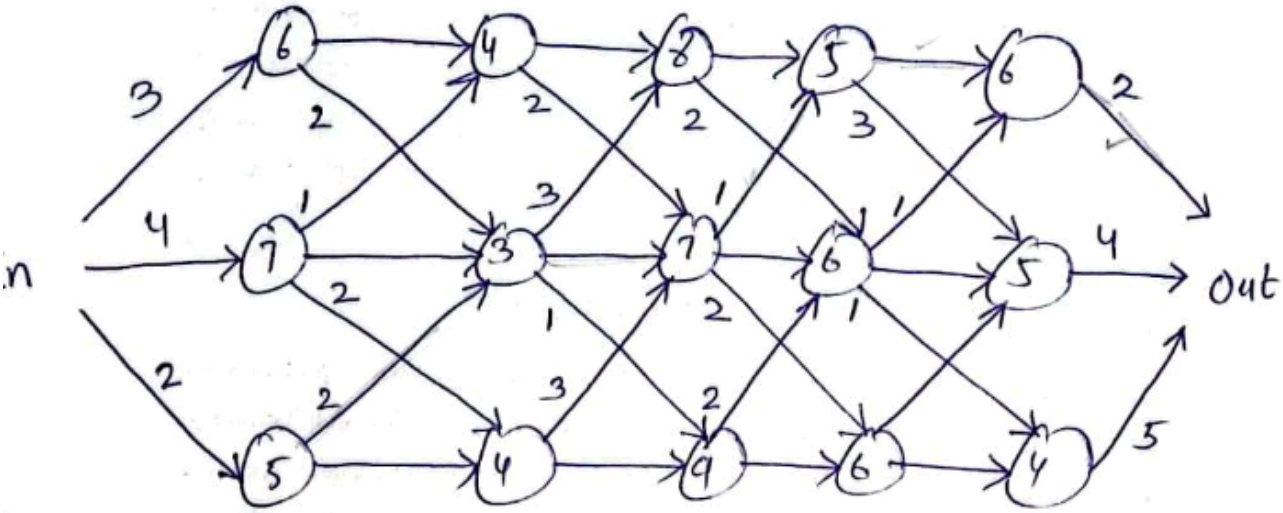
Question: 01

Apply dynamic programming to find fastest way through factory.



Let say $F_i[j]$ for costs & $l_i[j]$ for lines

f^* = overall cost , l^* = final line

$$f_1[j] = \begin{cases} e_1 + a_{1,1} & \text{if } j = 1 \\ \min(f_1[j-1] + a_{1,j},\ f_2[j-1] + t_{2,j-1} + a_{1,j}) & \text{if } j \geq 2 \end{cases}$$

	1	2	3	4	5
$f_1[j]$	9	13	21	25	31
$f_2[j]$	11	12	19	25	30
$f_3[j]$	7	11	20	26	30

$l_1[j]$	1	1	1	2	1
$l_2[j]$	2	3	2	2	2
$l_3[j]$	3	3	3	3	2/3

$L^* = 1, \quad F^* = 33$

Estimated path: