

TRAFFIC LIGHT CONTROL SYSTEM USING VERILOG

ABSTRACT:

Verilog designing is hardware descriptive language, the name itself suggest that it deals with the hardware designing and simulation. Basically, it becomes very difficult to mount the various electronic component on breadboard or PCB circuit. It also takes too much time for the simulation and sometimes many errors occur because of improper connection of components onto the circuit. And thus, to overcome this factor hardware descriptive language comes into conclusion. we can code the process using Verilog and we can mount it on a circuit or just upload it to the circuit accordingly so that particular circuit will work as according to the code we have written. HDL language is often used for sequential circuits like shift register, combinational logic circuit like adder, subtractor etc. basically it describes the digital systems like microprocessor or a memory. Whatever design that is describe in HDL are independent, it has its unique state of work, very much easy to simulate, designing and debugging, and very useful than schematics, especially for large circuits thus, to overcome difficulties or problems to design the circuits manually with breadboard and PCB, use of Verilog designing in this complex world is increasing a way better. Keywords: HDL, Verilog, PCB, Combinational logic circuit, microprocessor, simulation, register.

INTRODUCTION:

Traffic light signal controlling is most important and essential thing for any country to protect the people from heavy load of traffic. Before this kind of invention there was much difficult for traffic police to handle the heavy traffic (particular direction given manually). Thus, traffic signal controlling technology made much easier to handle the heavy loads of traffic. Safe movement of vehicles without any type of collision, accidents. Apart from the traffic it is very necessary for the people to cross the roads at particular time interval. And this is only possible by controlling the traffic by giving some kind of signal. Analysing the traffic, estimating the delays to the areas is crucial part.

Population can be predicted using GPS trekking and thus we can easily estimate the amount of time to be taken for delay. A perfect aligning of cars, bikes, cycles, trucks with orderly flow by giving right of way, this makes the processes very systematic and even in the presence of heavy traffic accident rate goes down which is one of the biggest advantage. Timing and the delays of particular signal plays a vital role because it is very necessary for us to keep information about the amount of traffic which present in the local area. This gives us an idea about timing and delay requirement of every signal in the local area. As we now the timing depends on traffic volume and its not necessary for us to have same traffic volume at each day so for that we can estimate average volume of traffic around the local area. Average can be made with consideration of 20 days for example we will analyse the traffic of 20 days then we will take an average of it and estimate delays and timings of it. It is very necessary factor for us to have adaptive mechanism. Apart from that we can estimate the traffic volume using GPS, which can give you volume prediction every day. For this we no need to take an average of particular days. GPS give us more correct prediction of volume of traffic than calculating an average of traffic of particular days. Thus, coordinating signal timing minimizes stating and stopping of vehicles in the traffic to avoid the traffic jam.

DESCRIPTION OF IMPLEMENTED FUNTION:

Including this RTL Schematic, technology schematic, behavioural waveform is most important factor for any Verilog designing.

Including this RTL Schematic, technology schematic, behavioural waveform is most important factor for any Verilog designing.

Behavioural waveform gives very exact simulation of any hardware description. We can actually observe our output whether it goes right or wrong. From the above given waveform, we can observe that signals which manipulate in perfect coordination as per the code is synthesis. North-south end East-west end Stage 1-Red stage 1- Green Stage 2-Red stage 2- Yellow Stage 3-Green stage 3-Red The above process repeats every cycle which you can observe from above diagram.

Overview of State diagram of traffic light system:

state diagram represents the sequence of object states during their life time. State chart of the signal states which are wait, ready to go and go. As Fig. 3 shows, a light signal has three states: green (go) state, yellow (get ready), and red (stop). Green light remains either green or can be switched to yellow light; Yellow light can switch to red only while the red light remains red or switch to yellow.

