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In [4]: #Name: Mohith Dande
Problem Summary:
Four people need to cross a narrow bridge at night.
They have only one torch, which is required to cross.
The bridge can hold at most 2 people at a time.
If two people cross together, they go at the slower person's speed.
Times for each person to cross:
Person A: 1 minute
Person B: 2 minutes
Person C: 7 minutes
Person D: 10 minutes

Goal:
Get all four people across as quickly as possible.
Find the minimum total time.

Optimal Strategy (Total Time: 17 minutes)
Let's label:
A = 1 min
B = 2 min
C = 7 min
D = 10 min

Step-by-step Plan:
A and B cross → 2 minutes
(A stays on other side, B returns)
A returns → 1 minute
Total so far: 2 + 1 = 3 minutes
C and D cross → 10 minutes
(B returns with torch)
B returns → 2 minutes
Total so far: 3 + 10 + 2 = 15 minutes

A and B cross again → 2 minutes
Final total: 15 + 2 = 17 minutes
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Step	Action	Time
1	A & B cross	2
2	A returns	1
3	C & D cross	10
4	B returns	2
5	A & B cross again	2
	Total Time	17 minutes

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Step-by-step with torch carriers:
A and B cross together → torch is with them
A returns with the torch (because someone has to bring it back)
C and D cross together → torch goes with them
B returns with the torch
A and B cross together → torch goes with them again
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In [1]:
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