

CHAPTER 1

INTRODUCTION

1.1 Background

In this modern era, can not be denied again that science and technology have a fairly rapid development. Housing is a major human need. Having a comfortable home is the dream of everyone. To make it happen of course can be done in various ways. One way is to build your own dream home. In building a house there are many factors that must be considered, one of which is the availability of power lines. Installation of inefficient power grids will certainly lead to cost swelling. With the development of technology, the installation of power grids must be done efficiently and optimally so that it can press the installation budget in order to allocate to other fields. Therefore, it takes knowledge that can be applied appropriately to solve the problem.

Graph theory can be used to solve this problem. The installed electrical network can be represented in the form of a weighted, connected, and undirect graph. The length of the installed power cord can be minimized by using the Kruskal algorithm. Each step in this algorithm will form a tree, which ultimately the purpose of this algorithm is to determine the smallest cost of the minimum spanning tree.

With the explanation of the case above, then this project produces an application that is able to determine the optimization of cable length on the design of the electrical network in the house.

1.2 Scope

The Kruskal algorithm will be implemented into the graph used by this program. This program will display a minimum spanning tree based on a graph of a building plan. The problem formulation in this project is How to determine the

optimization of the length of the power grid cable in a building using Kruskal algorithm?

In order for this project to be more focused and not widening from the topic of discussion, the authors limit the scope of this study with the following limits:

1. The data used is the graph representation of the building plan.
2. The resulting data will be stored in the txt file.
3. Calculation of the Kruskal algorithm covers only the main line.
4. This program has not been able to display the visualization of path result selected by Kruskal algorithm.

1.3 Objective

The purpose of this project is to determine the optimum length of a building's electrical network cable by using the Kruskal algorithm. Furthermore, based on the results of this project analysis is expected to be a learning medium for Unika Soegijapranata students.