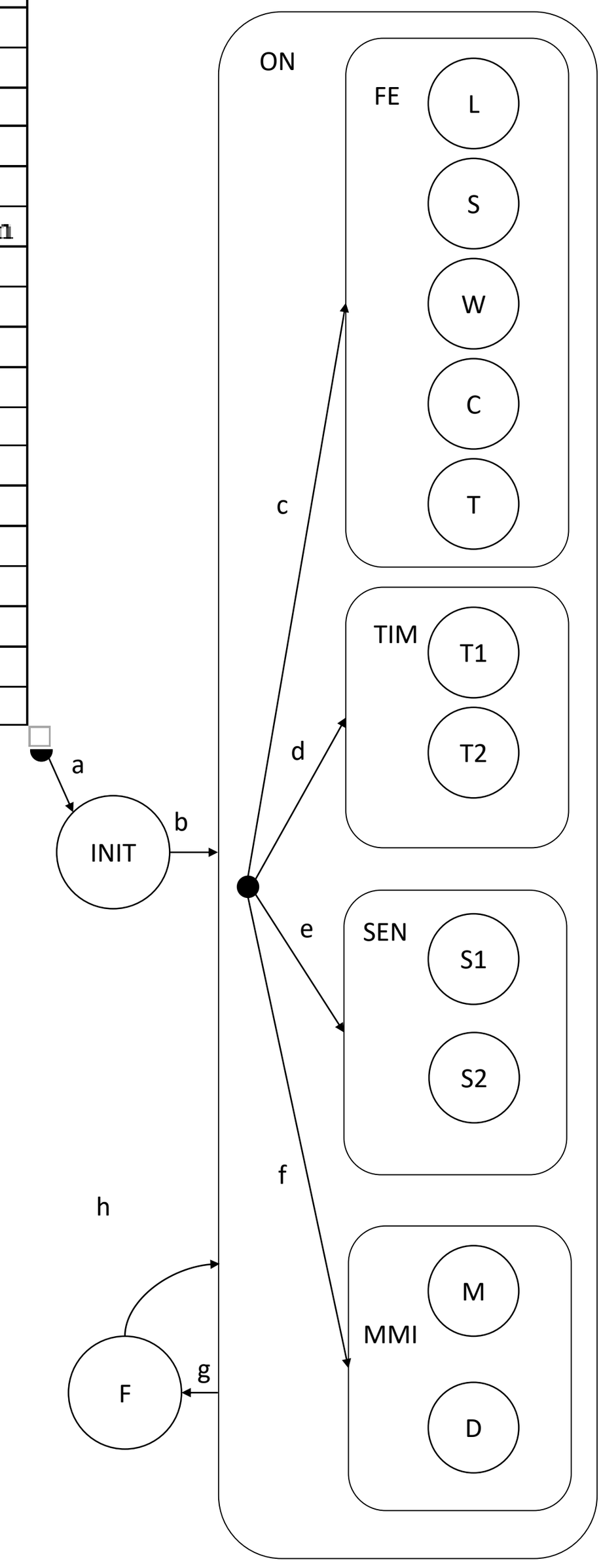
General System Overview

State	Type	Description
INIT	Basic State	Initialization State
ON	AND super state	System is working properly
F	Basic State	Fault state
FE	AND super state	Front End subsystem
TIM	AND super state	Timing subsystem
MMI	AND super state	Man-Machine Interface subsystem
SEN	AND super state	Sensing subsystem
L	OR super state	Light module subsystem
S	OR super state	Sound module subsystem
W	OR super state	Window-Curtain subsystem
C	OR super state	Coffee-making subsystem
T	OR super state	Shower temperature subsystem
T1	OR super state	Timer 1 subsystem
T2	OR super state	Timer 2 subsystem
S1	OR super state	Sensor 1 subsystem
S2	OR super state	Sensor 2 subsystem
M	OR super state	Microprocessor
D	OR super state	Display

