Block diagram

one-half-second counter

clk
data (2S downto 0) '0'
data
enable
load
reset_n
count

key(2)
key(0)
one-half-count-value
term

large counter of type gen-counter

clock-50
data (2S downto 0) '0'
clk
data
enable '1'
load   '1'
reset_n
open

enable
load
reset_n
count
term

key(0)

one-half-second counter

clk
data (2S downto 0) '0'
data
enable
load
reset_n
count

key(2)
key(0)
one-fourth count-value
term

sw(0)

selected timer value

message-cntrl

clk
half_shift
sliding-msg-sw
count
reset_n

key(2)
key(1)

hex 0 [6...0]
hex 1 [6...0]
hex2 [6...0]
hex3 [6....0]
hex4 [6...0]
hex5 [6...0]

State Diagram

Key-0=0 reset

A EE4S70
key2 = 0

key-1=0

B EE4S1
key2 = 0

key-1=0

C bbEE42
key2 = 0

key-1=0

D bbbEE3
key2 = 0

key-1=1
key-2=1

key-1=1
key-2=1

key-1=1
key-2=1

key-1=1
key-2=1

key-1=0

E bbbbE4
key2 = 0

J E4S769
key2=0

key-1=0
key-1=1
key-2=1

key-1=1
key-2=1

key-1=0

key-1=0
key-2=1
key-1=1

I 45Sbb8
key2=0

key-1=0

H Sb bb7

key-1=0

G 7bdbb6

key-1=0
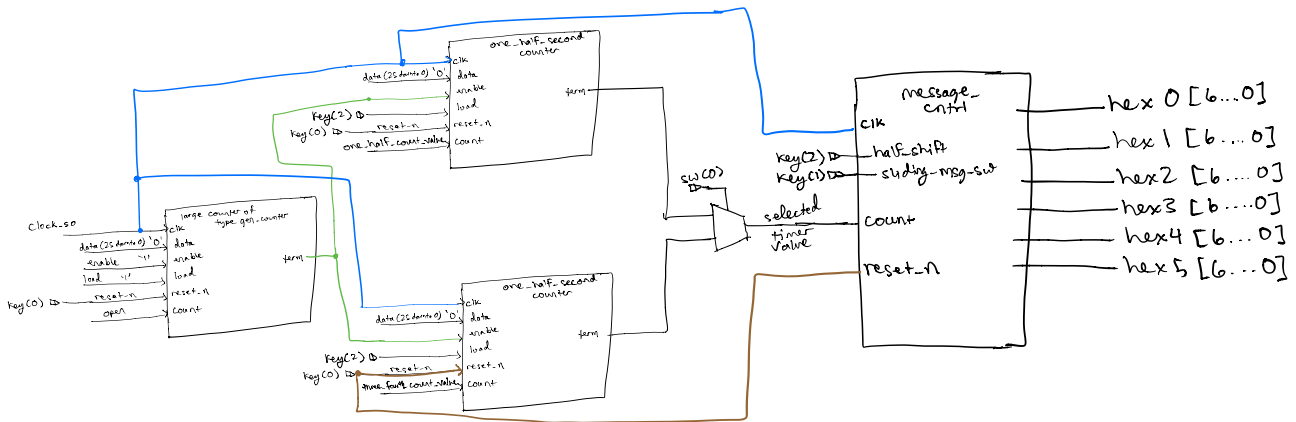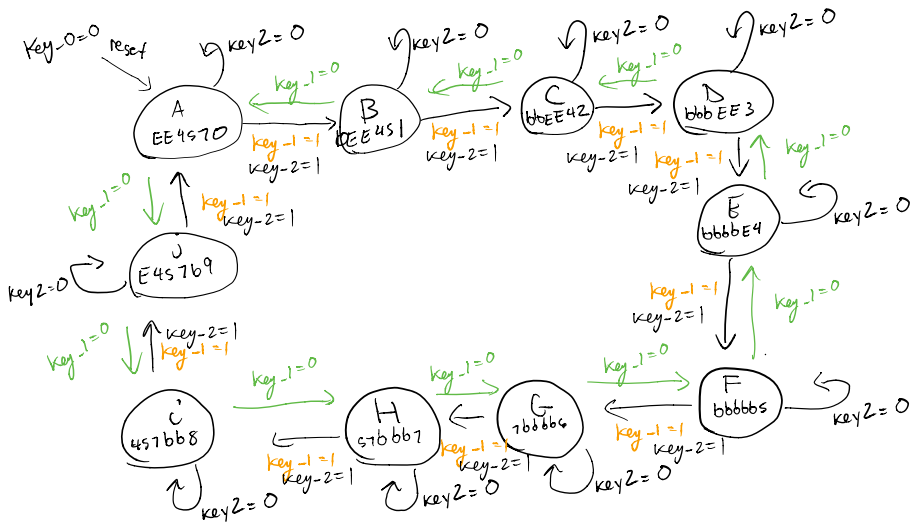
F bbbbbS
key2 = 0

key-1=1
key-2=1

key-1=1
key-2=1

key-1=1
key-2=1

key2=0

key2=0

when sw(1) = 1 output message "dudEs" follows the some state diagram
when sw(0)=1 speed changes to 0.5 seconds.