Graph Representation

Adjacency Lists

```
public static void main(String argv []) {

        Graph g = new Graph();
        g.addVertex("CS1");
        g.addVertex("DiscStruct");
        g.addVertex("DataStruct");
        g.addEdge("CS1","DiscStruct");
        g.addEdge("DiscStruct","DataStruct");
        g.addEdge("CS1","DataStruct");
        g.printGraph();
}
```

```
class Vertex {

    String name;
    LinkedList<Edge> inList ;
    LinkedList<Edge> outList;

    public Vertex(String s) {
        name = s;
        inList = new LinkedList<Edge>();
        outList = new LinkedList<Edge>();
    }
}
```

```
class Edge {
    Vertex origin;
    Vertex destination;

    public Edge(Vertex o, Vertex d) {
        origin = o;
        destination = d;
    }
}
```

public class Graph {}

```
Hashtable<String,Vertex> h;

public Graph() {
   h = new Hashtable<String, Vertex>();
}
```

```
public void addVertex(String s) {
    Vertex v = new Vertex(s);
    h.put(s,v);
}
```

```
public void addEdge(String s1, String s2) {
    Vertex u = h.get(s1);
    Vertex v = h.get(s2);
    if ( (u != null) && (v !=null) )
    {
            Edge e = new Edge(u,v);
            u.outList.add(e);
            v.inList.add(e);
        }
}
```

```
public void printGraph() {
    Collection<Vertex> vertexList = h.values();

    for(Vertex v: vertexList) {
        System.out.print(v.name + " :");
        for(Edge e: v.outList)
            System.out.print(" " + e.destination.name);
        System.out.println(" ");
    }
}
```