

$$w(1) = 4$$

$$w(2) = 1$$

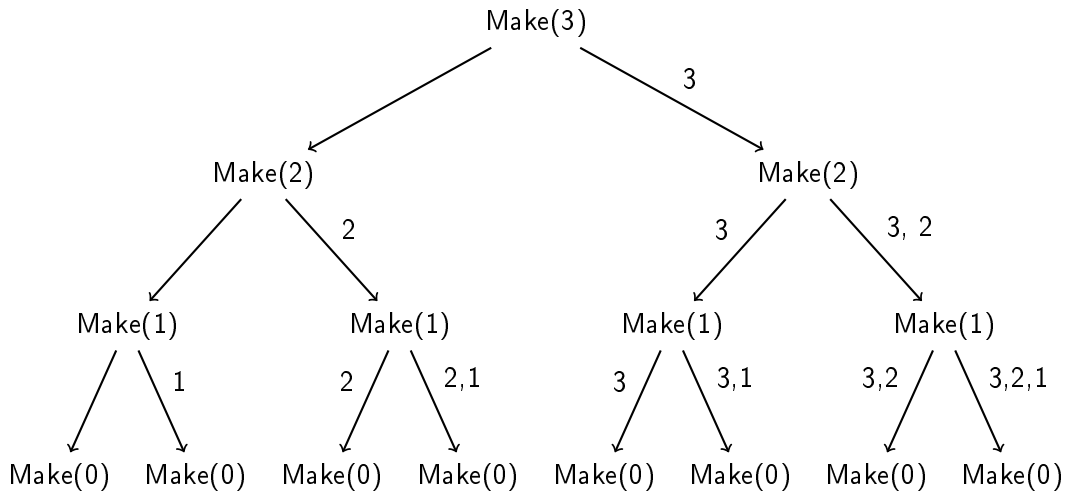
$$w(3) = 1$$

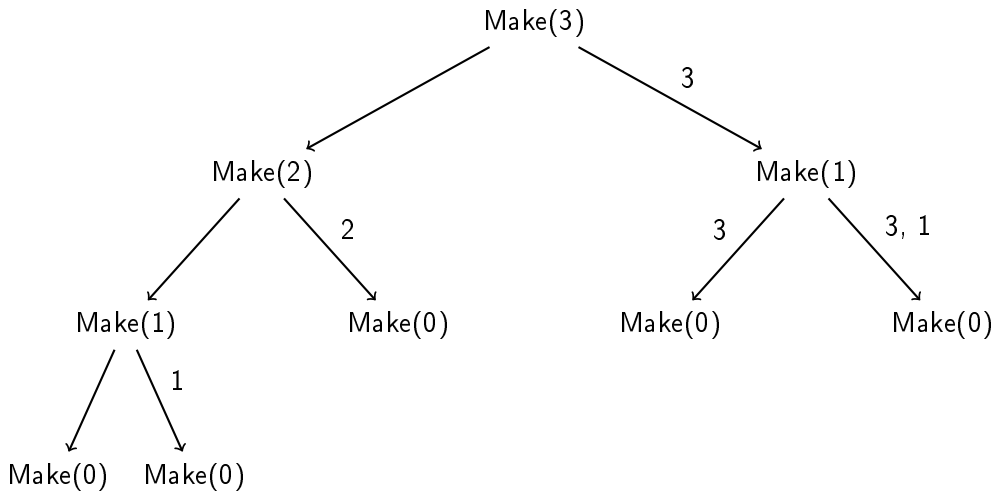
$$w(4) = 1$$

$$\overline{\quad} w(1) = 1$$

$$\overline{\quad} w(2) = 3$$

$$\overline{\quad} w(3) = 1$$





$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

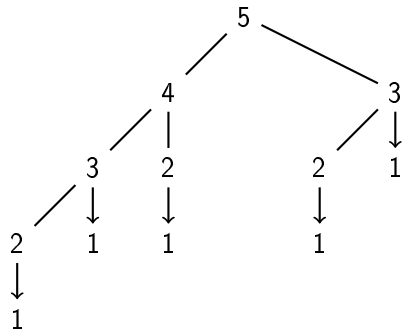
$$w(1) = 4$$

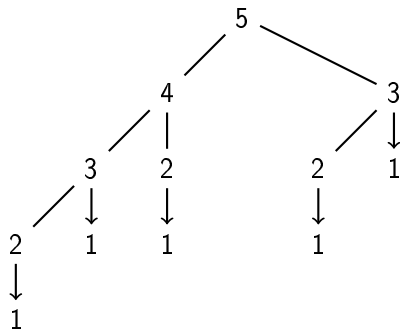
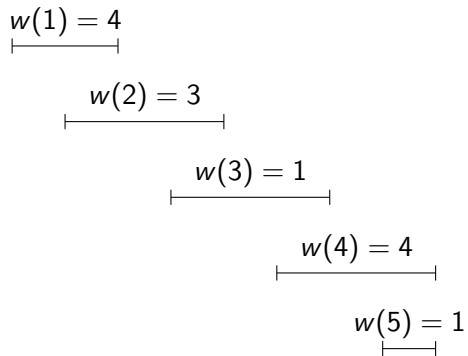
$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$





$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)					

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)	4				

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)					

\swarrow 4
 $+4$

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)					

Diagram illustrating the recurrence relation for $OPT(k)$ at $k=5$. A curved arrow from $OPT(5)$ to $OPT(4)$ is labeled $+4$, and a curved arrow from $OPT(5)$ to $OPT(3)$ is labeled $+3$.

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)		4		4	

\leftarrow \leftarrow
 $+4$

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)		4	4		

Diagram illustrating the calculation of OPT(k) for k=2 and k=3:

- For k=2, OPT(2) = 4, which is calculated as w(2) + OPT(1) = 3 + 4.
- For k=3, OPT(3) = 4, which is calculated as w(3) + OPT(1) = 1 + 4.

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)		4	4	5	

+4 (from OPT(1) to OPT(2))
 +1 (from OPT(3) to OPT(4))

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)	4	4	5		

