Sam is a supplier for mobile phones in your locality and he needs a database for mobile phones to be maintained, you need to store the following information about each of the mobile phones, the model name (considering the unique string name for each mobile), price (considering no two mobile have the same price), company (string), camera megapixels (float), colour (string), RAM(integer), battery backup (integer), removable batteries (boolean). For Sam, the queries of concern are querying using Mobile Name and price (which are both unique, individual). Sam consults a database designer and he suggests using the AVL tree as the primary data structure. Now your task is to implement the database for Sam using the AVL tree as your primary data structure.

Your database should support the following operations:

A: Add mobile to the database (name, price, company, camera, colour, RAM, battery, removable battery)
QP: Query database using price (print “Not Found” in case of any issues)
QN: Query database using Name (print “Not Found” in case of any issues)
DP: Query database using price and delete model for the database (print “Not Found” in case of any issues)
DN: Query the database using the Name and delete model for the database (print “Not Found” in case of any issues)
R: Get all mobile phones with price in a certain range (with price in ascending order)
T: Terminate the programme

Automatically also assign an auto-increment ID to each database entry, print operated id, in case of all operations.

Note: For this assignment use two AVL trees, one to query for Name and another for Price. For range-based queries, you need to use the properties of AVL trees. For example, consider the prices 55,12,35,60,32,75, simply searching element-wise would not work, you need to form an AVL and get range based queries using properties of AVL.

Sample Test Case 1:
A Nokia 6.2, 12000, Nokia, 24, Grey, 8, 3000, 0
A Samsung Galaxy A12, 10000, Samsung, 8, Red, 6, 5000, 0
A Dell 1001, 13000, Dell, 4.5, Green, 7, 45000, 0
QP 12000
QP 7000
R 11500 14500
DN Nokia 6.2
A Xperia, 15000, Sony, 5.9, Blue, 10, 60000, 1
T

Output:
ID: 1

ID: 2
ID: 3
ID: 1, Nokia 6.2, 12000, Nokia, 24, Grey, 8, 3000, 0
Not Found
ID: 1, Nokia 6.2, 12000, Nokia, 24, Grey, 8, 3000, 0
ID: 3, Dell 1001, 13000, Dell, 4.5, Green, 7, 45000, 0
Deleted ID: 1
ID: 4