

Sequencing

1. Consider the line segment from 0 to 100 and the following intervals which correspond to cosmids: $I_1 = [0, 10]$, $I_2 = [5, 40]$, $I_3 = [8, 30]$, $I_4 = [25, 55]$, $I_5 = [35, 50]$, $I_6 = [45, 60]$, $I_7 = [50, 65]$, $I_8 = [52, 67]$, $I_9 = [54, 64]$, $I_{10} = [60, 80]$, $I_{11} = [62, 75]$, $I_{12} = [70, 90]$, $I_{13} = [72, 89]$, $I_{14} = [75, 98]$, $I_{15} = [85, 100]$. Find the subset of intervals that covers the whole interval and has the shortest total length.
2. Prove that an auxiliary graph for the smallest subset of cosmids problem is acyclic (does not have a directed cycle).