Université Grenoble Alpes
Statistique en grande dimension
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Lab 1: first steps with graphs in Python

Thorough this lab, we will use the example given in the first lecture,
X_1: season (can take on 4 values)
X_2: rain (binary yes/no)
X_3: sprinkler (binary on/off)
X_4: wet (binary yes/no)
X_5: slippery (binary yes/no)

1. Implement the corresponding undirected graph in Python using the package `NetworkX`.
2. Implement also the directed graph.
3. Compute on Python the parents of X_4, and its ancestors.
4. Compute on Python the children of X_3, and its descendants.
5. Write a function that provides all possible paths between two nodes, in an undirected graph.
6. Write a function that says if a set of vertices is blocking a path in a given graph.
7. Write a function that says if two nodes are d-separated by a given set in a given graph.