CS303 LAB 6 PROJECT REPORT

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In our lab assignment we created a logic circuit for the commonly used time counting tool Eggtimer. Eggtimer simply is given an amount of time, for example 03.45, and the Eggtimer counts down exactly 3 minutes and 45 seconds for this example. Thus, Eggtimers are widely used for tasks that require precision with time management such as cooking or baking. To make this logic circuit we were given a template file eggimer.dig which required 4 sub-circuits to be designed: downcounter.dig, controller.dig, downcounter_new.dig and counter.dig.

Firstly, the counter.dig is for making the circuits clock component fitting to tick every second. It takes a 1khz clock, a rst input ends a start input which is provided from the latter sub-circuit. The only output of this sub-circuit is end which is connected to the controller.dig's end input.

Secondly, the controller.dig function is for creating a control panel for operations such as Start and Preset. It takes these inputs and also the same 1khz clock and rst input connected and also the previously mentioned end input, which initiates the countdown output directly. Also, the reset input directly triggers the load output. When beginn input is 1 and other inputs are 0 JK flip-flop will be in a set state and the counter will start to countdown. When beginn is released and we do not press reset inputs JK flip-flop will be in a hold state and it will continue counting down. When we press reset inputs (reset, rst and zero) JK flip-flop will be in the reset state and stop counting down and reset all processes.

There also is a sub-circuit named downcounter_new.dig inside the downcounter.dig which has two functions: if the reset input is given the output becomes 0 otherwise it uploads the number that has been entered as input. Other parts of the cowncounter_new are the same as lab5

Lastly, the downcounter.dig sub-circuit has a few functions. Firstly, in a XX:XX model of the EggTimer there is necessary to be 4 different number outputs decreasing every one second in order, thus the first thing this circuit does is counting down from 9 until 0 for every one of the digits

M10, M1, S10 and S1. Secondly, when the Reset input is given the system resets down to 00:00. Lastly, returns the M10, M1, S10 and S1 values to the number display.We connect our counter circuit to the clk since we want to receive a clock of frequency 1 kHz. With 2x1 multiplexers we decide whether input will take the 99:59, 00:00, or the time that is entered by the user.

In conclusion, These three functions combined make the EggTimer system work.