# CHAPTER 4
# ANALYSIS AND DESIGN

## 4.1 Analysis

Minimum spanning tree implementation to solve problems that exist in weights and non directional graphs. The graph that contains points and lines starts from determining the point. Then the point is forwarded to another point along with the weight that follows the point's path.

To start the analysis on this project, building design, mapping that has been made with the specifications of the tap pipe and the water are needed. In this building we give points A, B, C ... L. then connects the points so that they are connected to each other and form an interconnected location.

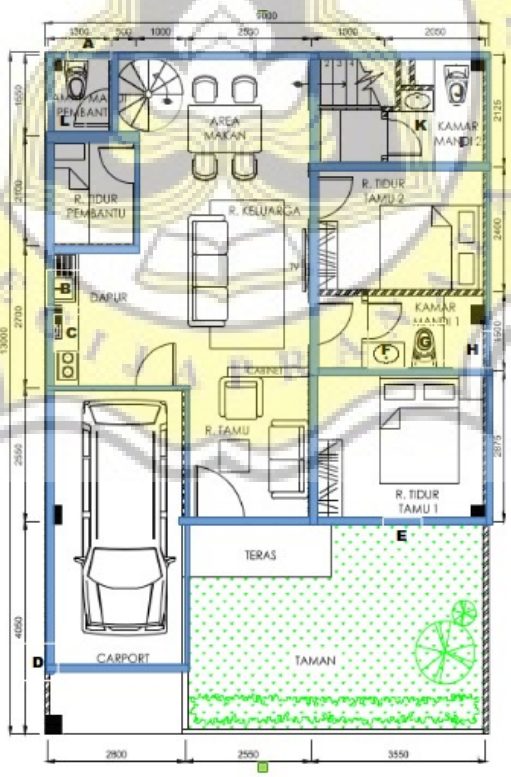
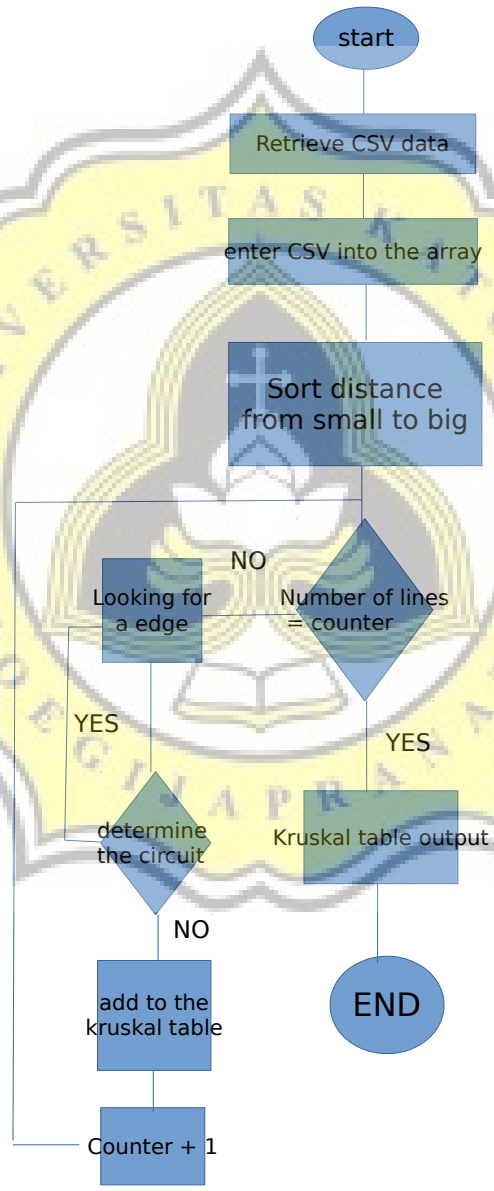



Illustration 4.1: floor plan

in figure 4.1 there is a blue line which is a pipeline, the path is connected to one another through walls and soil. Then the letter A, B, C ... L which is a water outlet such as a tap, shower, sink, and so on.

## 4.2 Design

The flowchart design for solving the problem on this project is as show below:



based on the flow diagram above illustrated that the starting line and end line are stored in the file to be included in the program. The initiation of the number of points and counters is needed so that the program can know how many points have been selected and stop the process. In this case the number of points is entered into the point variable. so that when the point variable is equal to the counter, the search process for the minimum spanning tree ends.

To start the search for a minimum spanning tree all points must be sorted from the smallest to the largest size. The program will start checking the point of the smallest size. If the point forms a circuit, the program will look for the next point to check. However if the check point does not form a circuit then the point will be added to the minimum spanning tree list. After adding, the counter variable will increase by one. This indicates the existence of points stored in the table.

this process will continue until the counter variable is the same as the "jml_titik" variable. When the process has reached the minimum spanning tree status, the program will stop.