Diagram illustrating the calculation of OPT(k) for k=1 to 5. The values are shown in the table above. The diagram shows the recurrence relation being applied:

- For k=1, OPT(1) = 4.
- For k=2, OPT(2) = max{OPT(1), w(2) + OPT(p(2))} = max{4, 3 + OPT(1)} = 4.
- For k=3, OPT(3) = max{OPT(2), w(3) + OPT(p(3))} = max{4, 1 + OPT(2)} = 5.
- For k=4, OPT(4) = max{OPT(3), w(4) + OPT(p(4))} = max{5, 4 + OPT(1)} = 5.
- For k=5, OPT(5) = max{OPT(4), w(5) + OPT(p(5))} = max{5, 1 + OPT(3)} = 5.

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)	4	4	5	8	

+4 (from OPT(1) to OPT(2))
 +1 (from OPT(2) to OPT(3))
 +4 (from OPT(3) to OPT(4))

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)	4	4	5	8	

Diagram illustrating the calculation of OPT(k) for k=1 to 5. The values are shown in the table above. The diagram shows the recurrence relation being applied:

- For k=1, OPT(1) = 4.
- For k=2, OPT(2) = max(OPT(1), w(2) + OPT(p(2))) = max(4, 3 + 4) = 4.
- For k=3, OPT(3) = max(OPT(2), w(3) + OPT(p(3))) = max(4, 1 + 4) = 5.
- For k=4, OPT(4) = max(OPT(3), w(4) + OPT(p(4))) = max(5, 4 + 5) = 8.
- For k=5, OPT(5) = max(OPT(4), w(5) + OPT(p(5))) = max(8, 1 + 8) = 9.

The diagram shows the following transitions and values:

- From k=1 to k=2: +4
- From k=2 to k=3: +1
- From k=3 to k=4: +4
- From k=4 to k=5: +1

$$w(1) = 4$$

$$w(2) = 3$$

$$w(3) = 1$$

$$w(4) = 4$$

$$w(5) = 1$$

$$OPT(k) = \max \begin{cases} OPT(k-1) \\ w(k) + OPT(p(k)) \end{cases}$$

k	1	2	3	4	5
w(k)	4	3	1	5	1
OPT(k)	4	4	5	8	8

+4 (from OPT(1) to OPT(2))
 +1 (from OPT(2) to OPT(3))
 +4 (from OPT(3) to OPT(4))
 (from OPT(4) to OPT(5))