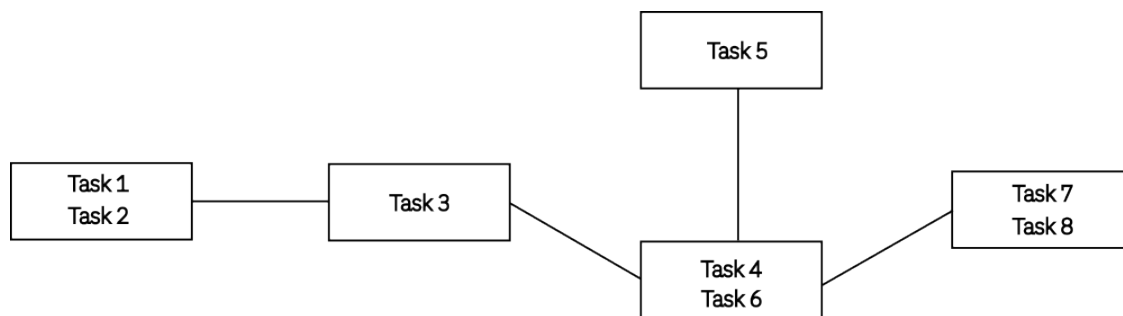


Problem 8-43

Task	Description	Time(sec)
1	Assemble wheels, bearings, and axle hardware	20
2	Assemble brake housing and pad	10
3	Complete wheel assembly	30
4	Inspect wheel assembly	10
5	Assemble boot	30
6	Join boot and wheel subassemblies	20
7	Add line and final assembly	10
8	Perform final inspection	20

Considering the production line achieving an output rate of 120 per hour with the following proposed design:



To find the cycle time (CT), we can use the formula:

$$CT = A/R$$

Where,

$$A = 60^2 = 3600 \text{ (sec)}$$

$$R = 120$$

This gives us:

$$CT = \frac{3600}{120} = 30 \text{ seconds}$$

Given the following list of stations and their assigned tasks, we can compute the total amount of time (in seconds) it takes to complete their tasks, along with each stations idle time (in seconds), using the formula:

$$(N \cdot CT) - \sum t$$

Station	Tasks	Total Time, seconds	Idle Time, seconds
A	1 and 2	$20 + 10 = 30$	$(1 \cdot 30) - 30 = 0$
B	3	30	$(1 \cdot 30) - 30 = 0$
C	5	30	$(1 \cdot 30) - 30 = 0$
D	4 and 6	$10 + 20 = 30$	$(1 \cdot 30) - 30 = 0$
E	7 and 8	$10 + 20 = 30$	$(1 \cdot 30) - 30 = 0$
	Total	$30 \cdot 5 = 150$	$(5 \cdot 30) - 150 = 0$

To find the assembly line efficiency. We use the formula:

$$\frac{\sum t}{N \cdot CT}$$

Which gives us:

$$\frac{150}{5 \cdot 30} = 1$$

$$1 * 100 = 100\%$$