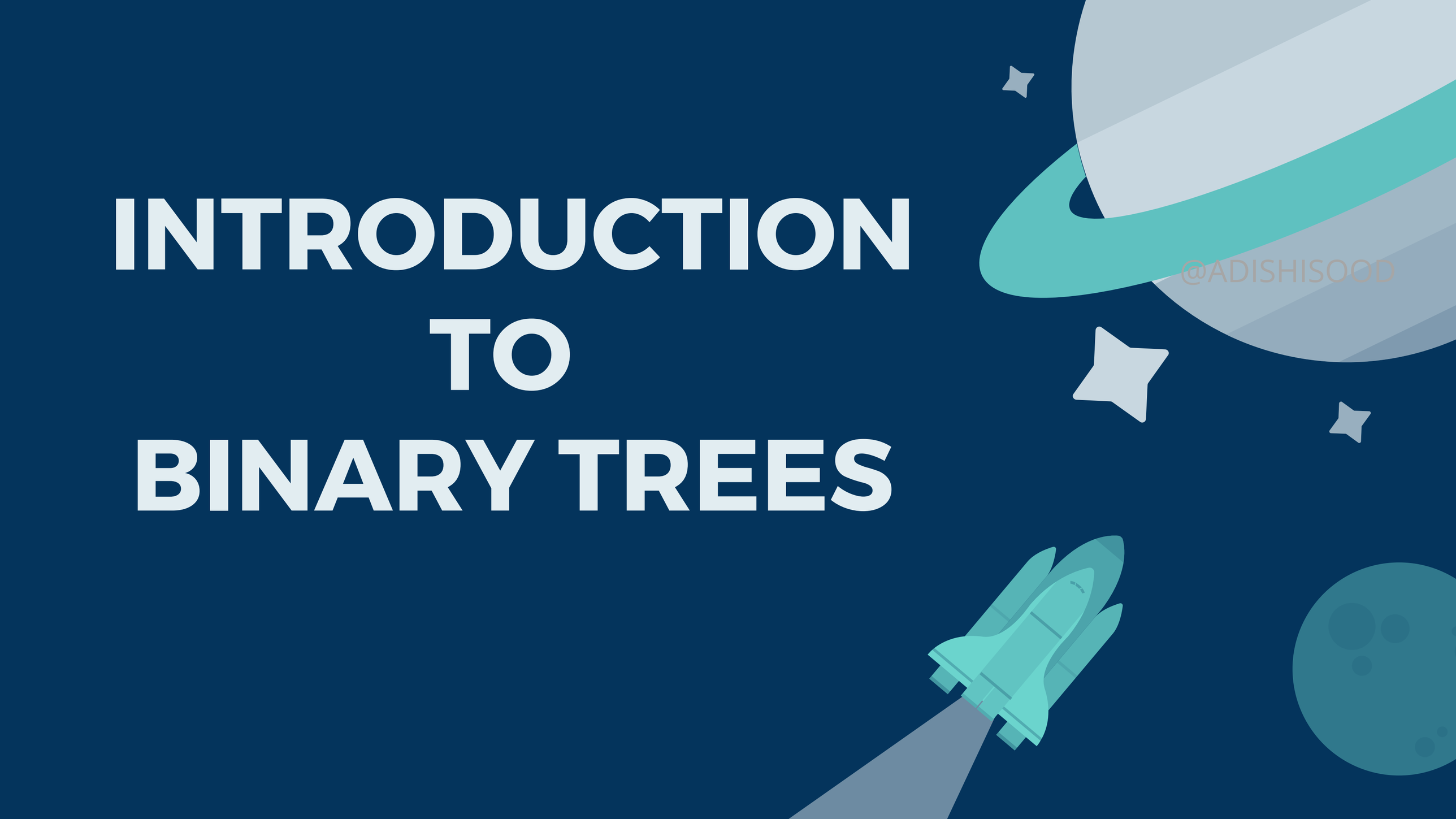
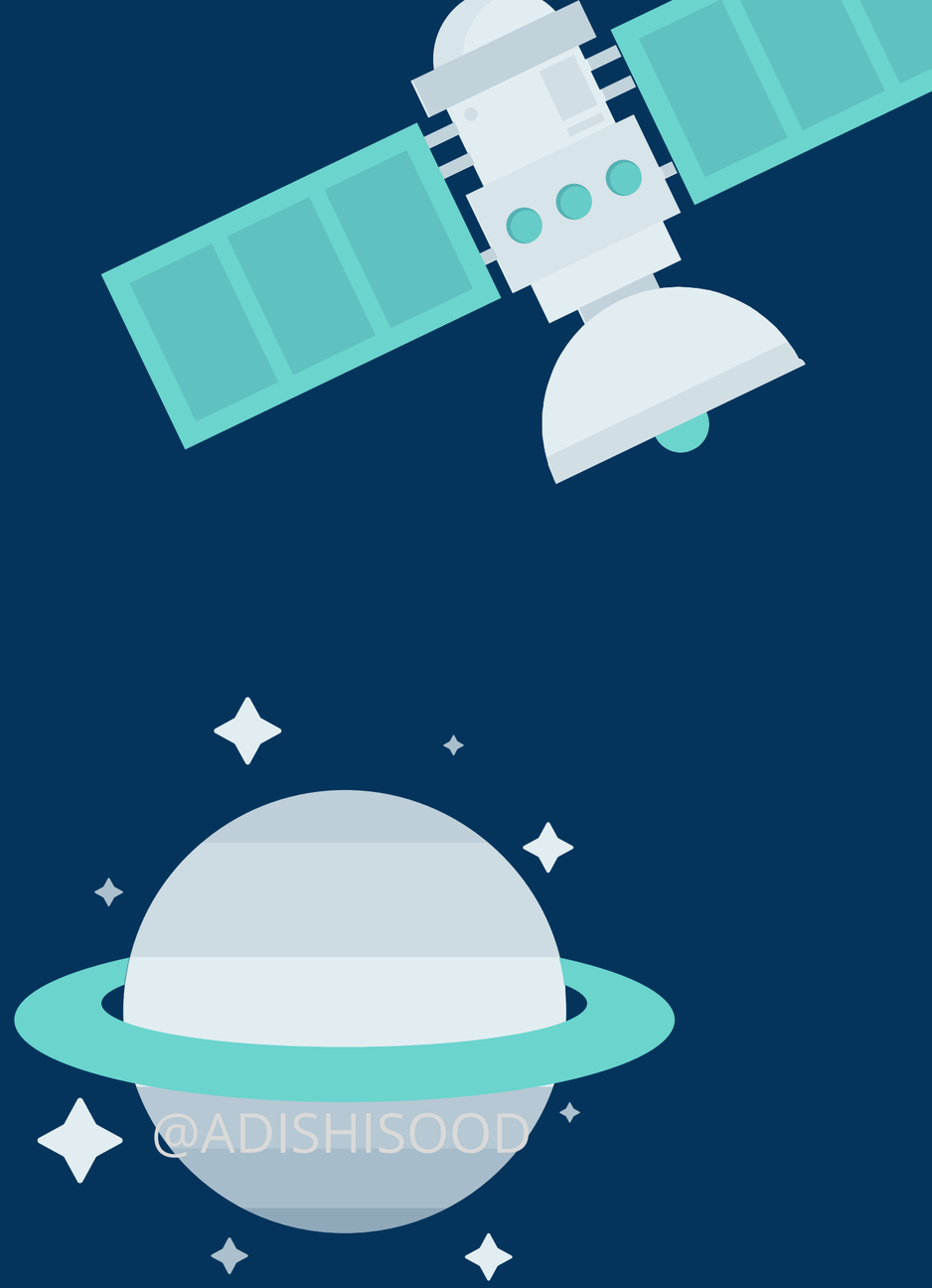
INTRODUCTION TO BINARY TREES



