

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Literature Study

First of all is to find and study journals that related to algorithms to find minimum spanning tree, so that it can be a reference in this project. Then after that, study and analysis about how the Reverse-Delete algorithm and Boruvka algorithm work, so that they can be implemented into the program.

#### 3.2 Collecting Data

The data that will be used in this project will use 4 sample tests that contain the names of cities and distances between cities that obtained from <https://people.sc.fsu.edu/~jburkardt/datasets/cities/cities.html>, and also using google map to find out the distance between these cities. To create a tree image from the distance between the cities, **Dia diagrams** is used to create the tree graph. Then the data will be entered manually into a CSV file format.

#### 3.3 Analysis

In this step will discuss the data that will be used in testing and also example of tree graph image, and examples of data that have been entered into CSV file format. To make it more easier in implementing the two algorithms in programs, it's necessary to make a flow chart of the program.

#### 3.4 Implementation and Testing

After learning about how the Reverse-Delete and Boruvka algorithms work, then the next step is implementing the two algorithms into the programming language using Python. After the programs runs well and there are no errors, then perform testing that aims to find out whether the algorithm is correct and also to test which algorithm is faster in finding the minimum spanning tree.

### **3.5 Conclusion**

After conducting the testing, conclusion can be drawn from the result of the research that has been carried out in the previous chapter, and also provide further suggestions from this project.

