CHAPTER 3
RESEARCH METHODOLOGY

3.1   Analysis

Analysis is explained step-by-step algorithm in the program, the genetic algorithm start with Gen Encoding, to identify chromosomes that affect the length of genes. After that initial the population by performing a large number of population that comprise the number of chromosome. The population evaluated the fitness value. Selection will selected 4 individual with highest fitness value which will be crossover. Crossover will swap the gen of two individual. After the crossover process then mutation process, the mutation process that being used is swap mutation. The last process is checking the stop factor. Checking the stop factor conducted to evaluate whether the resulting individual is meet the criteria.

3.2   Design

The design is described works of the formula and the flowchart system. First flowchart is illustrated how user input the data. Second flowchart is the genetic algorithm process. Third flowchart is describing to create the population. Then crossover flowchart is describing the crossover process that being execute in the program. Fifth flowchart is the mutation process. And the last flowchart is describe the fitness checking to evaluated the individual.

3.3   Algorithm and Implementation

The programming language used is java. In the program created data structure used is 1. Linked list used to store the room data as well as the space desired by the user before being processed for the formation of the initial population of the individual, 2 Hash table is used to store the initial population of the generated individuals, 3 Array 2D is used to display the final result that has been processed.

3.4   Testing

In Testing will be tested whether the number of different floors will affect the work of the algorithm or not. Testing is done with multiple tests with 2 different problems: First the number of floors used is one (1) floor. The second number of

floors used is two (2). After the test is done the results of the test will be written in chapter five (V).