Data Structure and Algorithms **Computer Engineering Degree** **University Carlos III of Madrid** **COURSE 2021-2022**	uc3m | Universidad Carlos III de Madrid

Second Mid Term Exam. April 27, 2022

Name:

Instructions:

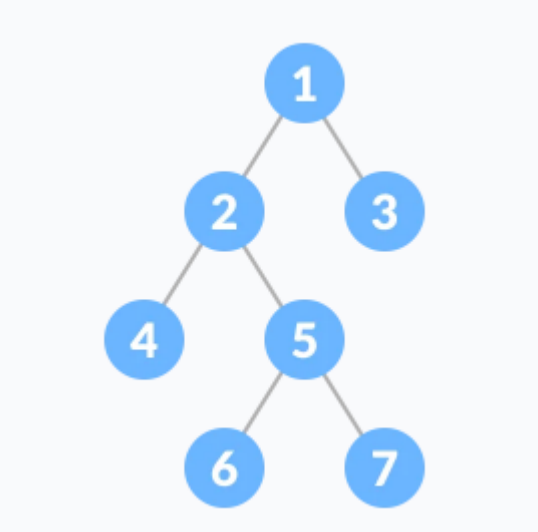
- Exam duration: 60'.
- Download midtermexam87_2.zip and unzip it .
- You must write your solution in the file **midtermexam87_2.py**. Add a python comment at the beginning of the file with your first and last name.
- DO NOT MODIFY the midtermexam87_2_test.py file (it helps you test your solution).
- Only your Python framework (Spyder, Pycharm) can be open on your computer. You are not allowed to consult any other material (code, notes, books, etc).
- When there are 5 minutes left, the teacher will notify you to upload your solution. You will be then allowed to open Aula Global and upload the midtermexam87_2.py file (only this file) to the “MidTerExam” activity in Aula Global.
- It is your responsibility to check that you have uploaded the correct version of the file.
- Cell phones must be turned off and can never be on the table.
- You cannot leave the classroom until the end of the exam.
- It is not allowed to go to the bathroom.

PROBLEM:

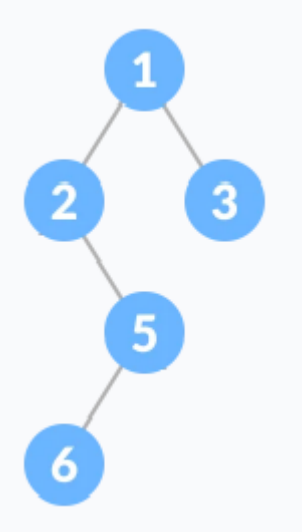
A **full binary tree** is defined as a binary tree in which **all nodes have either zero or two child nodes**.

The MyBST class allows you to represent binary search trees. In the MyBST class, implement a new method, **isFullBinary(self)**, that returns **True** if the tree is a full binary tree and returns **False** if not.

Examples:



Full Binary Tree: True



Full Binary Tree: False

For the solution to be considered correct, the proposed function must be correct (it solves the problem), robust (has no errors and works for any input) and efficient in terms of temporal and spatial complexity (avoid the use of auxiliary structures). Also, the code should be easy to understand and maintain.