Variable	Description
a	=1 delay before initialization
b	=1 all subsystems are on
c	=1 all front end modules are on
d	=1 all timers are initialized
e	=1 all sensors are initialized
f	=1 interface between user and processor initialized
g	=1 fault taken place
h	=1 fault rectified



Front-end System Overview

Light Module

Input:

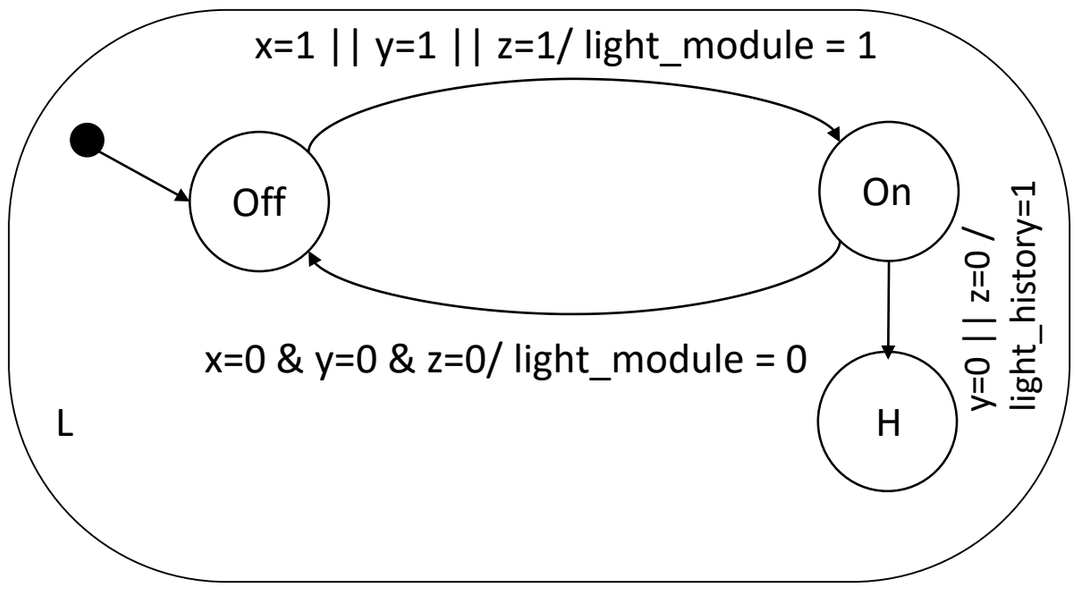
x = Input from user
y = Message from processing unit
z = user in in the room

Output:

light_module = system is either on or off
light_history = previous configuration of light module

States:

On = system is in on state
Off = system is in off state
H = history



Sound Module

Input:

y = Message from processing unit
sound_on= user selects a preview for a particular sound

Output:

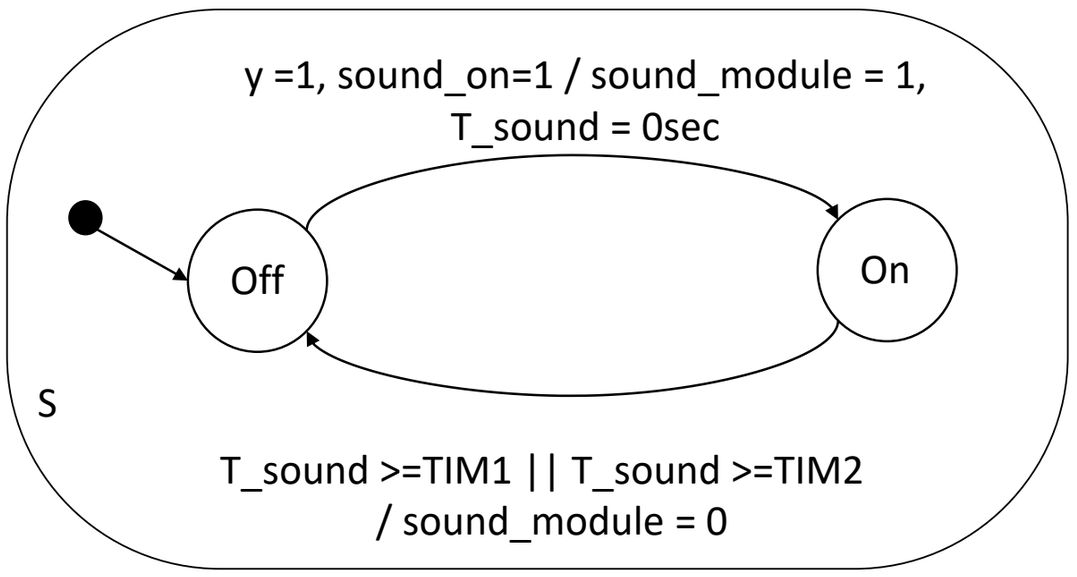
sound_module = system is either on or off

