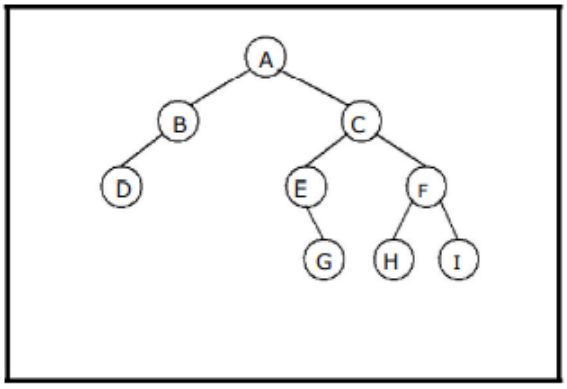
Traverse the following binary tree in pre, post, inorder and level order.

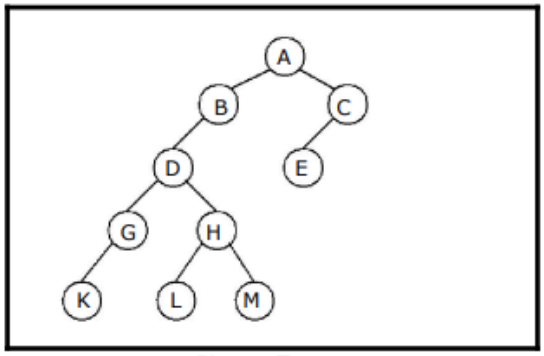


Bina ry T re e

- Preo rder traversal yields: A, B, D, C , E, G , F , H, I
- Posto rder traversal yields: D, B, G , E, H, I, F , C , A
- Ino rder traversal yields: D, B, A, E, G , C , H, F , I
- Level o rder traversal yields: A, B, C , D, E, F , G , H, I

Pre, P o st, Inorder a nd lev e l order T rav ers ing

Traverse the following binary tree in pre, post, inorder and level order.



Bina ry T re e

- Preo rder traversal yields: A, B, D, G , K, H, L, M , C , E
- Posto rder travarsal yields: K, G , L, M , H, D, B, E, C , A
- Ino rder travarsal yields: K, G , D, L, H, M , B, A, E, C
- Level o rder traversal yields: A, B, C , D, E, G , H, K, L, M

Pre, P o st, Inorder a nd lev e l order T rav ers ing

Example 1:

Construct a binary tree from a given preorder and inorder sequence:

Preorder: A B D G C E H I F
Inorder: D G B A H E I C F

Solution:

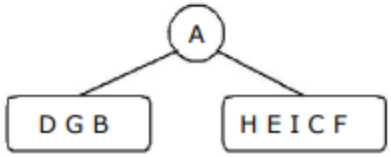
*From Preorder sequence **A** B D G C E H I F, the root is: A*

From Inorder sequence *D G B* ***A*** *H E I C F*, we get the left and right sub trees:

Left sub tree is: D G B

Right sub tree is: H E I C F

The Binary tree upto this point looks like:

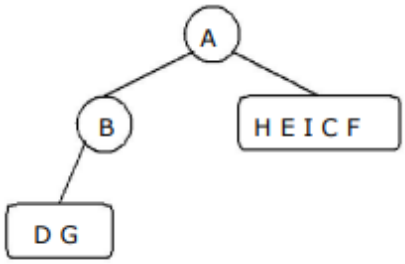


To find the root, left and right sub trees for D G B:

*From the preorder sequence **B** D G, the root of tree is: B*

From the inorder sequence D G **B,** we can find that D and G are to the left of B.

The Binary tree upto this point looks like:

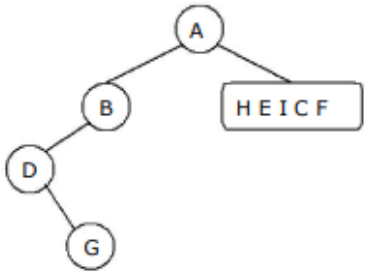


To find the root, left and right sub trees for D G:

From the preorder sequence **D** *G, the root of the tree is: D*

From the inorder sequence ***D*** *G*, we can find that there is no left node to D and G is at the right of D.

The Binary tree upto this point looks like:

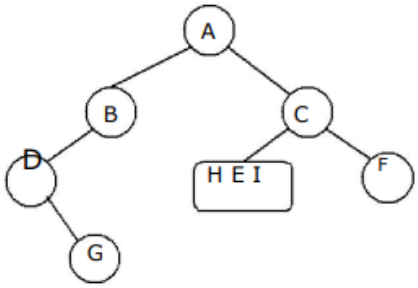


To find the root, left and right sub trees for H E I C F:

From the preorder sequence ***C*** *E H I F, the root of the left sub tree is: C*

From the inorder sequence *H E I* ***C*** *F*, we can find that H E I are at the left of C and F is at the right of C.

The Binary tree upto this point looks like:



To find the root, left and right sub trees for H E I:

*From the preorder sequence **E** H I, the root of the tree is: E*

From the inorder sequence *H* ***E*** *I*, we can find that H is at the left of E and I is at the right of E.

The Binary tree upto this point looks like: