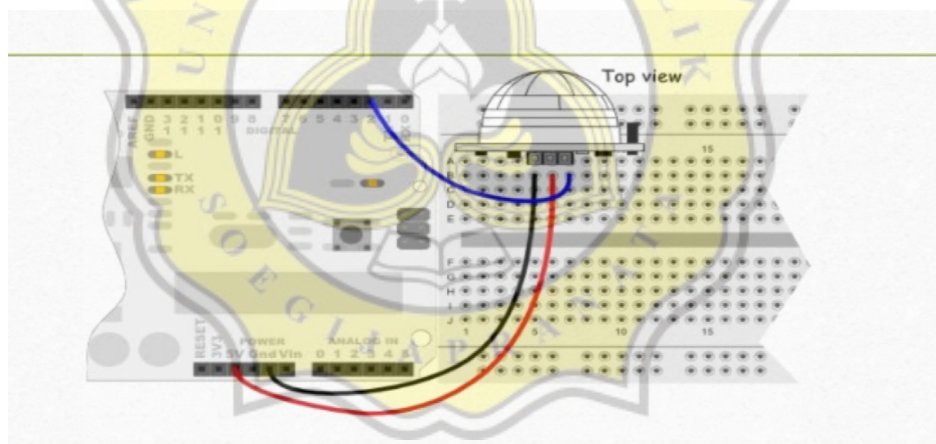# CHAPTER 4

ANALYSIS AND DESIGN

4.1 Analysis

PIR Sensor This PIR sensor works by capturing heat energy generated from passive infrared rays that are owned by each object with an object temperature above absolute zero. Like the human body that has a body temperature of about 32 degrees Celsius, which is the typical heat temperature found in the environment.


Gambar 4.1: Sensor PIR

In the picture there are 3 parts of the cable which are connected to Arduino from the top viewpoint. There are 2 right and left legs black and red cable connected to the left foot, black cable to Gnd, red cable connected to 5v, and blue cable connected to right foot connected pin 2 to the sensor to place the PIR buzzer Lamp put the cable on pin 13 and Gnd on the right foot.

Proximity E18-D80NK Infrared (IR) detector or infrared sensor is an electronic component that can identify infrared light (infrared). Works optimally at a frequency of 38.5KHz. High sensitive photoreflector for detecting distance

functions, ranging from 3cm to 80cm. When the infrared emitted by the emitter will be reflected on the blocked surface, the phototransistor will pick up a signal for distance calculation. The receiver's function only makes sense if it is infrared light and only when it receives the correct signal. Therefore it is not very sensitive to ambient light compared to normal infrared detectors.
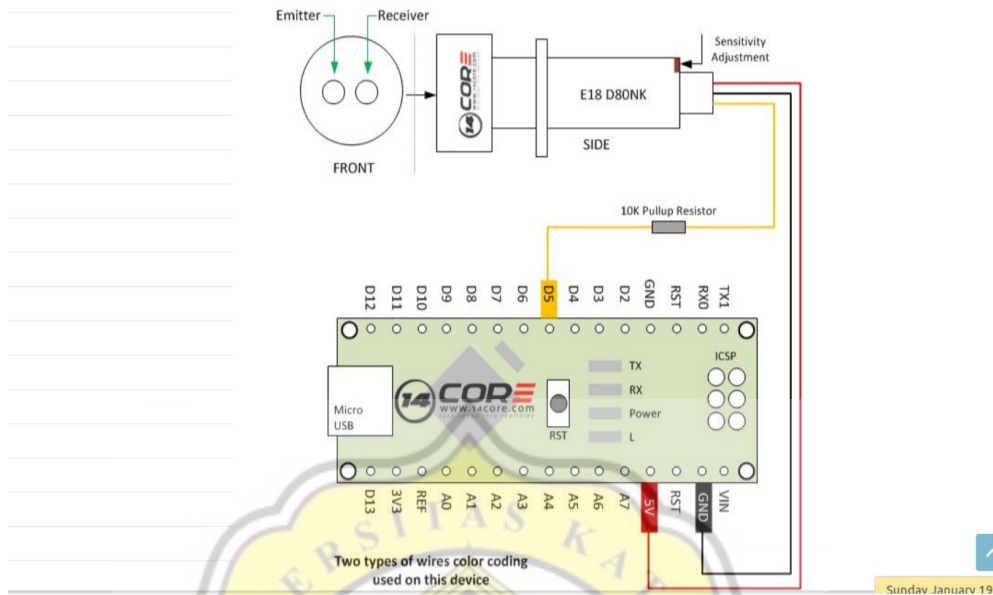
Gambar 4.2: Proximity E18-D80NK
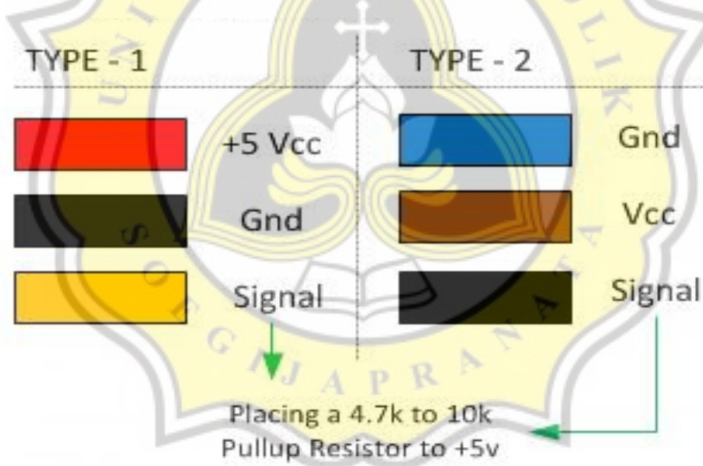
Gambar 4.3: Cable Option

On the E18-D80NK Proximity Sensor there are 3 cables that are blue, brown and black, each of which will also be connected to Arduino with the blue and black cables connected to the left foot, while the blue cable that goes to the Gnd pin, the black waena cable to 5v, then for the brown cable to the right foot to pin 5.
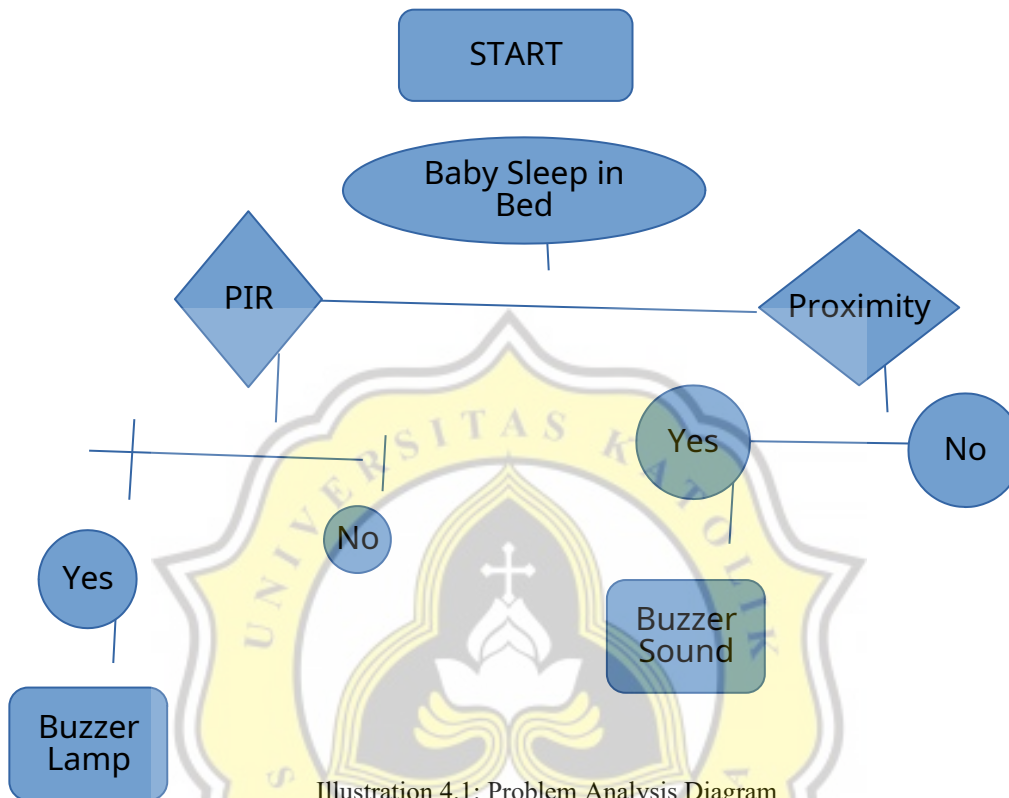
4.2 Desain

Gambar 4.4: Sketch Proximity

Illustration 4.1: Problem Analysis Diagram

Of the many to maintain baby's safety and comfort, there are many things that can be done and done. but in that case I used a baby safety system that used the equipment I prepared. Like the PIR sensor, in this PIR sensor I chose it because the range of the range reached by the sensor is quite wide. I set the PIR sensor with a distance of 100cm because the trial space is quite limited. with nursery sizes 3.5m x 2.5m x 2m. placed at the top of the bed and leads down. baby beds are 70. when the baby's PIR sleeping position will not be detected because it is not within the range of the PIR. after waking the baby, the baby is sitting or standing. PIR will read the movement within its reach. and the PIR will send a signal to the buzzer that sounds. And the Proximity E18-D80NK sensor in this sensor beam is different from the PIR. E18-D80NK Proximity Sensor Power Supply: 5 VDC, DC current supply <25mA, maximum load current 100mA (Open-collector NPN pulldown output), response time <2ms, Diameter: 17 mm, pointing angle: ≤ 15 ° effective from 3 -80CM

Adjustable detection of objects: transparent or opaque. working environment temperature: −25 ℃ + 55 ℃. In this proximity sensor I set the maximum distance of 80cm. I installed this proximity on the edge of the mattress with the distance between the edge of the mattress 40 cm. So when the proximity sensor is blocked it will immediately sound the buzzer sound which indicates the baby is on the edge of the mattress.