UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Data Structure and Algorithm

Laboratory Activity No. 10

Intro to Graphs

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I. Objectives

Introduction

A graph is a visual representation of a collection of things where some object pairs are linked together. Vertices are the points used to depict the interconnected items, while edges are the connections between them. In this course, we go into great detail on the many words and functions related to graphs.

An undirected graph, or simply a graph, is a set of points with lines connecting some of the points. The points are called nodes or vertices, and the lines are called edges.

A graph can be easily presented using the python dictionary data types. We represent the vertices as the keys of the dictionary and the connection between the vertices also called edges as the values in the dictionary.

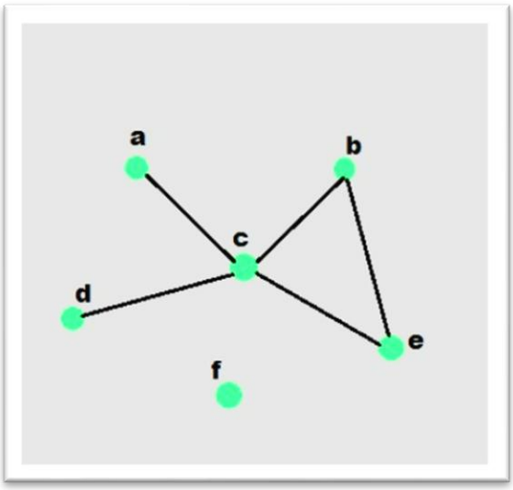

Figure 1. Sample graph with vertices and edges

This laboratory activity aims to implement the principles and techniques in:

- To introduce the Non-linear data structure – Graphs
- To discuss the importance of Graphs in programming

II. Methods

A. Discuss the following terms related to graphs:

1. Undirected graph
2. Directed graph
3. Nodes
4. Vertex
5. Degree
6. Indegree
7. Outdegree
8. Path
9. Cycle
10. Simple Cycle

III. Results

Discuss the following related to graphs:

1. UNDIRECTED GRAPH - All edges have no direction therefore the graph is undirected.
2. DIRECTED GRAPH – The edges have no direction therefore the graph is not directed.
3. NODES - The graph contains node of 6. Node = {a, b, c, d, e, f}
4. VERTEX - V = {a, b, c, d, e, f,}
5. DEGREE - degree (4) c = {a, b, d, e} the f has no degree.
6. INDEGREE – There is no indegree in the given graph because its undirected.
7. OUTDEGREE - There is no indegree in the given graph because it's indirect.
8. PATH – {(a > c > d), (d > c > b), (a > c > e > b) }
9. CYCLE – { e > c > b > e }
10. SIMPLE CYCLE – { e > c > b > e }

IV. Conclusion

In conclusion, the graph that is shown above is a undirected graph but it has some of the following properties that you can see on it.

References

[1] Co Arthur O.. "University of Caloocan City Computer Engineering Department Honor Code," UCC-CpE Departmental Policies, 2020.