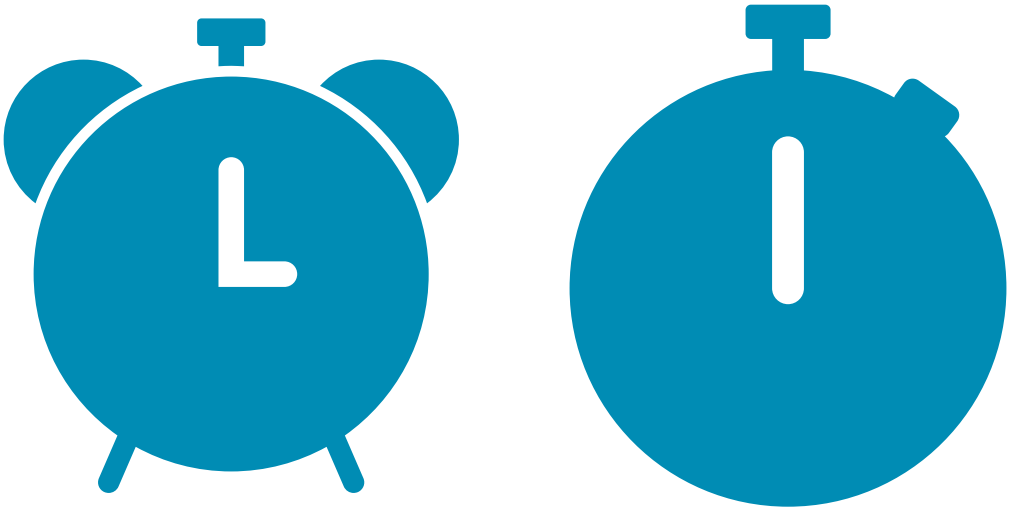
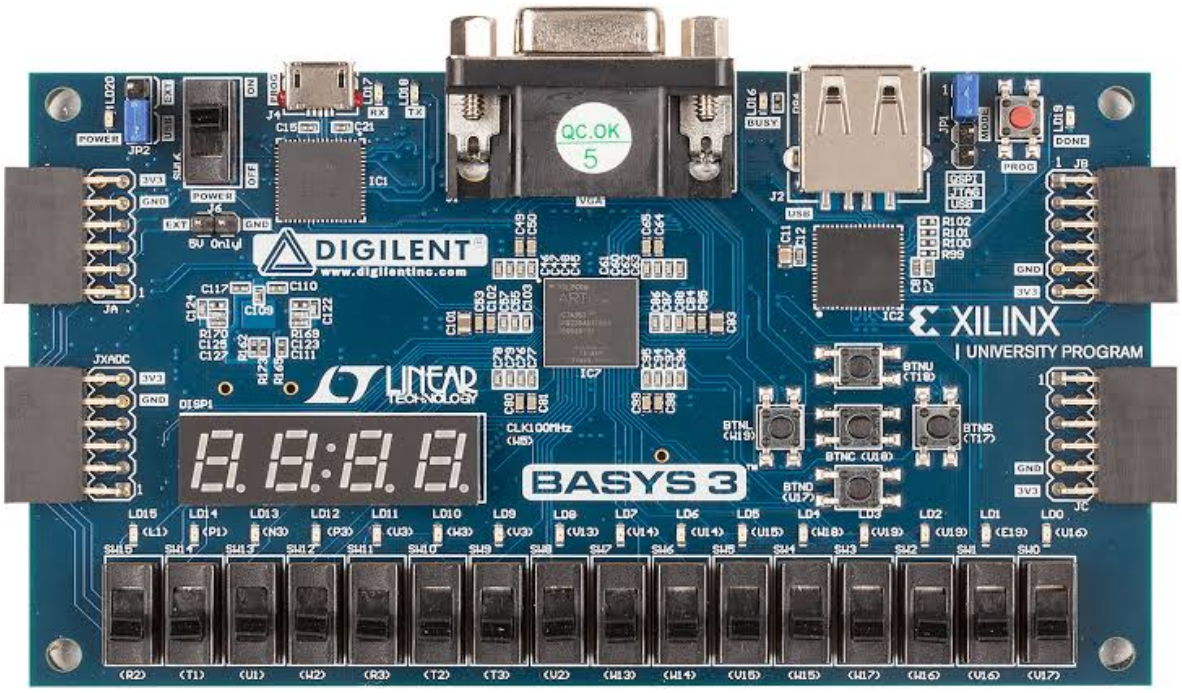
Alarm Clock & Stop Watch

