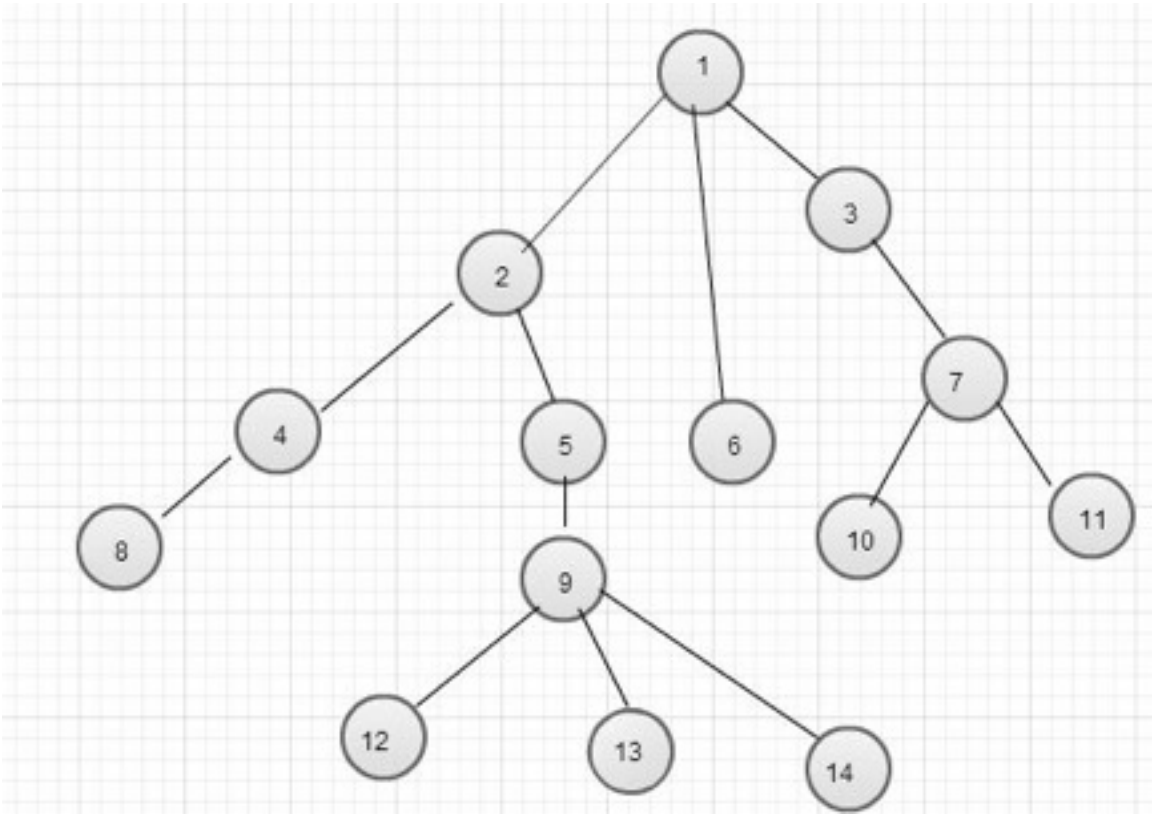
Q1. Study the following tree:



Each node of the tree has two attributes : a) name (mentioned inside the circles) and b) value. The edges are undirected.

(i) Design the above tree using appropriate data structures. Please assume that the tree can have any number of children.

(ii) Traverse the tree and return all the node names where value is greater than a specified number, taken as user input and stored in a variable named “threshold”.

Q2. Given an arbitrary string :

(i) Implement an algorithm to determine if a string has all unique characters.

(ii) Can you implement the above without using any additional data structures?

Q3. The bookings table at goibibo has the following schema:

Name	Email	Mobile	Bookingdate	Bookingid	Amount_paid
Varchar	Varchar	Varchar	Datetime	Varchar	int

One row of the table corresponds to one booking done on goibibo.

A user is identified by a unique combination of the following : (Name, Email, Mobile).

(i) Write a query to find out all the users who have not done a booking in the last 6 months on goibibo.

(ii) Write a query to get the last bookingid of all such users.

Q4. (Optional)

You are a customer of goibibo.com, as well as a developer in the data insights team. What are some data-driven intelligence/features that you would like to develop for goibibo.com, that will make it stand apart from the rest?

Please be specific - 1 or 2 points only, and each point should have maximum 1 line explaining it.