Beihang University
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Data Management and Artificial Intelligence Homework 1

Task 1 ***Networkx – Graph construction and properties***

Networkx is a Python package for the creation, manipulation and study of the structure, dynamics and functions of complex network. To construct a graph and obtain its properites, one could refer to the tutorial in the official website of networkx: `https://networkx.org/documentation/stable/tutorial.html`.

1. Use Networkx to construct the graph shown in Figure 1.
2. Use Networkx to get all nodes and edges of the graph.
3. Use Networkx to get the degree of a given node in the graph.
4. Use Networkx to get all neighbor nodes of a given node.
5. Use Networkx to set an attribute for a node, and access this node attribute.

Task 2 ***Graph Algorithms – Depth-first search***

Implement the depth-first search (DFS) with the graph built with Networkx in Task 1. The function should show the start_time and end_time of node exploration. Think about the time complexity of DFS.

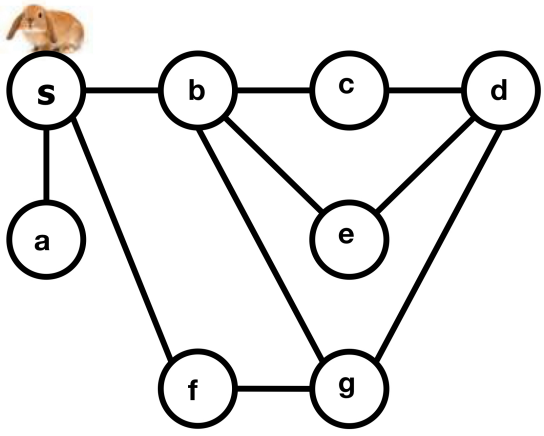

Figure 1: Graph of Task 1