Language — C++

Classes - controller
elevator (elevator FSM + Door Fsm + IR sensor)
memory (use std::vector?)
floor lights

Global vars - fire mode
current elevator floor

Maybe add graphics?

-> mouse over elevator when open to simulate "people" walking in/out
-> states outputs in view
-> up down button
-> add 2 elevators?
-> SDL libs

Controller

States

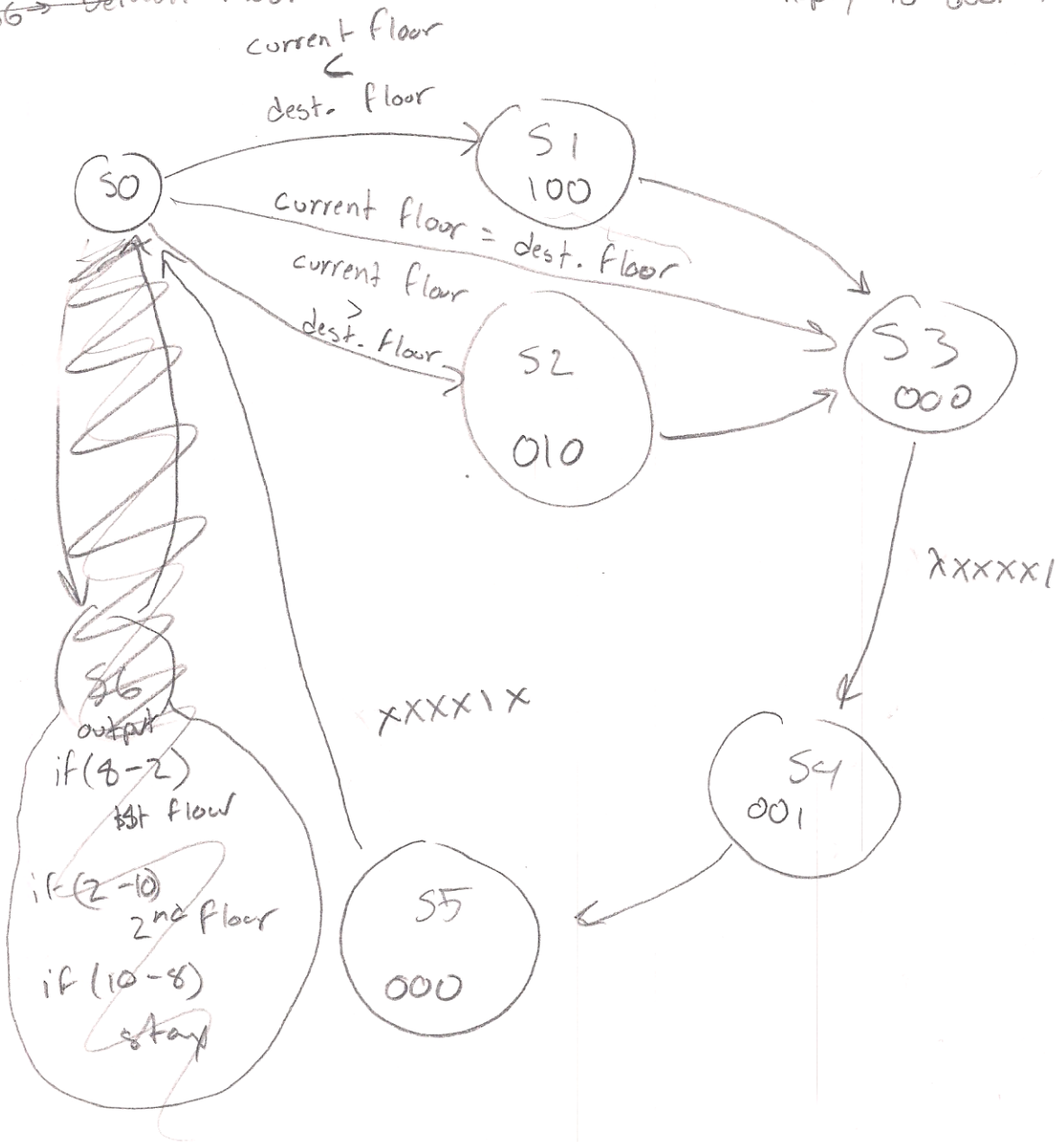
S0 → Ask memory black box
S1 → Elevator up —
S2 → Elevator down —
S3 → wait for latch —
S4 → reply to door FSM —
S5 → wait for door closed —
~~S6 → Default floor~~

Inputs

floor to go next (2 bits)
~~Elevator reached signal (1bit)~~
what floor the elevator (2 bits)
door closed (1 bit)
latch (1 bit)

Outputs

Elevator up/down (2 bits)
Reply to door FSM (1 bit)



Elevator

States

S0 → 00 → Gf
S1 → 01 → 1f
S2 → 10 → 2f
S3 → 11 → 3f

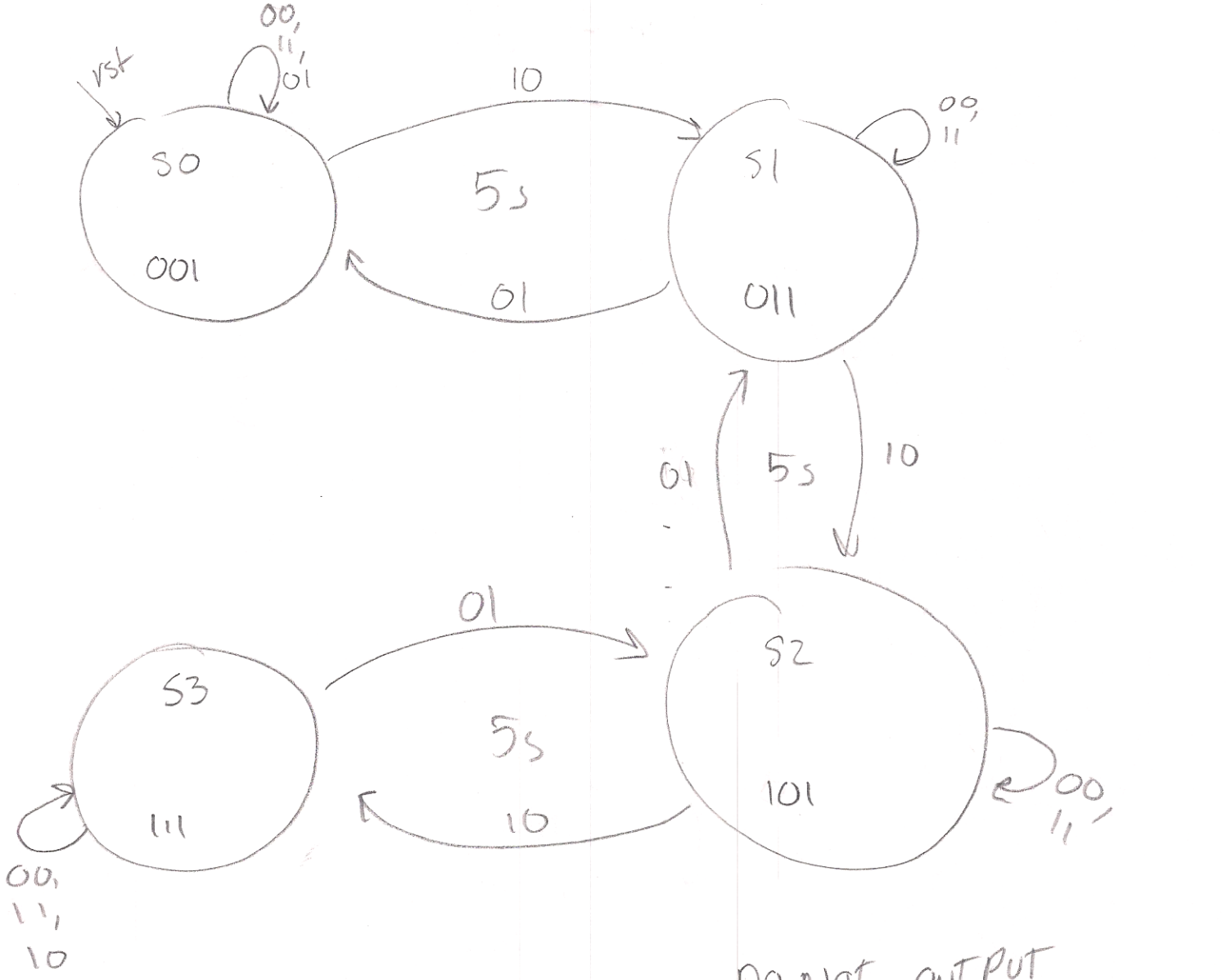
Input

U D

0 0 → wait
0 1 → GOdown
1 0 → GOup
1 1 → dont care

Output

Current floor (2 bits)
start door FSM (1bit)



