Data Structures

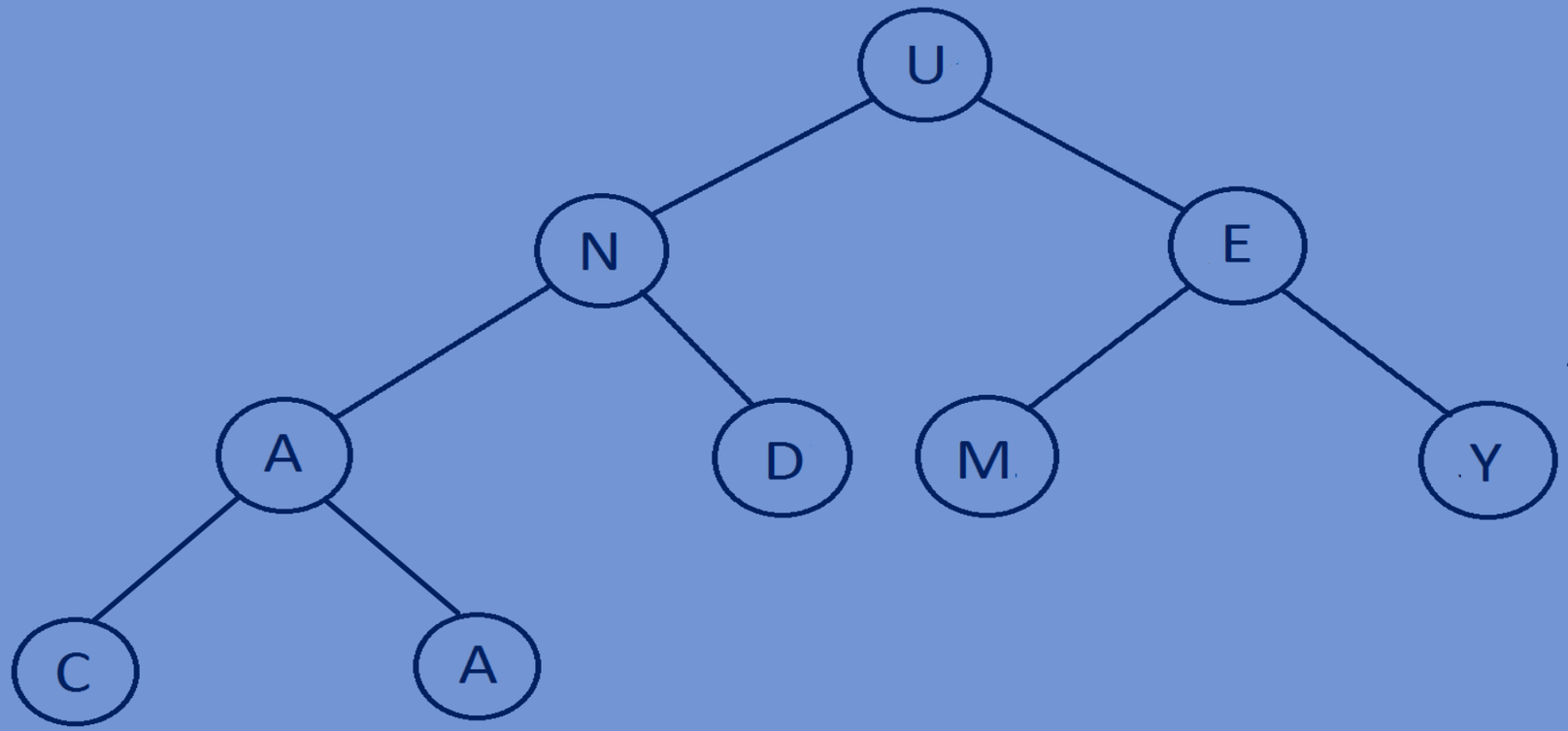
Tree traversals

Binary Tree Traversal:

- In linear data structure like linked list ,there would be a logical start and logical End so that there is only one possible way of traversing the linked list.
- A tree is a non-linear data structure,so it may be traversed in many possible Ways.
- Tree traversal is Process of visiting each node in the tree exactly once in some order.
- Tree traversal is divide into two types.
    1)Breadth first traversal(level order traversal).
    2)Depth first traversal.
- There are three ways of traversing in case of depth first traversal.
    1)preorder traversal.
    2)Inorder traversal.
    3)postorder traversal.

Bredth-first traversal:

- Breadth first traversal is also called as level order traversal.
- In breadth first traversal we travers all the nodes of tree level by level
- First visit the root node and then the nodes in the level(1) and then nodes in level(2) and so on.
- Breadth first traversal for the Following tree is U N E A D M Y C A.

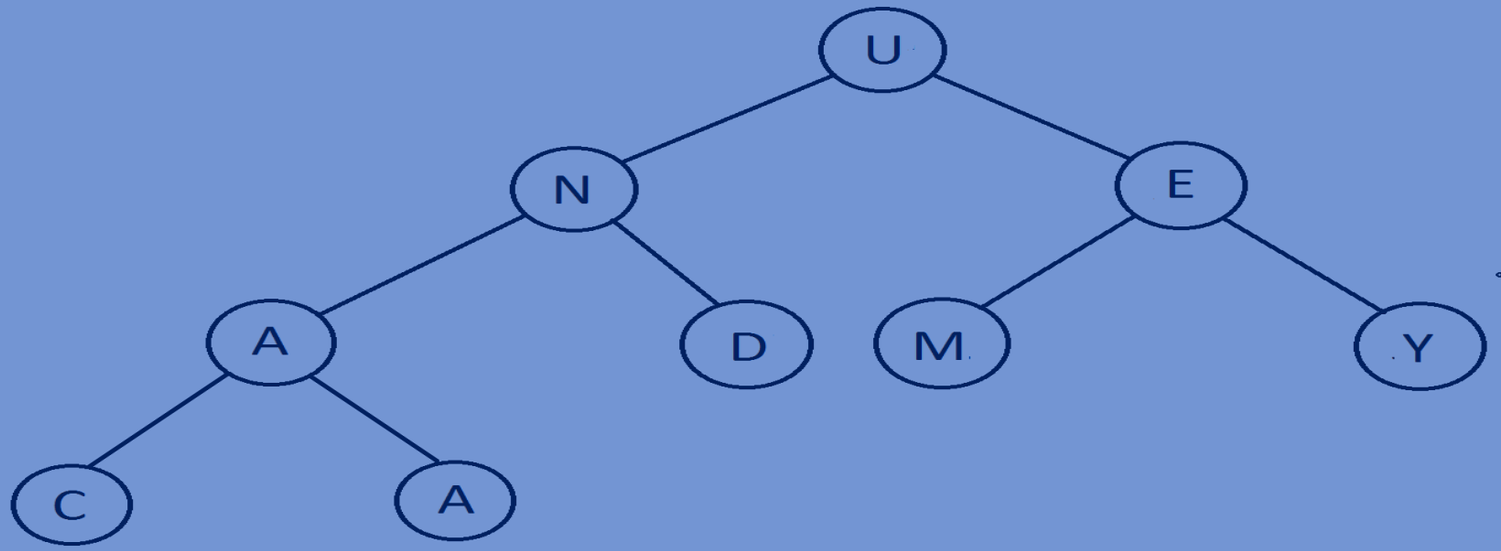


Deapth-first traversal:

- Here the relative order of preorder,inorder and postorder may differ but the Core idea is that visiting a child is visiting the complete subtree in that path.

