

CHAPTER 5

CONCLUSION

5.1 Summary

The improvement of town traffic condition is largely dependent on the modern ways of traffic management and control. Advanced traffic signal controllers and control system contribute to the improvement of the urban traffic problem. The intelligent of traffic signal controller that is introduced in this project with powerful functions and hardware interface. Good quality social benefit has been made through the application of the intelligent traffic controller in practice, and the application result shows that the intelligent traffic signal controller will improve.

Before design the circuit and program, it is important to understand and identify the problem of the system. First, a block diagram or structure for traffic controller systems must be design. Referring an interface block diagrams (Figure 3.1), we know the inputs, outputs, types and the number of states are uses in this project. Using states machine, it is easy to design and gives the designer nice flexibility when the designer needs to pathetic the design either for speed or area optimization. Most synthesis tools in the market have special option to allow a designer to synthesize a state machine design.

In software implementations, should choose clear and understandable the solutions. Design a traffic light using the state machine is very difficult compare to design using the logic gates. Verilog HDL (Hardware Description Language) text editor was chosen to write a program code for simulation only to get a timing diagram. This is because it easy to write and understand compare to other language. Simulation using

gate logic is very difficult when there have feedback output. That means the output become the input state.

Traffic signals mainly operate in three modes, which are Fixed-time mode, Semi-time mode and Actuated mode. For this project, the actuated mode was chosen. Under this mode, there are detections for all approaches. The traffic signal is set to provide the green light “on-demand” or only in the presence of vehicles. If the road have pedestrians crossing, the pedestrian must push button in order to cross either the major or minor streets.

This project has two major phases. The first stage is to design a program, which consists of reading, research, planning and designing a program. The simulation is needed to get a waveform and the output of this simulation must be a same value or data with the waveform. After that, continue with the hardware implementation using the gate logic and the interface light is using led. The blinking is depending on the state machine transition.

As a conclusion, the controller can control the traffic movement and detect a busy and non busy road. The overall of this project is ok but certain condition the traffic signals is not function properly. The critical problem is about the timing. The output of the timing always changing, certain time the timing is ok and certain time is not. The environment and equipments are used can effects the output.

5.2 Recommendation For Future Project

Nowadays there are so many researches that have been done in order to enhance the traffic light function to improve the movement of the vehicle flow on the road especially at the junctions. Based on observation and researches, the condition now is fixed time mode. It means the timer for all of roads are constant timer. It cannot detect a busy and non-busy road.

This project is using Verilog HDL (Hardware Description Language) to write coding for simulation and using gate logic to implement in hardware. Implement using FPGA (Field Programmable Gate Array) is difficult. This is because the UP2 Board is very sensitive device. For suggestion, can use other language, for examples VHDL code and implement using UP3 Board. The UP3 Board can save a programmable in that device. So, no need to implement for the next time went to use this board. The others idea is add a pedestrian cross between the Road1 and Road3 using a push button.

5.3 Commercialization Potential

The purposes of this project are to design a safe and efficient traffic flow and to assign the right way to minimize delay waiting time in road. This project, a traffic light controller is to improve the movement of the vehicles on the road at the junctions. This project is design to add direction movement and to change the timing for green timer. This project also can detect a busy and non-busy road. For examples, the long timer is remaining at the same road if the other road has no vehicle and the long timer is 'off' when have vehicle in the next road.

The intelligent traffic light controller was chosen because to practice designing a program and implementing a sequential machine in hardware using the gate logic. When using this product, it will be able to reduce a traffic jam in road, to avoid an accident and it also to minimize a waiting time.

I believe that my product is very brilliant idea to solve a traffic jam. This is because almost of the traffic controller in city using a semi-actuated timer mode. This mode only can sense the vehicle in the side street. That why; I believe that my product is better compare with the others product. Actually, the application of this product is used actuated timer mode, that means there are detection all approaches, main street and side street.

In the market, there are has similar idea with my project. The actuated mode not widely used in Kangar. This product actually designs for Jalan Alor to Pusat Bandar

Kangar to prevent a traffic jam, especially time 'Solat Jumaat'. At this time, this road using the fixed timer, it means the timer for side and main road are constant value. The different idea is using actuated timer mode, it means sensor can detect all approaches for busy road where have vehicles at road. When road is busy, the timer green is long (40s) and for non-busy (20s), the timer green is short.

This product is not expensive compare with the other product. It product can uses in anywhere. This product not only can use in negeri Perlis, it also can use for the other state or city. This product will be able sell to JKR (Jabatan Kerja Raya), small company which that handles this product and the other that related with this product.