DO NOT OUTPUT
TO FLOOR FSM
GO THROUGH CONTROLLER

Door FSM

SOIC

States

S0 → door closed

S1 → latching (1s)/output sound

S2 → open door

S3 → wait for IR sensor

S4 → close door

Inputs

Start door FSM (1 bit)

controller open door (1 bit)

IR sensor end (1 bit)

Door close (IR sensor) (1 bit)

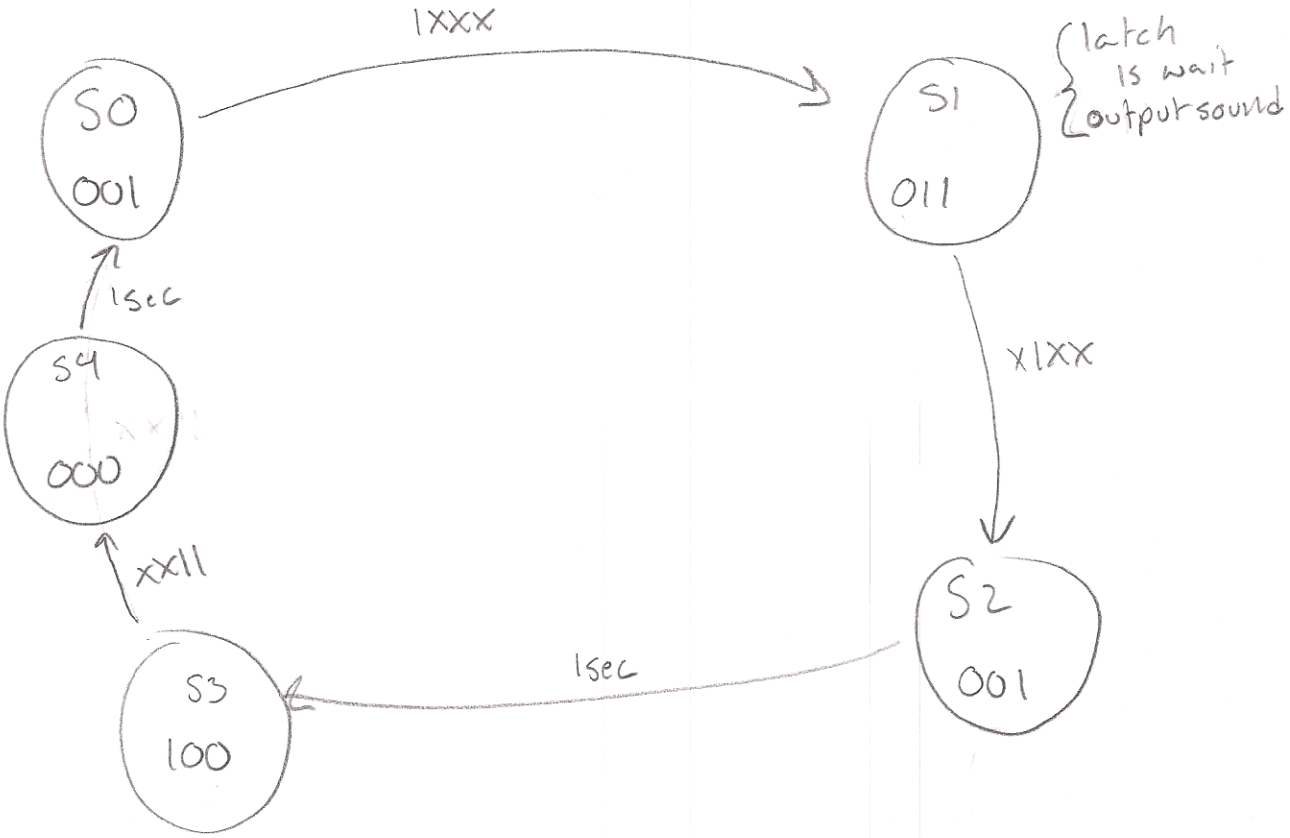
Combine!

outputs

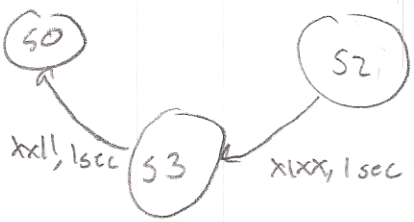
IR sensor start (1 bit)

sound (1 bit)

door closed (1 bit)



combine S2, S3, S4 to



IR Sensor

Inputs

start IR
fire state
IRon

SFI

States

S0 → rst (IR sensor off)

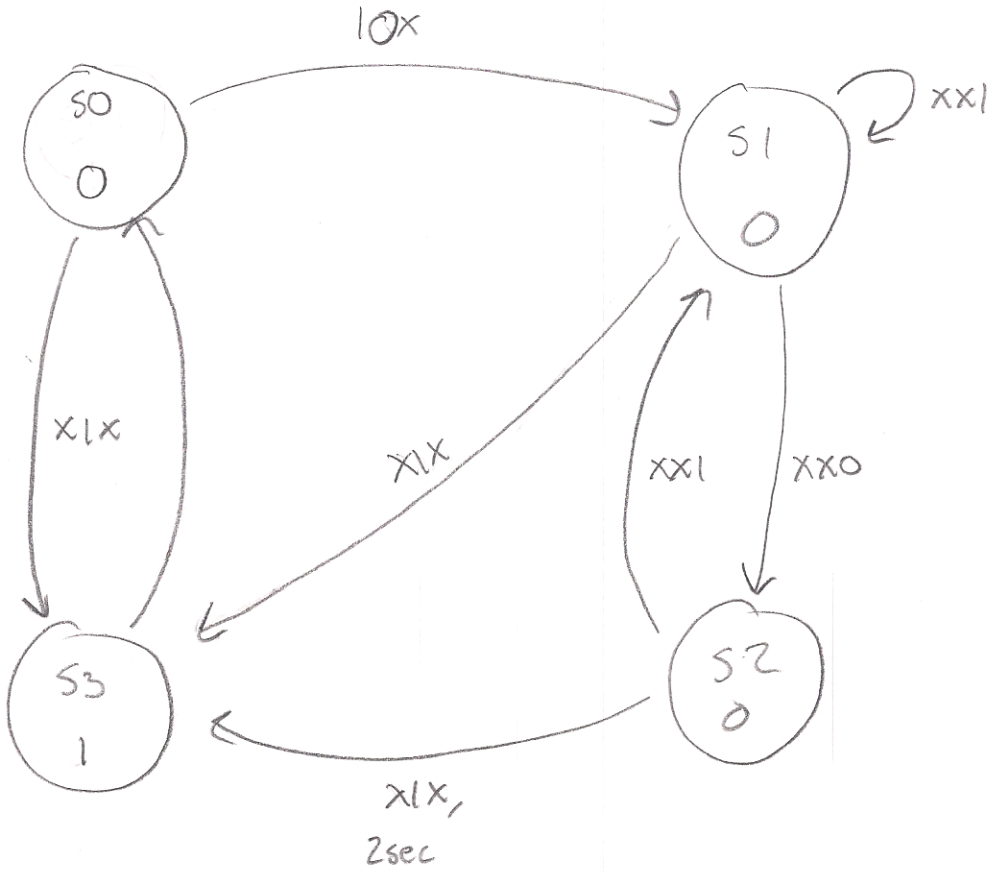
S1 → Person walking through

S2 → No person walking through

S3 → Close door

