

CHAPTER 1

INTRODUCTION

1.1 Background

Diabetes mellitus is a disease that should not be underestimated, because this disease can be considered quite dangerous even diabetes mellitus can make the sufferer die. Diabetes mellitus is caused by a buildup of blood glucose due to the inability of the patient's body to produce the hormone insulin. Diabetes mellitus usually occurs or attacks people who have no control in consuming food. This makes nutritional needs unbalanced or insufficient, so that it can cause abnormalities in the body to produce a hormone. In this case most people do not pay attention to the balanced nutritional needs that needed by the body. Determination of the food menu that leads to the composition of food ingredients is one of the important factors to suffice the nutritional needs that needed by the body, especially for patients with diabetes. Determination of food ingredients that are done manually is difficult because each food ingredient has different nutritional content in it.

In calculating the determination of the composition of food ingredients if done manually, the results will be less than optimal. Then it takes an accurate calculation to determine the composition of food ingredients needed by diabetics. To get the optimal results, this project uses a genetic algorithm approach because this algorithm is suitable for solving cases that require optimization in it. While for the data structure of this project used is arraylist.

With the existence of this project will certainly get optimal results or in accordance with what is expected, namely in the form of composition of food ingredients that should be consumed by diabetics to suffice their nutritional needs.

1.2 Scope

The limitations of the problem in this study are as follows:

1. The data used is 51.
2. The types of nutrients used are only 7 types.
3. Data storage with text file models.
4. Using 2 types of selection are RouletteWheel selection and Elitism selection.
5. Using the java programming language.
6. The output is in the form of text files and csv.

Based on the background of this project, the problem formulation is as follows :

1. Can genetic algorithms solve problems in determining main course composition for diabetics ?
2. Can the food combination as the result of genetic algorithm be optimal ?

1.3 Objective

The main objective of this project is to produce optimal composition of food ingredients for diabetes sufferers to suffice the nutritional needs that needed.