

CHAPTER 3

RESEARCH METHODOLOGY

These are the steps that implemented in this project

1. Data Collection

Data collection was carried out by conducting a survey to Hermon Community Church to obtain data in the form of a list of church activities and a list of all divisions of church servants and their members.

2. Database Creation

The database is created with a .csv file that lists church activities and lists all church servants and is loaded into memory using a scheduling program with Arraylist data structures in Java.

3. Determining Constraints

The next step is to determine the constraints that will be used for determining whether a schedule is an optimal or not.

4. Applying Genetic and SAHC Algorithm

After the database is formed, genetic algorithms and SAHC are then applied to create an optimal schedule, which is a schedule that meets the specified conditions / constraints then save the results into memory.

5. Creating and Designing Output

The optimized schedule that created by genetic and SAHC algorithm in memory are then written in the output in the form of a .txt file and also history of creating schedules of the scheduling program will be noted in a other .txt file and these two files will be used for analyzing in the next step.

6. Analyzing Output

After an optimal schedule and history of schedule creation in the .txt file are created, then the two algorithms will be analyzed to compare which algorithm is more effective.

7. Creating Analysis Report

The final step is to make a detailed report of analysis of comparison of the two algorithms and determine which algorithm is more effective.

