1. Introduction:

This document is about the group project for "Object Oriented Programming with

Java - Advanced" course in winter semester 2019-2020. By the use of advanced object-oriented concepts in Java programming language, the aim of this project is to create a program has fully functional, meet the given requirements and provides a good documentation for users can install, run and see the expected results.

The intended audience of this document is the course instructor, who will use it as the basis for a determination of a portion of our grade. The developed project is based on basic graph definitions, people who are interested in graph can use this as a tool to refer some specific properties of graph.

The secondary goal is to collaborate among team members, assign tasks to members, manage and plan the project to implement the project on time and effectively.

3. Project documentation:

3.1. Technical description:

In this project, a basic analysis of a graph-based communication network model had been implemented, from the input of a model over the appropriate processing of the model data to the output of the information. In particular:

- Reading communication network information from a network model ﬁle (graphml).

- Processing the network model data and acquisition of the necessary information in accordance with the above communication network properties.

- Output the results of the processing into the command line interface (CLI) or the file specified by user.

Given network model has basic properties of graph, this project is possible to:

- Outputs number of nodes, edges and their identities (IDs)

- Determines whether the model is connected or not and calculate its diameter

- Prints shortest path between two vertices according to the Dijkstra algorithm

- Calculates the betweenness centrality measure for a selected node.

The program has to meet following requirements:

3.x: Những hạn chế và khó khăn đang gặp phải:

The program has to meet following requirements:

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Data flow diagram: