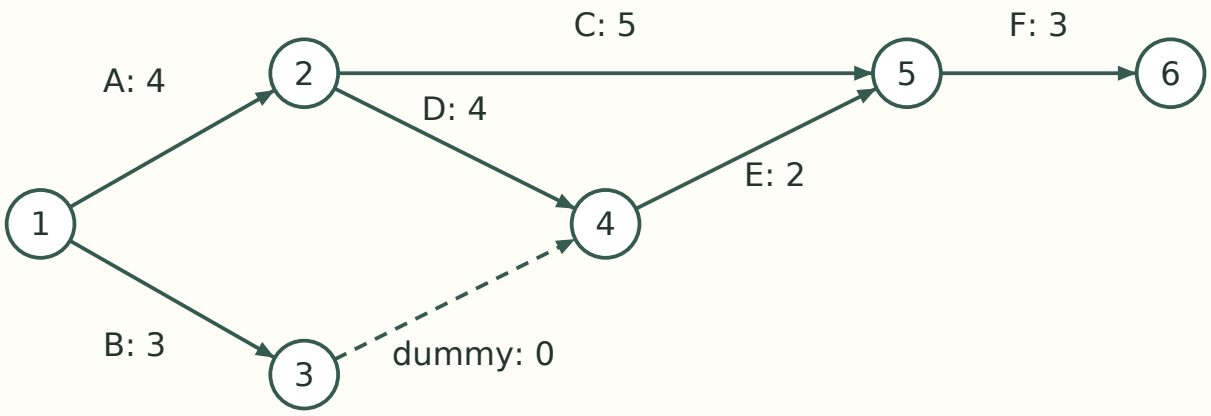
Slack and changes to activities

6 questions | 17 marks

Equivalent correct methods earn the corresponding marks.

1. Calculate the total floats of B and C in the display project. [3 marks]



Activity-on-arrow network; durations are in days.

B: $8-0-3=5$.

C: $10-4-5=1$.

Answer: B: 5 days; C: 1 day.

2. Increase B's duration in the display project from 3 to 7 days. Find the project finish. [3 marks]

A school display project. Times are in days.

Activity	Duration	Immediate predecessors
A	4	None
B	3	None
C	5	A
D	4	A
E	2	B and D
F	3	C and E

E waits for $\max(\text{B finish } 7, \text{D finish } 8) = 8$.

E finishes 10 and F finishes 13.

Answer: 13 days.

3. Increase B's duration instead to 9 days. Find the finish and critical real-activity sequence. [3 marks]

A school display project. Times are in days.

Activity	Duration	Immediate predecessors
A	4	None
B	3	None
C	5	A
D	4	A
E	2	B and D
F	3	C and E

E starts at $\max(9, 8) = 9$.

It finishes 11; F finishes 14.

The B branch now controls.

Answer: 14 days; B-E-F.

4. Activity P has $\mathrm{ES} = 6$, $\mathrm{EF} = 10$, $\mathrm{LS} = 9$ and $\mathrm{LF} = 13$. Find its duration and float. [2 marks]

$\text{Duration} = 10 - 6 = 4$ (also $13 - 9 = 4$).

$\text{Float} = 9 - 6 = 3$.

Answer: Duration 4; float 3 time units.

5. A non-critical route takes 12 hours and the project finishes in 16. Two consecutive tasks on that route are both extended by 3 hours. What happens? [3 marks]

Its shared allowance was $16 - 12 = 4$.

The combined extension is 6, so it exceeds the allowance by 2.

Answer: That route becomes 18 hours, delaying the project by 2 hours.

6. The project deadline is fixed at day 20, but its earliest completion is day 18. Explain why a backward scan using 20 answers a different question from one using 18. [3 marks]

A looser finish target creates two days of overall schedule allowance.

State the finish target before interpreting zero or positive float.

Answer: The day-20 scan finds latest times that meet the deadline; the day-18 scan finds float that preserves the earliest completion.