Homework: Deterministic Production Control

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A company that makes airplanes has one of them on hand at the beginning of the current month. Orders for this month and for next three months are 1; 2; 1; 0 airplanes, respectively. The company wants to have one airplane on hand at the beginning or the fifth month, which means that a total of 4 airplanes must be manufactured over the next 4 months. Orders for a particular month may be filled from that months production or from inventory. The problem is to find a production schedule that satisfies demand and minimizes the total cost of producing 0,1, or 2 airplanes in a give month is 10, 17, and 20, respectively. The cost of having 0, 1, or 2 airplanes in inventory at the start of a month is 0,3, and 7, respectively.

(a) Draw a network whose shortest path is the best production schedule.

(b) Find the best production schedule by backward induction.