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.

2. What are the differences between serial sorting algorithms and sorting networks?

3. How can we sort the following array with selection sort on a sorting network? [2, 3, 1, 4]