CHAPTER 4
ANALYSIS AND DESIGN

4.1 Analysis

The file search application in development raises some issues to be solved. The issues to be solved during analysis step are :

1. How to list file's data in a folder and write it in a .txt form.
2. How to read file's data from .txt file and store it into Linked List.
3. How to implement searching process in the program using KMP algorithm and Wildcard Character.

The data used in the file to perform searching process are filename, date of storage, and the address of the directory where the file was stored. The program needs a class to list files in the folder. The class that can be used to list files is the File class. The working of the File class is to browse the directory or folder and read the files in it. Files that already listed will then be written to a .txt form with Buffered Output Stream class.

List of filenames that have been written in .txt file then read with the assist of File Reader class. File Reader class will read the data of each line from .txt file. The data is then stored in Linked List nodes.

The searching process is the part where the algorithm will be applied. KMP algorithm is a string searching algorithm used to compare data in the form of text or string with the pattern entered by the user. Wildcard character is a special character used for file search. User generally use asterisk (*) that represent many characters in a string, and question mark (?) that represent one character.

4.2 Design

4.2.1 Use Case Diagram

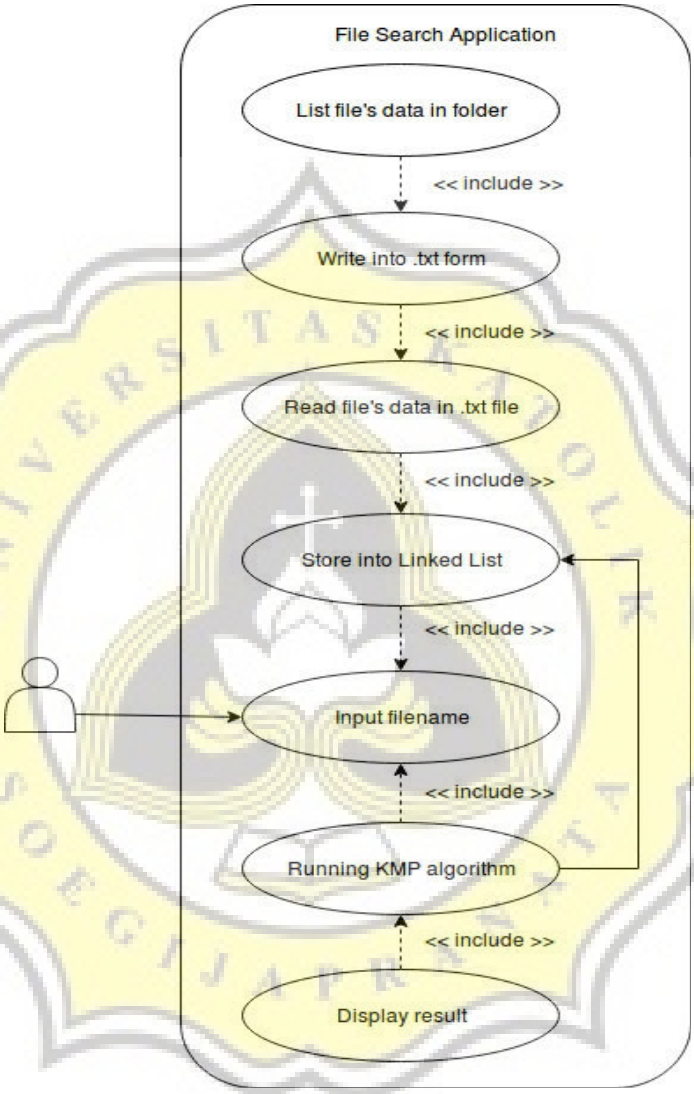

Illustration 4.1: Use Case Diagram

Based on use case diagram above, the program begins with list file's data in folder to earn data required. Filenames that has been obtained then converted into .txt form. The .txt file is read and stored into Linked List. The user types filename in search box then the system will process the input. The KMP algorithm will running during searching process which looking into the Linked List.

Searching process then will locate file's data with similar keywords entered. Finally the system will display the result.

