Exercise Java

Note: it is not required to provide fully compilable code. It can also be pseudo code or a description of the solution. Please do not hesitate to ask for clarifications when necessary.

Provide a class that handles city data in a tree. Read a dataset from a datasource of your choice (file, relational database, webservice,....). It should contain as information: City, country and continent e.g. (Freiburg, Germany, Europe). 10 data entries are sufficient. [Example: https://de.wikipedia.org/wiki/Liste_der_gr%C3%B6%C3%9Ften_Metropolregionen_der_Welt#Liste]

The data should be filled in a tree-based, hierarchical structure with one additional root node "World". The progress of adding nodes to the tree should be logged to the console. It should be checked that the data is consistent e.g. no city can be added to two different countries and each country must belong to one continent. For the implementation, encapsulate the logic in separate classes and methods where appropriate.

Be prepared to discuss:

- Where could your implementation be improved? (We don't expect it to be perfect!)
- Where could interfaces be used in the implementation?
- What about the performance in case of huge datasets with e.g. 10 million rows?
- How can the tree be made thread-safe?