CHAPTER IV

ANALYSIS AND DESIGN

4.1 Analysis

4.1.1. Use Case Diagram

The actor is user. Users will input the polynomial to be solved. Users will also filling the necessary parameters (particle number, the number of iterations, and others). While the system will retrieve the coefficients and the rank of the polynomial function, run the algorithm, and displays the results.

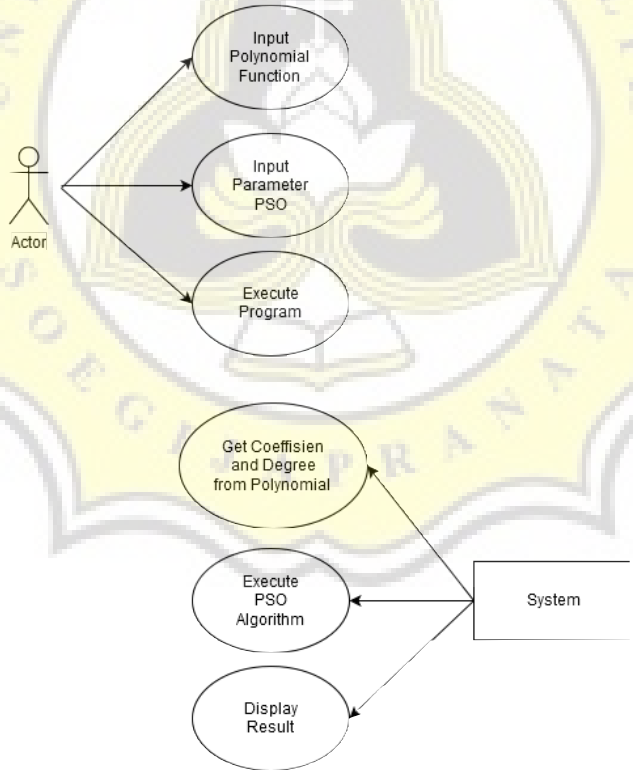

Figure 1. Use Case Diagram

4.1. Design

4.1.1. Flowchart

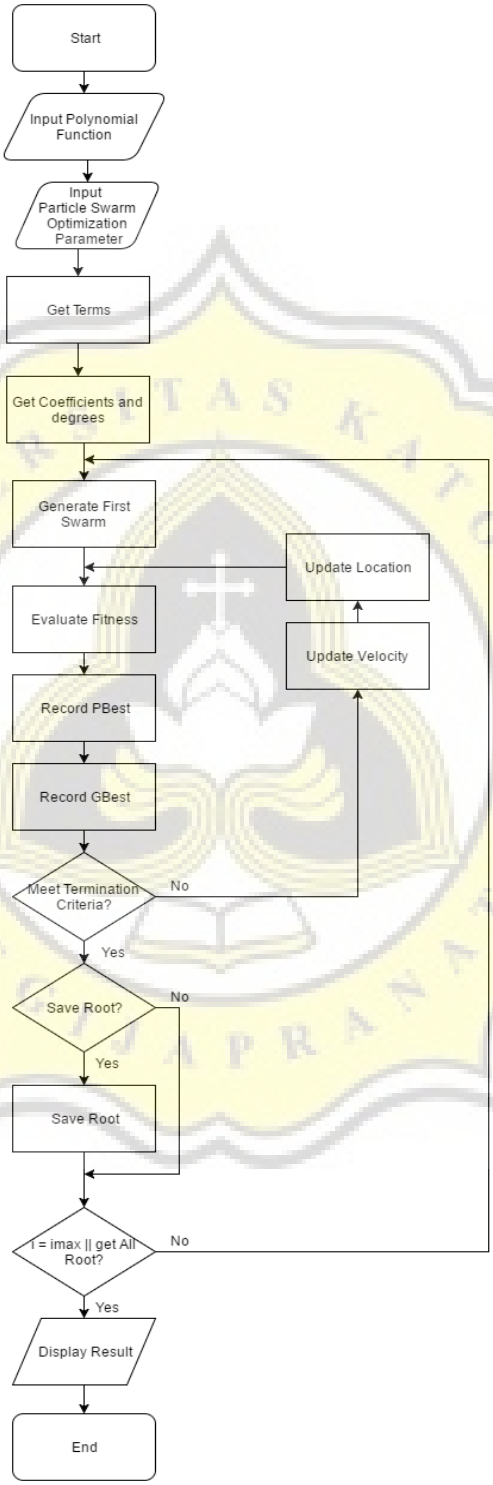

Figure 2. Flowchart

When start the program, users should give the polynomial function that will be resolved. Then user must fill in the parameters for the Particle Swarm Optimization algorithm. Thereafter, when the user execute the program, the system will take the coefficients and exponents of a polynomial function and continue to search the roots of the equation of the polynomial function using Particle Swarm Optimization algorithm. These search are performed repeatedly until all the roots have been obtained or until the maximum number of iterations. When complete the search, the system display the results that already obtained.

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