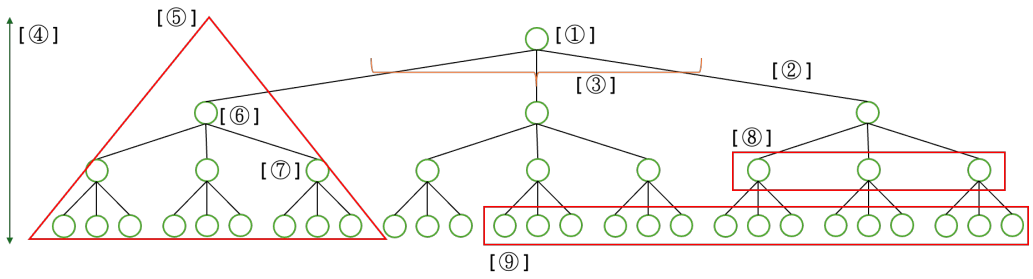
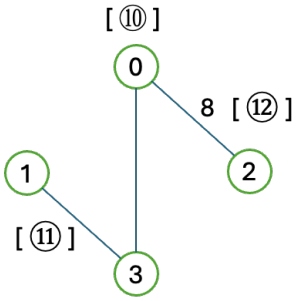
Course: Data Structures (CSE CS203A, 114-1)
Quiz V: Tree/Heap/Graph
December 16, 2025, 16:30~17:00

Student ID: Student Name:

Q1. (60 pts, 5pts each)
Complete the terminology.
完成術語表

Tree	Graph
	

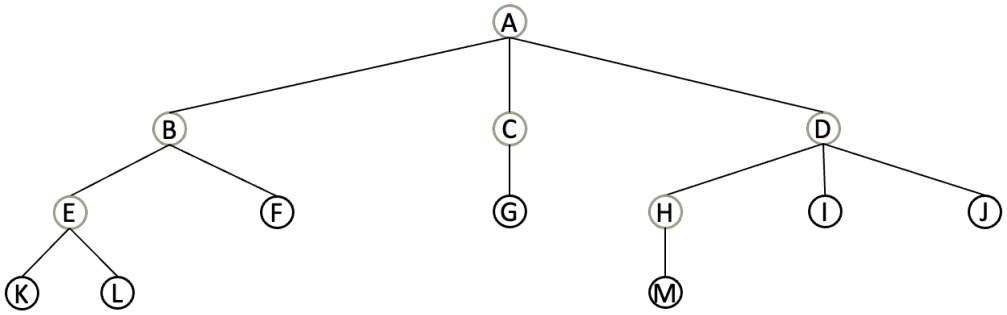
A1:

①	**root node**	②	**edge**
③	**degree**	④	**height / depth / level**
⑤	**subtree**	⑥	**parent node**
⑦	**child node**	⑧	**siblings**
⑨	**leaf node**	⑩	**vertex (node)**
⑪	**edge (link)**	⑫	**edge with weight (cost)**

Q2. (40 pts)

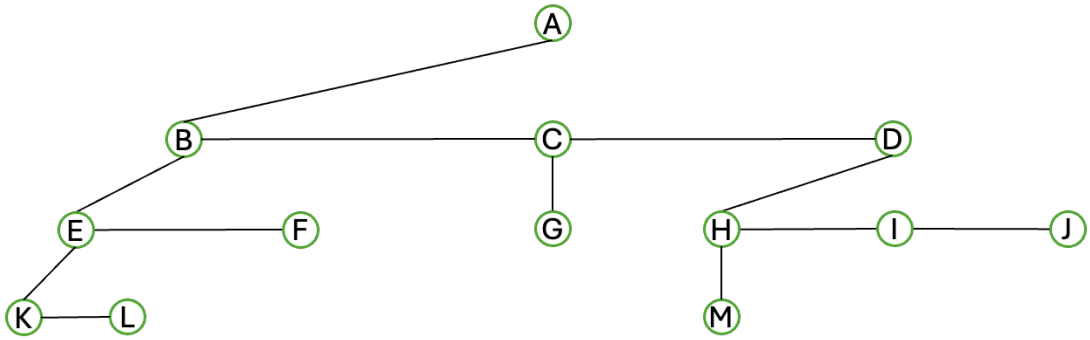
Convert the tree in the figure below into a degree-two (binary) tree, and describe the conversion process.

