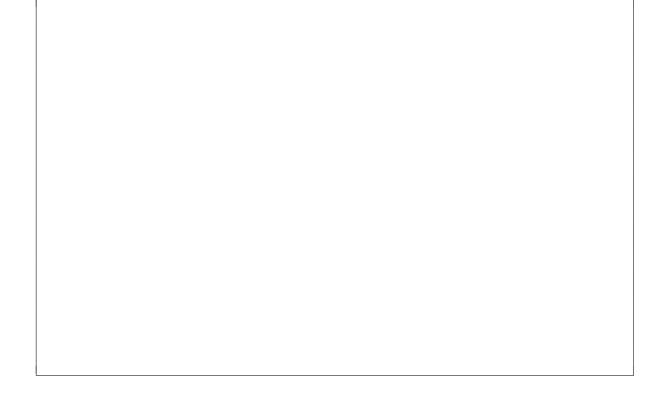


1. A construction company needs to assign 5 carpenters (Alice, Bob, Charlie, David, and Eve) to 4 different tasks (foundation, framing, roofing, and siding). Each carpenter has specific skills that make them more suited to certain tasks. The table below shows their preferences (indicated by a 1) and any disqualifications (indicated by 0).

Carpenter	Foundation	Framing	Roofing	Siding
Alice	1	0	1	0
Bob	0	1	1	0
Charlie	1	1	0	1
David	0	0	1	1
Eve	1	0	0	1

Can you find a perfect matching between carpenters and tasks such that everyone gets assigned a task they are qualified for? If so, use the Ford-Fulkerson algorithm to find this matching. If not, explain why a perfect matching is impossible.

Bonus: Are there any other valid (but not perfect) matchings possible? Explain your answer.





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