Design Project Proposal - Tanish Tyagi

I am interested in exploring different methods of storing data in a graph (adjacency list, adjcency matrix). In addition, I think it is important to understand how these storage methods can be used to solve relevant Computer Science problems.

Steps of my project:

1. Review different methods of traversing a graph (DFS/BFS).

2. Understand different methods of storing data in a graph. I will understand the pros and cons of all storage methods and implement them in code.

3. Learn and understand the graph properties below:

- Connectivity
- Weights
- Directed and Undirected
- Neighbors and Degrees
- Colorings
  I will also understand how to write code that checks for these properties in a graph.

1. Learn, understand, and implement the following graph algorithms:

- Floodfill
- Functional Graphs

1. Apply these algorithms to the following USACO problems:
   - Icy Perimeter: http://www.usaco.org/index.php?page=viewproblem2&cpid=895 (Floodfill)

- Switching on the Lights: http://www.usaco.org/index.php?page=viewproblem2&cpid=570 (FloodFill)

- The Bovine Shuffle: http://www.usaco.org/index.php?page=viewproblem2&cpid=764 (Functional Graphs)
  I will be learning all of this material from the usaco.guide website.