4.2.2 Linked List Flowchart

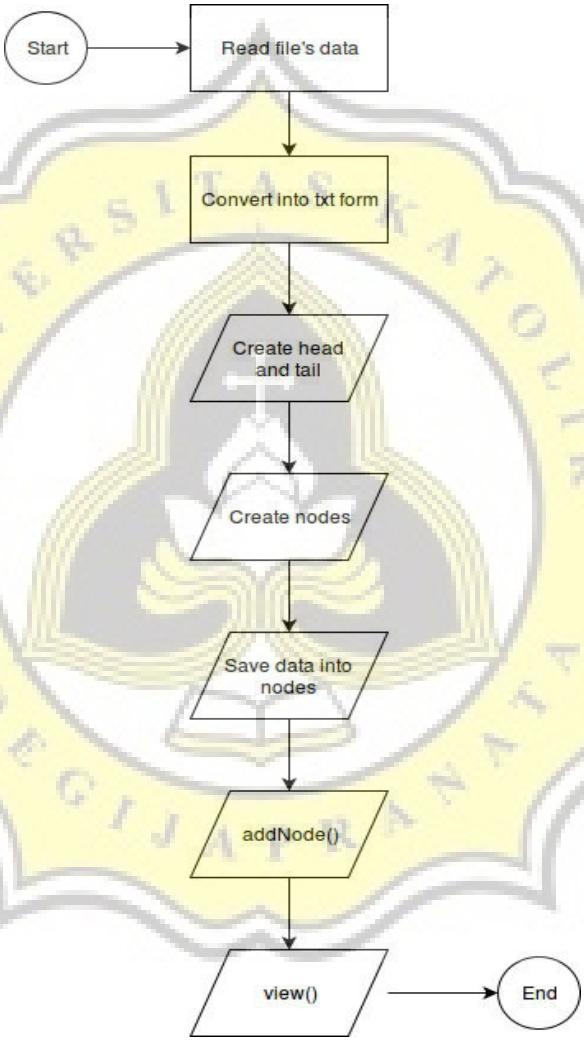

Illustration 4.2: Linked List Flowchart

Based on Linked List flowchart above, the system begins with reading file's data in folder. The file's data that has been read will be converted into txt form. The user then create head and tail to perform Linked List data structure. The user creates nodes to implement the

information required. The file's data then will be saved into nodes. Linked List should able to perform some funtions such as add nodes and view.

4.2.3 Knuth-Morris-Pratt Flowchart

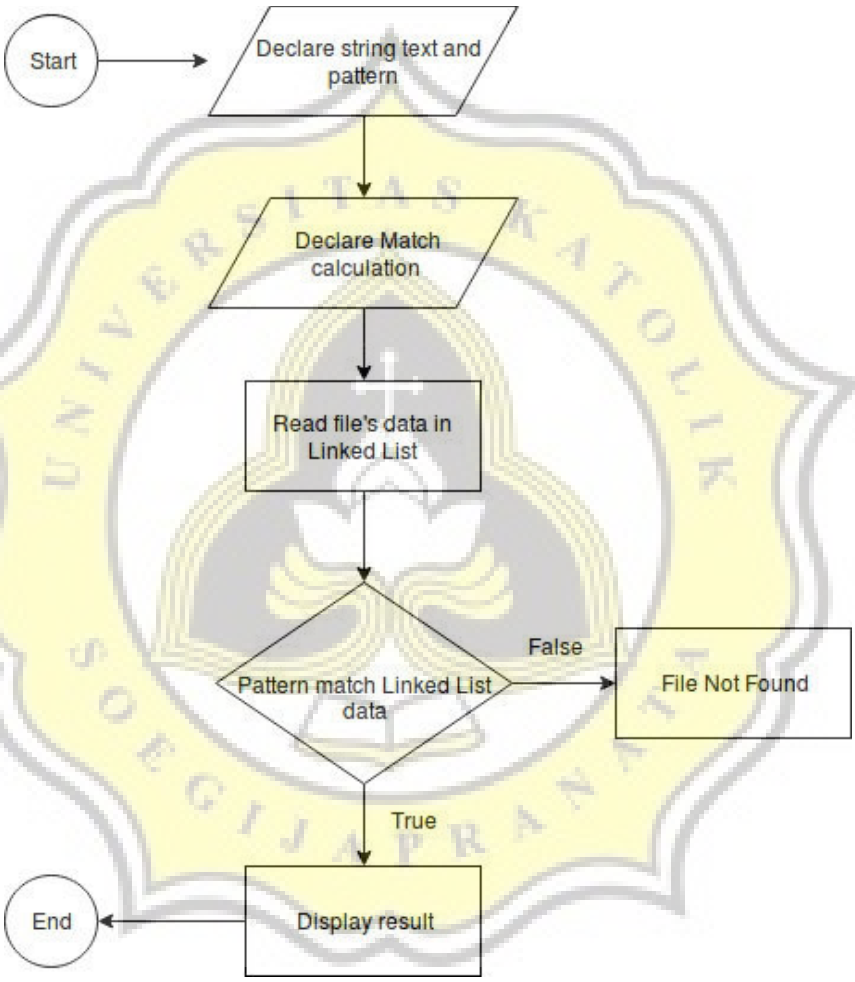

Illustration 4.3: KMP Flowchart

Based on KMP flowchart above, the user declares string text and string pattern in order to compare between both. The user then declare Match calculation to check whether string text is match with string pattern or not. The system will read file's data in Linked List. The system starts to check whether the pattern entered by the user is similar with the list of filenames that are in the linked list.

The result of the similarity that exists between the pattern and the filename will be displayed, if it has no similarity then the system will bring up the message “file not found”.