Output

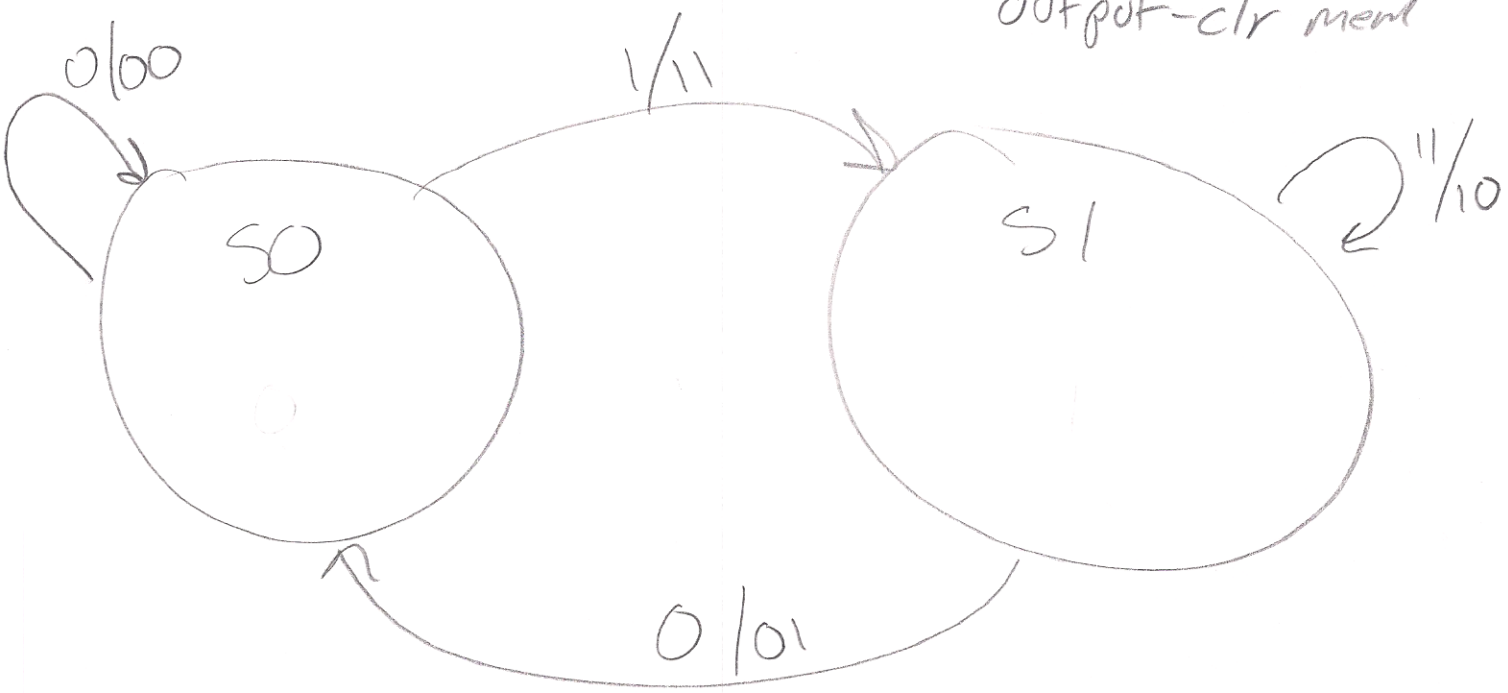
Door close



FIRE

Input – Fire key inserted

output –
In Panic mode
output – clr mem



If key was disconected after being 1 (Input 0) reset memory and go to default

S0 → Not in fire mode

S1 → In fire mode

Controller (FIRE)

same inputs as controller + door open

S0 → paused state (rst state)

S1 → Go up

S2 → Go down

S3 → wait for latch

S4 → wait for door open button

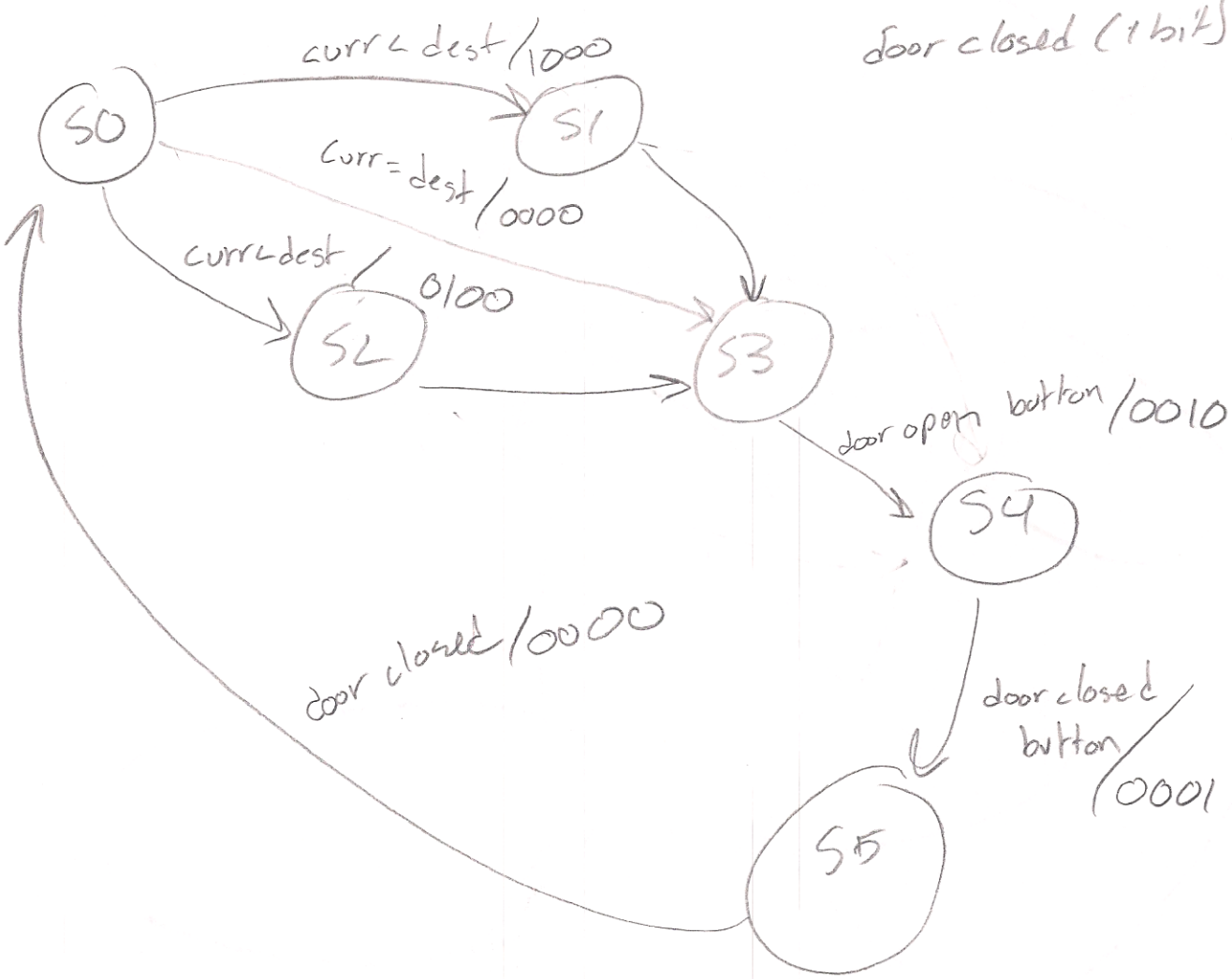
S5 → wait for door closed button

outputs

elevator up/down (2bits)

door open (1bit)

door closed (1bit)



Door FSM (FIRE)

