# **DSA Problems on 3rd June (Face Prep)**

# 1. Diameter for binary tree:

CODE:

class Node:

    def \_\_init\_\_(self, data):

*self*.data = data

*self*.left = *self*.right = None

class Height:

    def \_\_init\_\_(self):

*self*.h = 0

def diameterOpt(root, height):

    lh = Height()

    rh = Height()

*if* root is None:

        height.h = 0

*return* 0

    ldiameter = diameterOpt(root.left, lh)

    rdiameter = diameterOpt(root.right, rh)

    height.h = max(lh.h, rh.h) + 1

*return* max(lh.h + rh.h + 1, max(ldiameter, rdiameter))

def diameter(root):

    height = Height()

*return* diameterOpt(root, height)

*if* \_\_name\_\_ == "\_\_main\_\_":

    root = Node(1)

    root.left = Node(2)

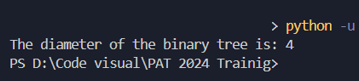
    root.right = Node(3)

    root.left.left = Node(4)

    root.left.right = Node(5)

    print("The diameter of the binary tree is:", end=" ")

    print(diameter(root))

OUTPUT: