CHAPTER 4
ANALYSIS AND DESIGN

4.1 Analysis

This sorting visualization program helps in solving numerical sorting process. Sorting visualization works is very simple. The user just inputs how many boxes you want, then the box will appear on the display. In this program the number of boxes is limited to only 20 boxes, because the length of the canvas can not display more than 20 boxes on the screen. Each box inputted in it already has a value of numbers. The number will appear in the input box. For example the user inputs 5 boxes, in each box will appear 5 different numbers. Then 5 boxes are randomized 5 times round until the box does not return to its original position. After the box is scrambled, entered in the sorting process.

In this sorting process using 2 sorting methods. Both methods are exchange and shell sort. The workings of the two sorting methods are different but have the same end result. Here the user can compare the speed and efficiency of the two sorting methods. For the exchange sort method it works by comparing the value of box one with the other box. For example by using 5 boxes with different values. The box will compare with the box next to it 4 loops. If you have not found a sequential answer the box will loop again until the value on the box into a sequence. In this program, the answer will be displayed on the display complete with the description loopingnya. Same with exchange sort, the result of shell sort will also appear on display complete with looping.

Differences in how it works, The shell sort method sort boxes by comparing a box with another box that has a certain distance so that Formed sub-list, then made an exchange if needed. In this program the interval has been determined that K = 4. It means that every 5 boxes inputted has an index value starting from 0. For the 5 boxes have index value 0 - 4. Then the box on index 0

with index 4 compared if the value in index 0 Greater than index 4 then the two boxes on the index are exchanged or vice versa if the value is smaller then the box is fixed. If the index at interval K = 4 is no longer a pair, it will enter at interval K = 1. At this interval the value at index 0 with index 1, index 1 with index 2 so on until the number of boxes inputted will compare each other.

4.2 Desain

4.2.1 Flowchart Exchange Sort

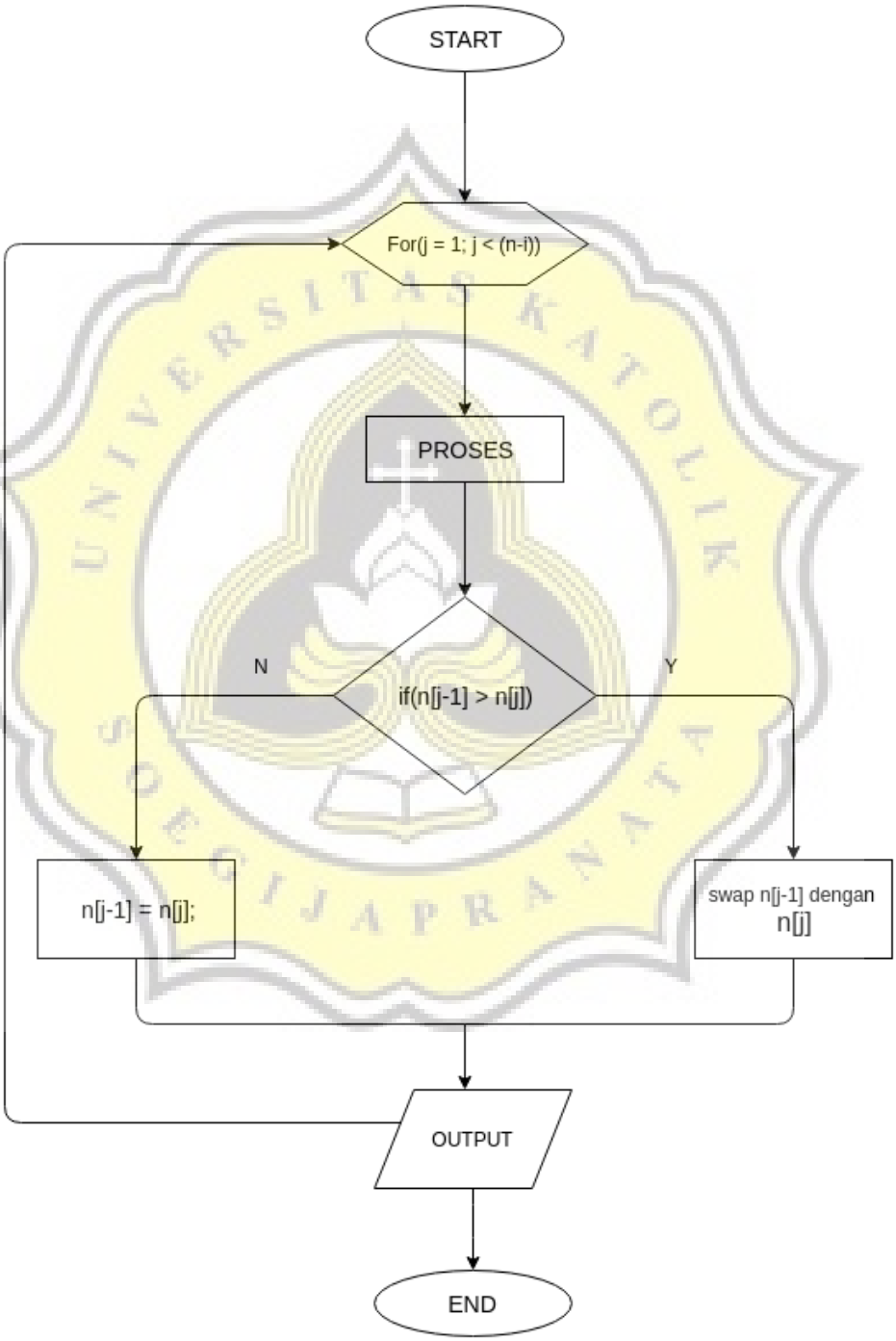

Illustration 4.1: Flowchart Exchange sort

The picture above is a flowchart of the exchange sort process. Program starts with data input. Once the data is inputted, the program enters the exchange sort looping process.

4.2.2 Flowchart Shell Sort

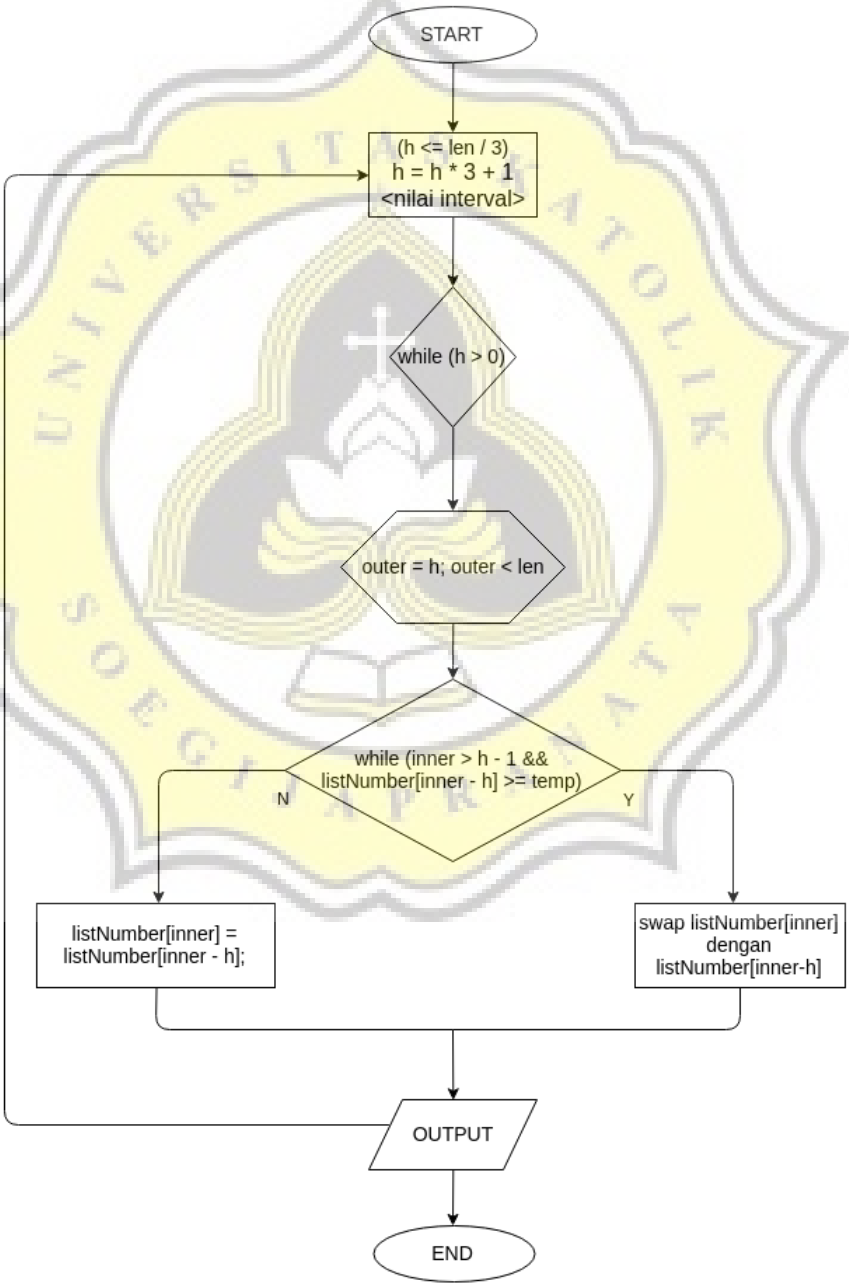

Illustration 4.2: Flowchart Shell sort

The picture above is a flowchart of the exchange sort process. Program starts with data input. Once the data is inserted, the program enters the exchange sort looping process. Shell sort uses intervals or distances for the exchange process. In this program use interval K = 4, Mean value at index 0 compared with value at index 4.