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$$\forall i \in [1, N], \forall p_i^1 = (x_i^1, y_i^1), p_i^2 = (x_i^2, y_i^2) \in \{(x, y) | x, y \in [1, M]\}, \exists s_1 \dots s_P, s_1 = p_i^1, s_P = p_i^2, \forall j \in [1, P], s_j = (x_i^j, y_i^j) = i$$