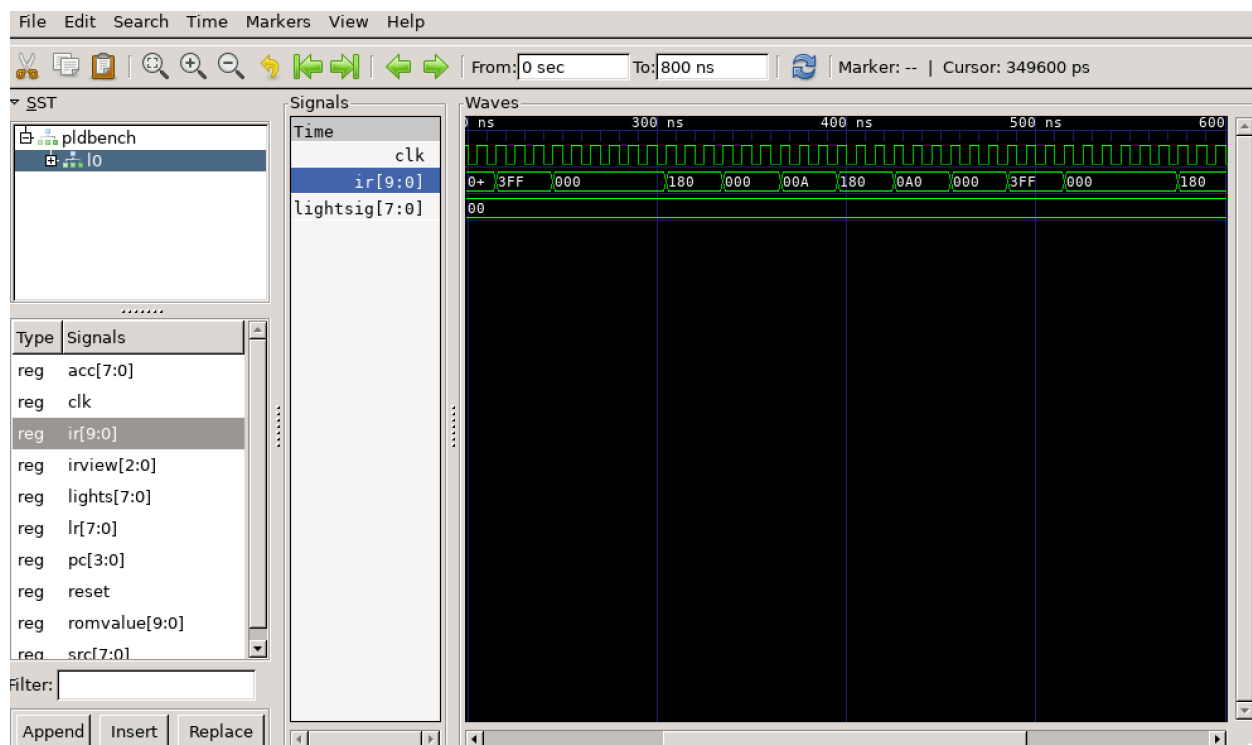


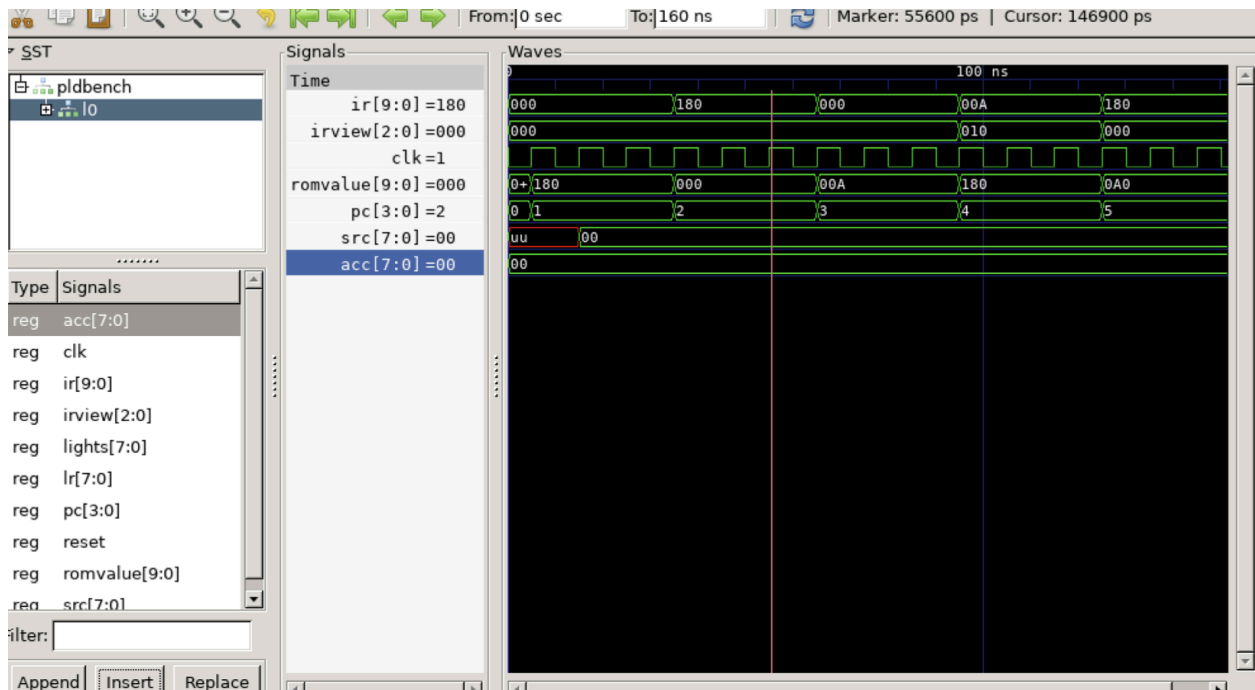
The goal of this project was to design and implement a more sophisticated programmable light display using a state machine and a specific set of machine instructions. The state machine operates on a set of instructions, enabling the control of an 8-bit light register (LR) and an accumulator (ACC). The machine language includes conditional and unconditional branches, which allow for looping behavior and conditional execution, making it possible to design more complex programs for controlling a light display.

The project involves creating a ROM (Read-Only Memory) to hold the program, a VHDL design to implement the control logic, and a testbench to validate the design. The key tasks include creating a simple processor with a few instructions, handling basic operations such as data movement, arithmetic, shifting, and branching, and testing the system with different programs.





The purpose of the second program was to branch and flash between the 0s and 1s. The Gtkwave is below.



Acknowledgements: I went to TA hours, and worked with classmates.