Binary Tree

A binary tree is a hierarchical data structure in which each node has at most two children generally referred as left child and right child.



Each node contains three components:

- POINTER TO LEFT SUBTREE
- POINTER TO RIGHT SUBTREE
- DATA ELEMENT

TYPES OF BINARY TREES

ROOTED BINARY TREE

It has a root node and every node has atmost two children.

FULL BINARY TREE

It is a tree in which every node in the tree has either 0 or 2 children.

PERFECT BINARY TREE

It is a binary tree in which all interior nodes have two children and all leaves have the same depth or same level.

COMPLETE BINARY TREE:

It is a binary tree in which every level, except possibly the last, is completely filled, and all nodes are as far left as possible.

BALANCED BINARY TREE

It is defined as a binary tree in which the height of the left and right subtree of any node differ by not more than 1.

DEGENARATE TREE

It is a tree in which each parent node has only one child node. It behaves like a linked list.

What are BFS and DFS for Binary Tree?

A TREE IS TYPICALLY TRAVERSED IN TWO WAYS:

- BREADTH FIRST TRAVERSAL (OR LEVEL ORDER TRAVERSAL)
- DEPTH FIRST TRAVERSALS
  - INORDER TRAVERSAL (LEFT-ROOT-RIGHT)
  - PREORDER TRAVERSAL (ROOT-LEFT-RIGHT)
  - POSTORDER TRAVERSAL (LEFT-RIGHT-ROOT)