S0 → door closed

S1 → latch/sound

S2 → ~~door open~~ open door

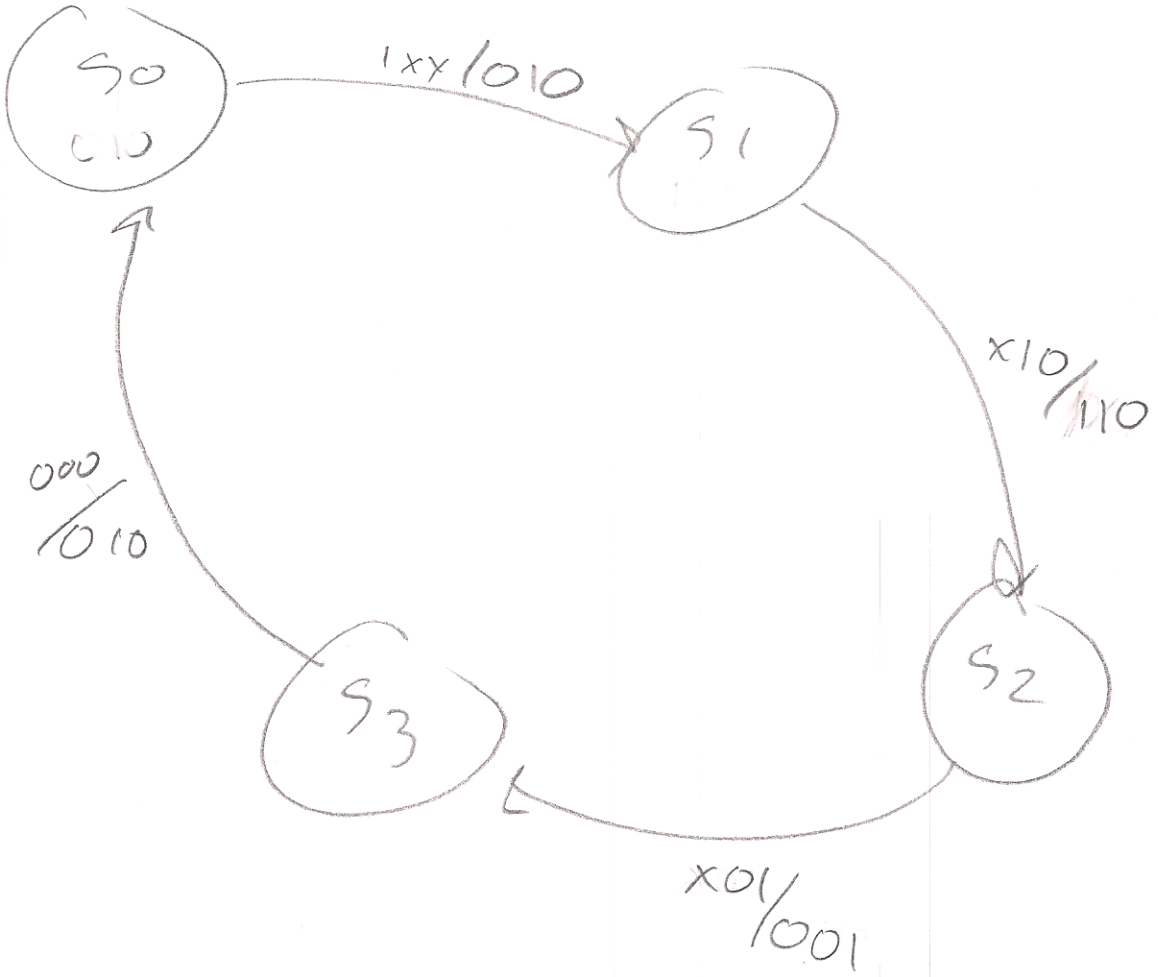
S3 → ~~door closed~~ close door

Input

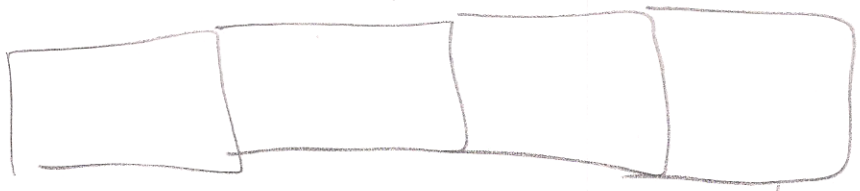
start (1bit)
opendoor (1bit)
close door (1bit)

outputs

sound
door closed
door open



MEMORY - NO FSM (black box)



clear mem - 1bit

Input ⇒ Current floor - 2bits

direction - 1bit

output ⇒ Next floor to stop at

Input → buttons from each floor

IT'S A QUEUE

FIRST IN - FIRST OUT (FIFO)

→ if no next floor then

if (8am-2pm)

1st floor

if (2pm-10pm)

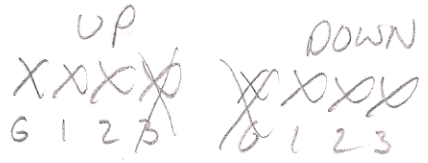
2nd floor

if (10pm-8am)

stay at current floor

FLOOR LIGHTS – NO FSM (black box)

FSM seems to difficult



Floor 6

up on → x20 bitor 1000,0000

~~down on → x20 bitor~~ cant go down

up off → x20 bitand 0111,1111

Floor 1

up on → x20 bitor 0100,0000

down on → x20 bitor 0000,0100

up off → x20 bitand 1011,1111

down off → x20 bitand 1111,1011

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12 operations

Inputs

up/down (from controller)

current floor (from elevator)

pass function object that takes parameter of x20 and returns the bitset operator ???