Digital Logic Design Verilog Basys 3 Project

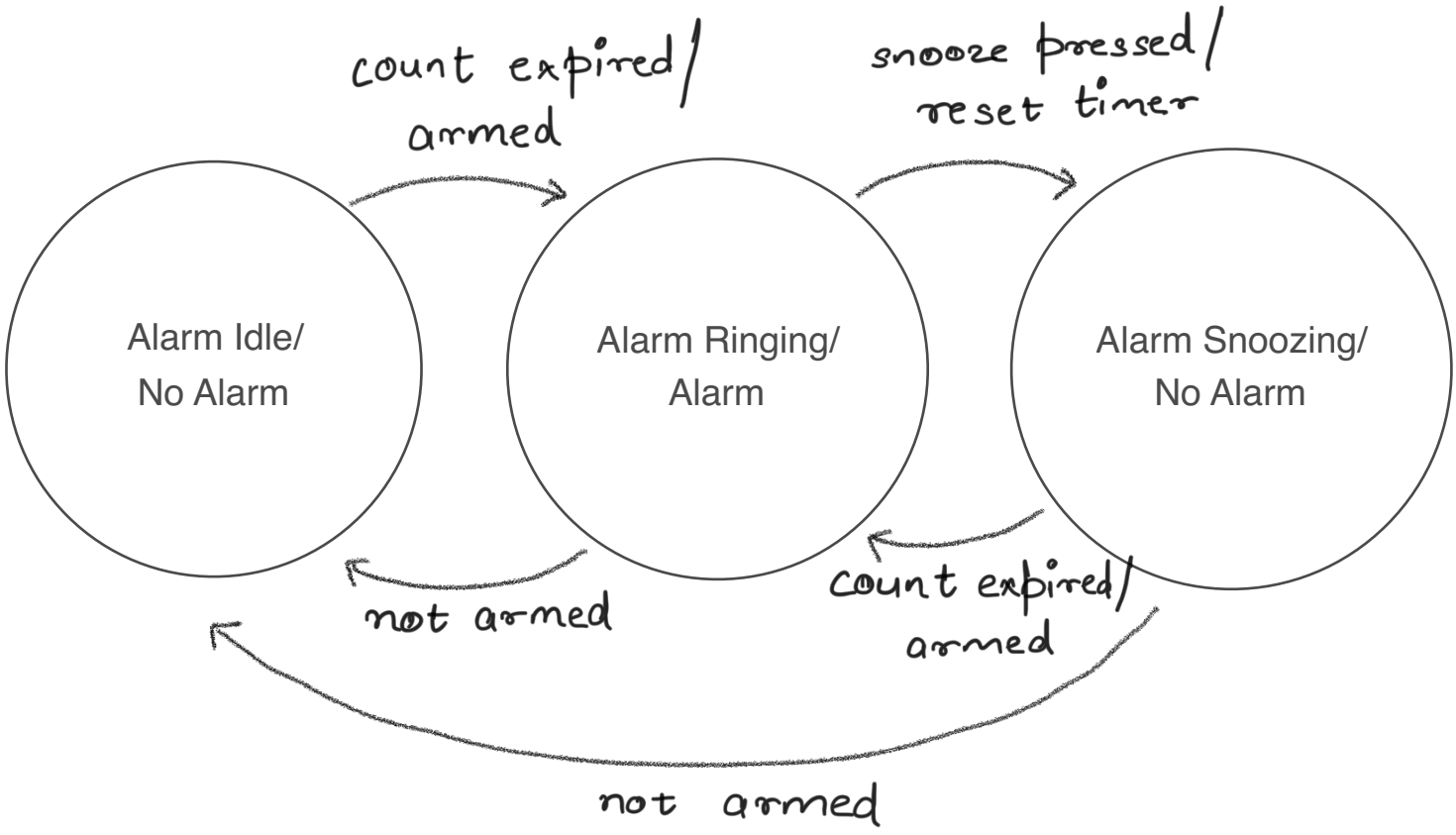
November 27, 2018





