CHAPTER IV
ANALYSIS DESIGN

4.1 Analysis

4.1.1 Use Case

Firstly, user will check and set the configuration. Then, user will input the polynomial equation. And lastly, user will execute the program by clicking generate button.

The system will get and process the equation. After that, system will execute genetic algorithm to find the result. The result will be displayed along with the cartesian graph.

Figure 1. Use Case Diagram
4.2 Design

4.2.1 Genetic Flowchart

Firstly, user will input polynomial equation to the program. Then, equation is being processed to GA. After that, population will be generated by program. Program will evaluate population and get fitness value for selection method. After that, population will be processed in selection method to eliminate bad solutions. Next, population will go through crossover method and mutation method. Crossover method is a process to complete population because some of the solutions are not selected in
selection method and they are removed from population. Mutation method is the process to change some of the genes of the population and is being done in really small percentage, just about 0-5%. After all the GA process is done, program will check if all the roots are found. If not, program will loop through evaluation until mutation method. After all the roots are found or number of generations is reached maximum value, program will display the result and the cartesian graph.