將下圖中的樹轉換為度為二的樹（二元樹），並描述轉換過程。



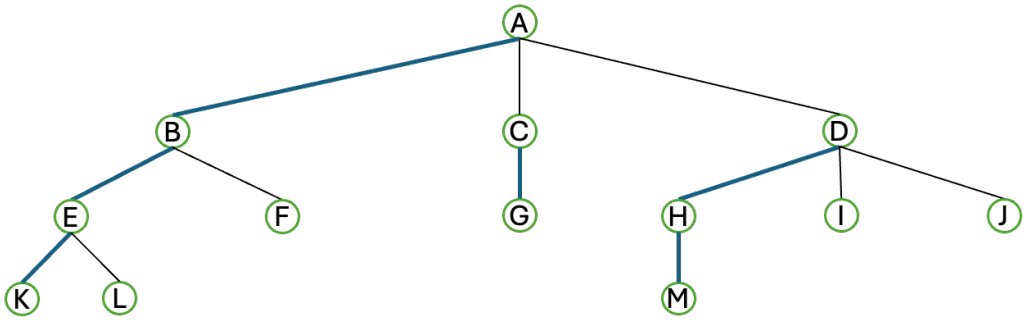
A2:

1. Convert the general tree into left child-right sibling tree representation (required)

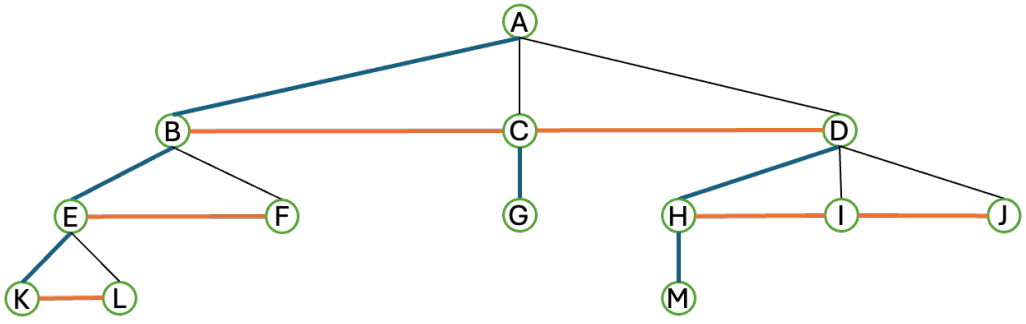


Steps:

a. First-child → left child: For each node, connect its first child **as the** left child**.**

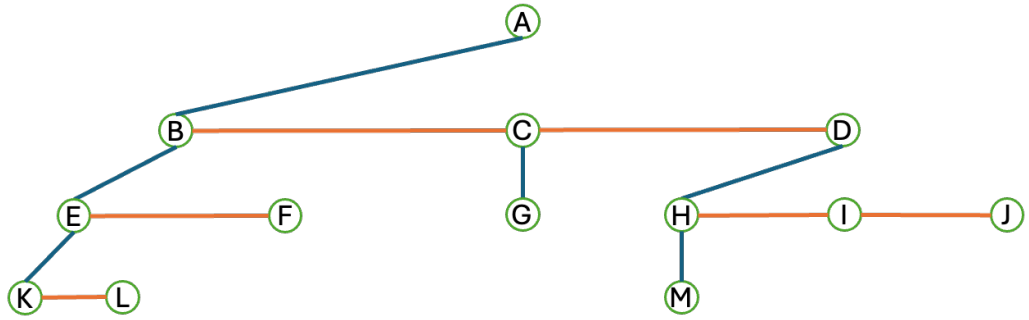


b. Next-sibling → right child: For each node, connect its next sibling **as the** right child**.**



c. Remove all other original sibling edges: Remove all other child links, keeping only the

first-child and next-sibling links.



2. Binary tree obtained