CSC 591: Homework #1

Due on Sunday, August 28, 2016

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Problem #1

A customer asks you to provide the most efficient implementation of the following operations over a large graph (about 10,000 vertices): add/delete edges/vertices.

1.

What questions would you ask the customer that will help you to make the right decision about the customer's request? [Hints: Check the types of graphs]

- What exaclty is being optimized? Space or time?
- How often will these operations occur?
- Is the graph Directed or undirected?
- Is the graph cyclic or acyclic?
- Do edges contain data such as weight or labels? If so, what?
- Do vertices contain data such as weight or labels? If so, what?
- Is the graph simple or a hyper graph?
- Is the graph dense or sparse?
- Is the graph unipartite, bipartite, or multipartite?
- Do nodes have self-loops?
- Is the graph static or dynamic?
- Is the graph complete, just connected, or disconnected?
- Are general statistics about the graph known, such as mean and standard deviation of degrees of the nodes and anything else? If so, what are they?

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