

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

Here are some steps of research methodology that are made in this research :

#### **1. Literature Study**

The project's literature study is studying several journals about Heap Sort algorithm and data structure that can support in the making of program. From all journals that have been studied, it can be concluded that Heap Sort is a sorting method on binary tree. The value visualized into binary tree and each node will be sorted.

#### **2. Analysis and design**

The scope of this project analysis is analyzing step by step the process of Heap Sort algorithm and implementing the proces into the program. The analysis has come into one conclusion, it is Heap Sort algorithm begins by building a heap of rows of random data. When the data has been inserted into the binary tree, the algorithm will substitute the largest value with the smallest value, then the smallest data is placed on bottom root. This process is also called Heap Rebuild, this process is repeated until the condition of the binary tree is qualified which is the data ordered ascendingly.

The design of the program contains three main menus, there are input random numbers, choose sorting mode, and show sorting result. There are two others menu which are reset the program, and close the program. The program's user interface will be simply designed.

### 3. Implementation and Testing

This project contains implementing tree data structure and Heap Sort algorithm as the implementation. Checking wheter the data sorting process runs correctly or not. If problems were found, they wil be repaired during the program created.