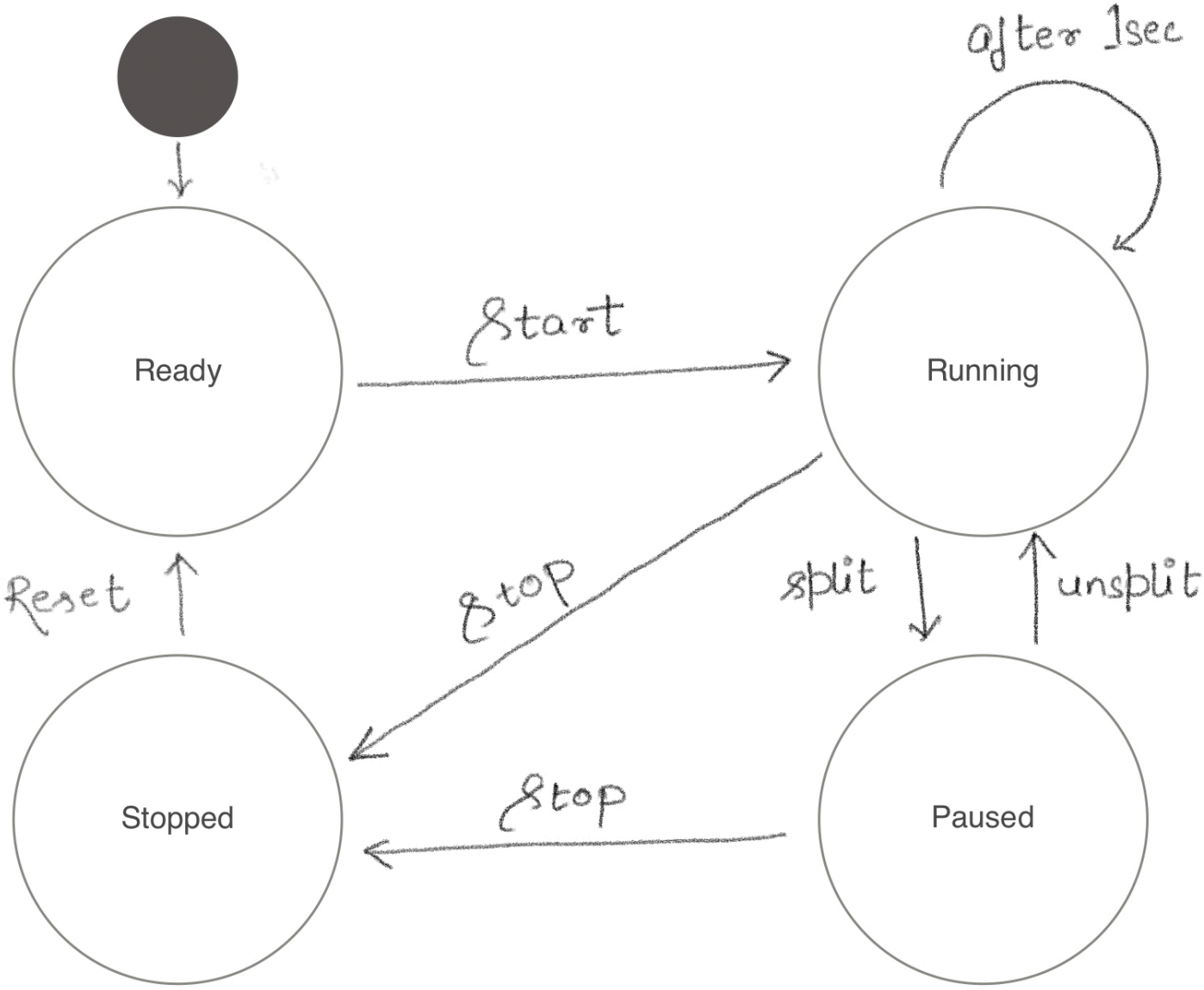
State Diagrams

ALARM ClOCK



State Diagrams

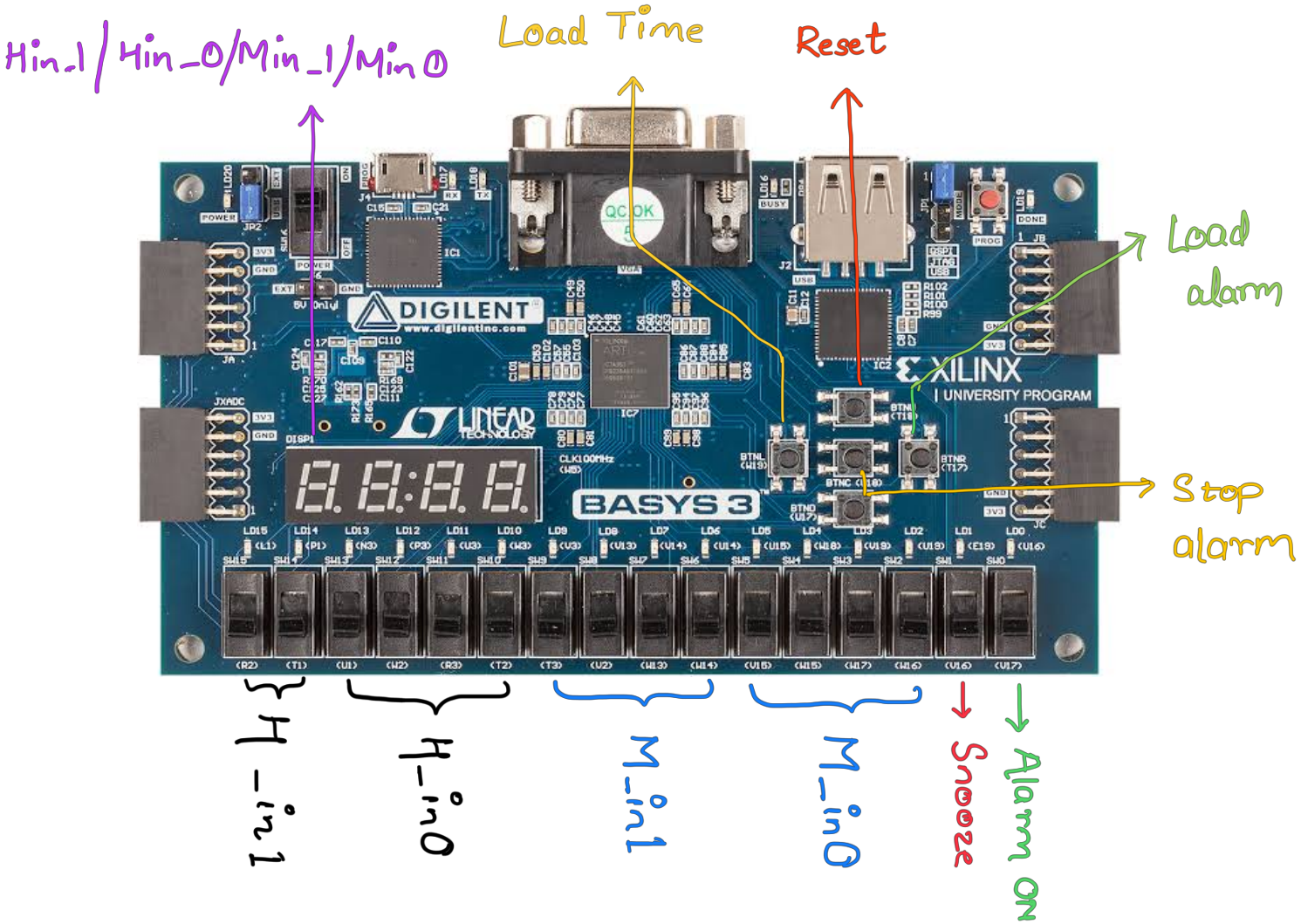
STOP WATCH