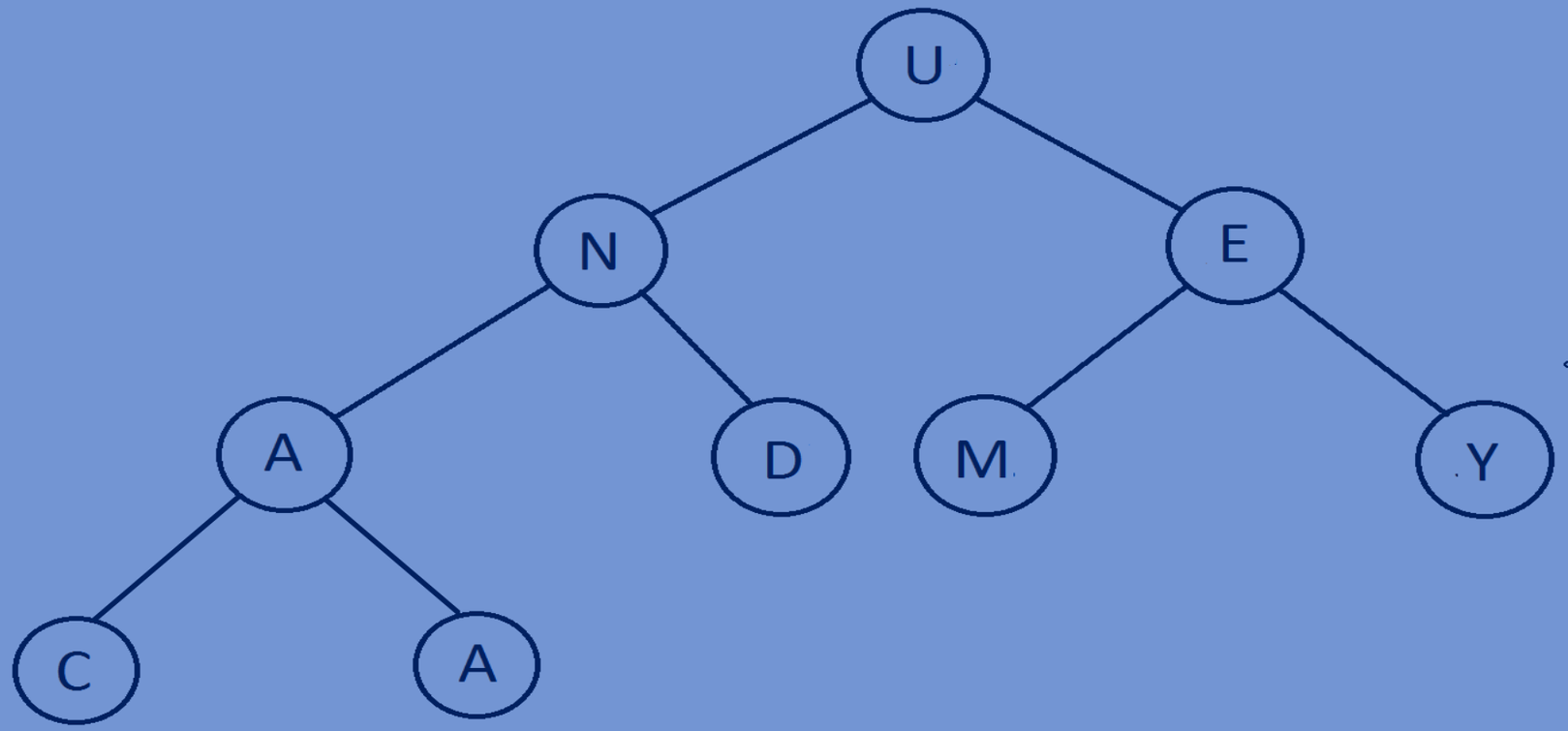
Preorder traversal:

- In this traversal the root node is visited first and then the left subtree and Finally the right subtree,remember that every node represent a subtree itself.
- Root->left->right.
- Preorder traversal for the following binary tree is U N A C A D E M Y.



Inorder traversal:

- In this traversal the left subtree is visited first and then the root node and finally The Right subtree .
- Left->root->right.
- Inorder traversal for the following binary tree is C A A N D U M E Y



Post order traversal:

- In this traversal the left subtree is visited first and then the right subtree and Finally the root node.
- Left->right->root.
- Post order traversal for the following tree is C A A D N M Y E U