

## BEGINNER:

1. Multi bit Barrel shifter.
2. BCD counter with up and down counting.

## INTERMEDIATE

1. Traffic light controller using FSM approach
2. Vending machine/washing machine using FSM approach
3. Synchronous FIFO
4. Booth multiplier.
5. Code converter from binary to gray, bcd, excess3 and vice versa using datapath and control path properly.

Hint: for fsm, draw state diagram for different. Draw the hardware for the fsm and then code it.

## ADVANCED

1. MIPS – implementation of 5 staged pipelined MIPS Processor. Also implement hardware detection if possible.
2. Fixed point square root algorithm- fpga implementation.