FUNCTIONALITIES

ALARM CLOCK

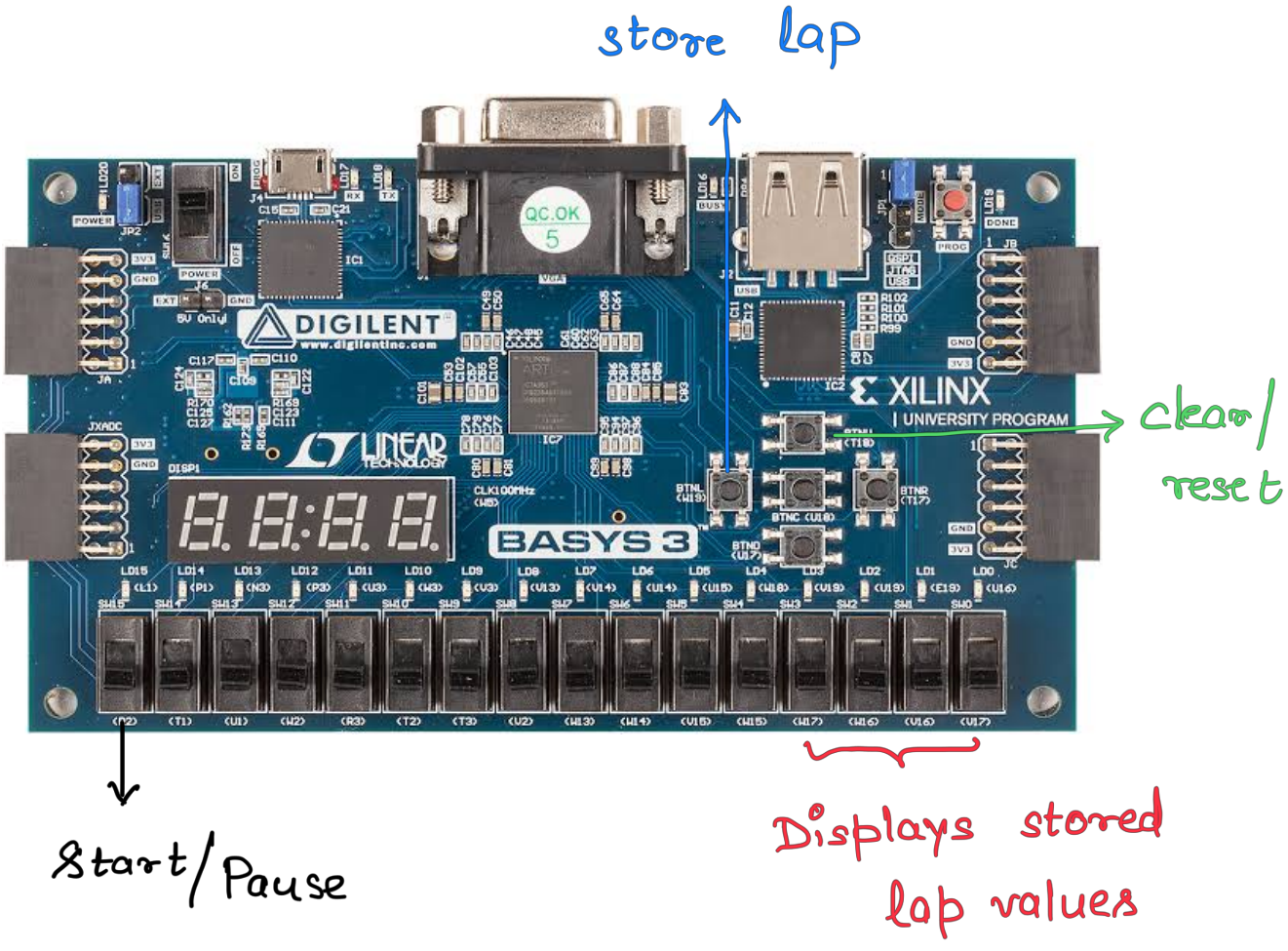
WE HAVE ADDED A SNOOZE FEATURE IN THE ALARM CLOCK. AT START SET CURRENT TIME AND LOAD IT INTO FPGA. SET THE ALARM TIME AND TURN ON THE ALARM. WE CAN ALSO SET SNOOZE TIME.



FUNCTIONALITIES

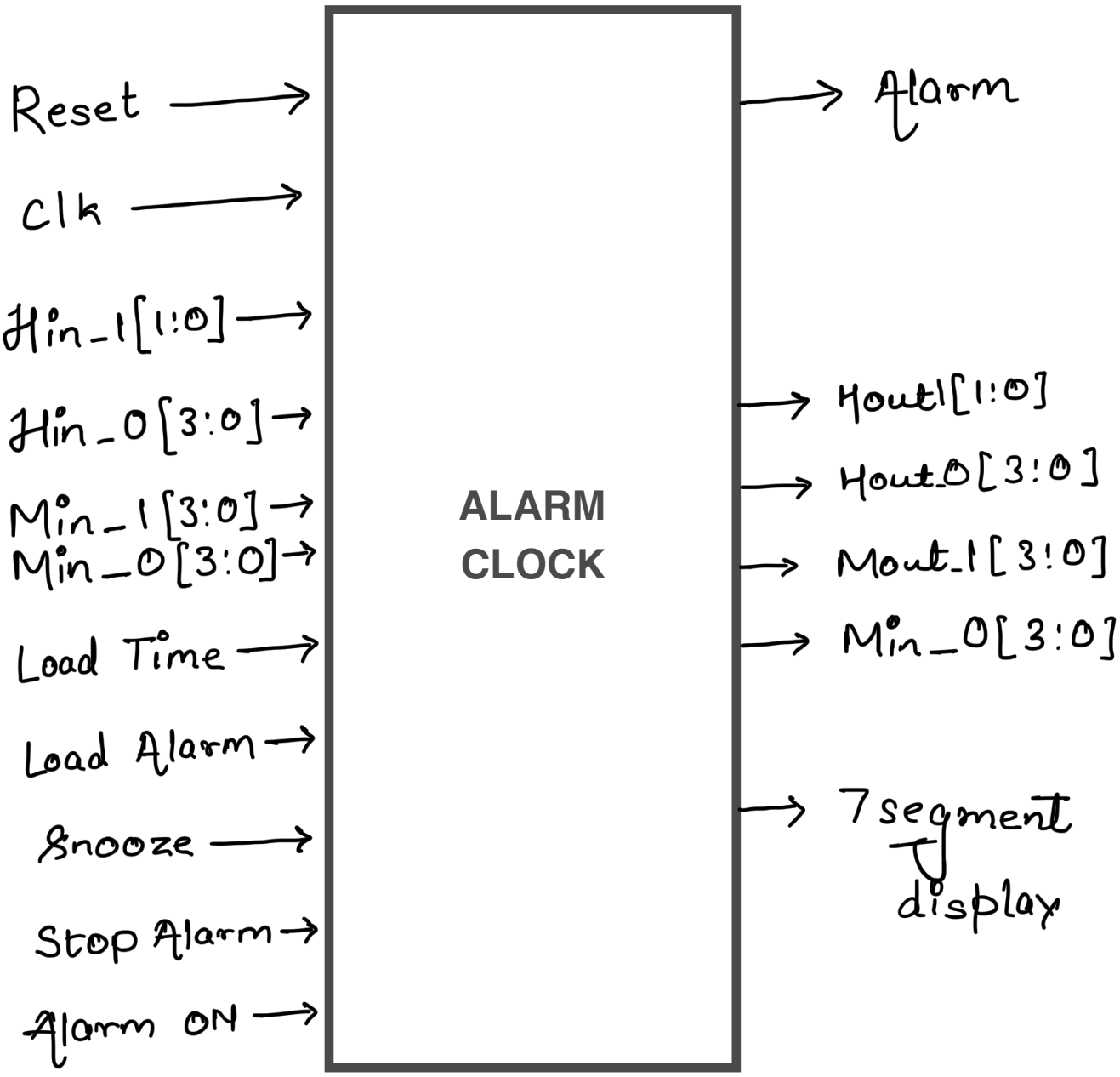
STOP WATCH

WE HAVE ADDED LAP FEATURE IN THE STOP WATCH. WHENEVER LAP BUTTON IS PRESSED, THE CURRENT TIME VALUE IS STORED IN THE REGISTER. WE CAN STORE UPTO FOUR LAP VALUES THAT CAN BE DISPLAYED USING LAP SWITCHES.



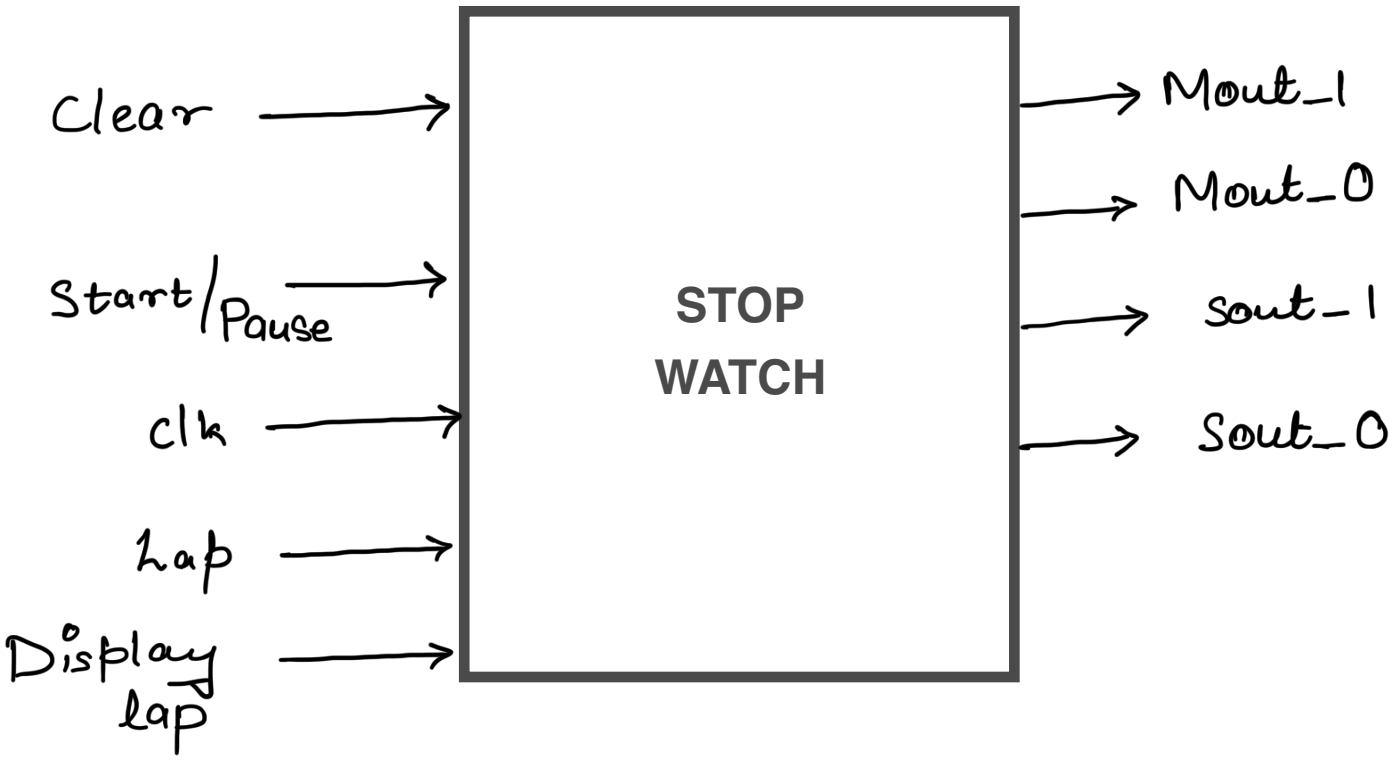
MODULE

ALARM CLOCK



MODULE

STOP WATCH



WHAT'S NEW ?

We were able to add SNOOZE feature in Alarm Clock. For this purpose, whenever alarm is On and snooze is also On and then stop alarm is pressed at the time alarm is ringing then current time is incremented by one minute. So when counter expires, alarm will once again start ringing. By default snooze time is one minute.

In stop watch, we were able to include the LAP feature. For this, we stores the lap time. This stopwatch stores 4 lap values, that can be displayed using different lap switches. If the lap button is pressed for 5th time, then the first lap value is changed to second one and so on and the new lap value is stored in the 4th register.

WHAT COULD NOT BE DONE ?

We wanted to design both alarm clock and stop watch in same vivado basys 3 module but most of the input switches and buttons were used in alarm clock, so we were not able to implement both in the same module.

Our alarm clock is 24 hour clock. It can also be designed as 12 hour clock but for that we need a separate input to store AM/PM. So we decided to make 24 hour clock as it is more universal.

While we were making the project, we faced a few problems like our clock's time period didn't match the actual clock's time period. But we were able to overcome this problem by changing the counter value.