Generic Programming Project (UE14CS337 / 14CS337)

Project Title : Implementation of a Generic Graph Data Structure

Abstract :

In this project, we look to implement a generic graph data structure, using C++. We will provide the implementation of an Iterator class to enable the client to perform DFS/BFS traversal on the graph. An implicit ordering of the nodes of the graph would be defined as “lower the cardinal number associated with a vertex node, greater the priority for that vertex to be visited before a corresponding connected higher numbered vertex, according to the graph traversal algorithm employed”. This cardinal number would be implemented as a member field of the node class. Further, multiple constructors will be provided, in order to support creation of graphs in various methods such as through a matrix, from a text file etc.

We would also enable the user to use the graph in conjunction with applicable functions from the algorithms STL. A few such functions (tentative) are :

- count, count_if
- find, find_if
- search
- copy, copy_if
- max_element, min_element

An initial conception of the abstract template/ layout of our class design is as follows:

```
class Graph
{
        class Node{};
        class Iterator{};
        Iterator begin(){}
        Iterator end(){}
};
```

Progress of the project can be tracked at : www.github.com/varunnrao/Generic-Graphs/

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