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Fix an integer  $k$ . Given a vertex set of  $n$  elements, the degree sequence of a graph of order  $n$  associated to the elements, a  $k$ -partition of the  $n$  elements, and prescribed numbers  $c_{ij}$  assigned to the  $i^{\text{th}}$  and  $j^{\text{th}}$  partition classes. Is there a simple graph on these  $n$  elements as vertices that simultaneously realizes the degree sequence and has  $c_{ij}$  edges between the  $i^{\text{th}}$  and  $j^{\text{th}}$  partition classes? We solve this decision problem with a Monte Carlo algorithm, which runs in polynomial time in  $n$ . When the algorithm provides a positive answer, it is always correct, and when the truth is positive, the algorithm fails to find it with small probability. We have a graph construction algorithm as well, with similar behaviour. (Received August 27, 2019)