Timers:

T_sound = timer for sound system
Tim1 = timer for alarm
TIm2 = timer for snooze

States:

On = system is in on state
Off = system is in off state



Window and Curtain Module

Input:

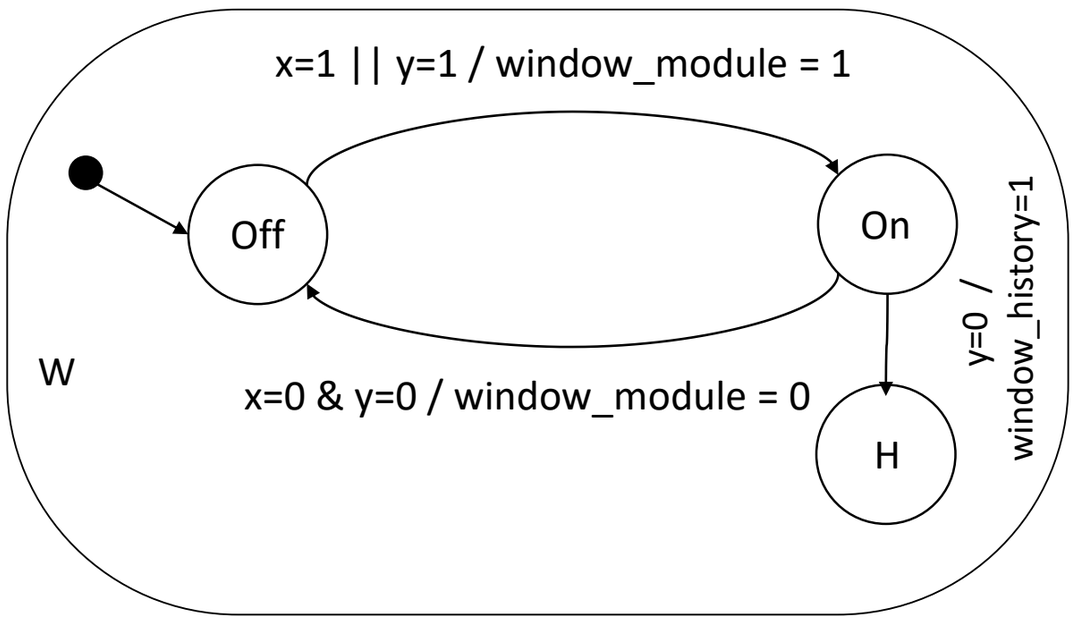
x = Input from user
y = Message from processing unit

Output:

window_module = system is either on or off
window_history = previous configuration of window and curtain module

States:

On = system is in on state
Off = system is in off state
H = history



Front-end System Overview

Shower Module

Input:

shower_command = Message from processing unit

Output:

shower_module = system is either on or off

Timers:

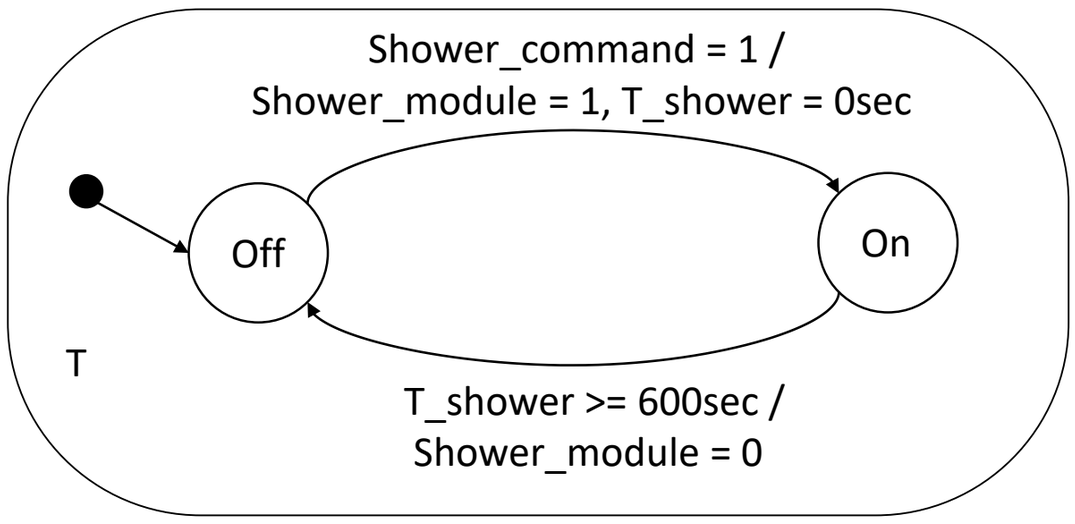
T_shower = timer for coffee system to be ready

TIm3 = timer for shower temp

States:

On = system is in on state

Off = system is in off state



Coffee Module

Input:

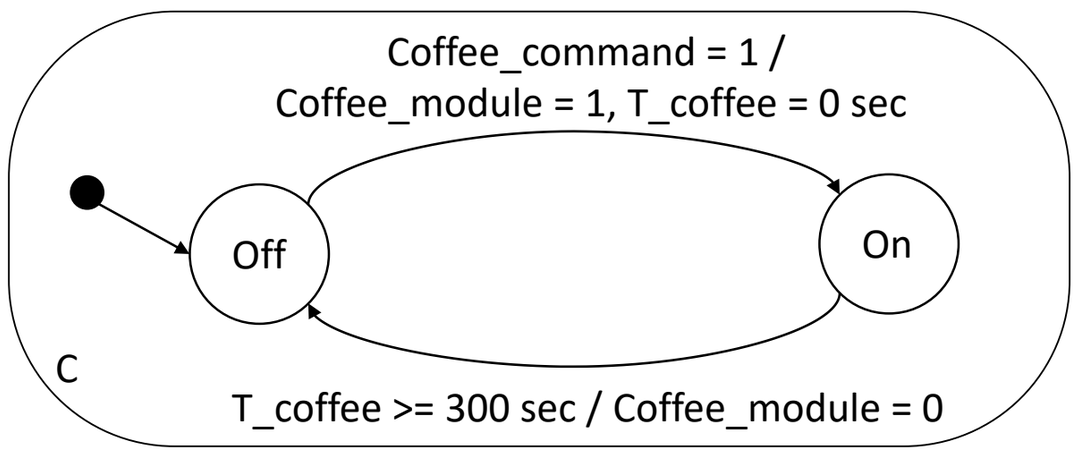
coffee_command = Message from processing unit

Output:

coffee_module = system is either on or off

Timers:

T_coffee = timer for coffee system to be ready



Timer and Man-Machine System Overview

Timer 1

Input:

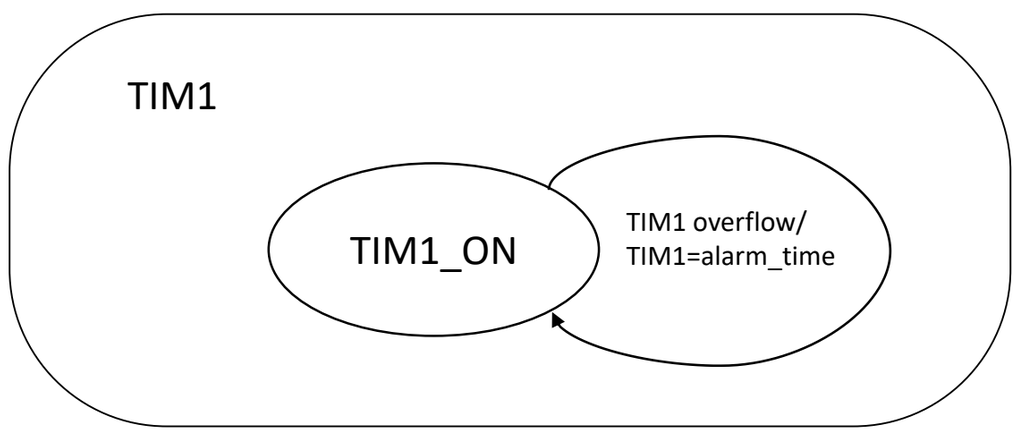
TIM1 overflow = timer1 overflows

Output:

TIM1 = alarm time set by the user

States:

TIM1_ON = on state off the timer



Timer 2

Input:

TIM1 overflow = when timer1 overflows

TIM2 = when timer2 overflows

Output:

TIM2 = timer2 is awake

sound_on = the sound system becomes on

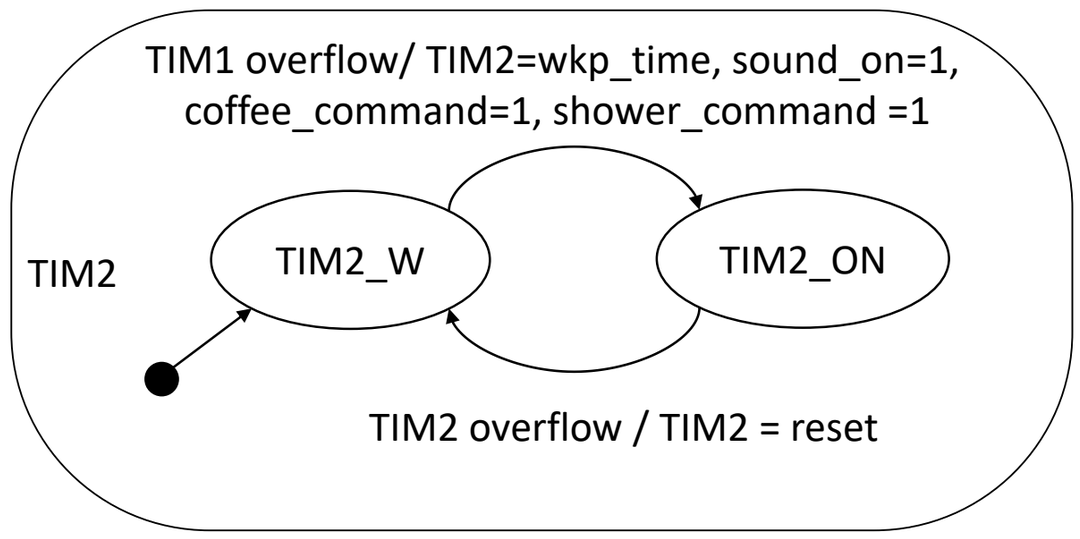
coffee_command = switch on the coffee system

shower_command = switch on the shower system

States:

TIM2_ON = on state off the timer

TIM2_W = wait state of the timer



Display Module

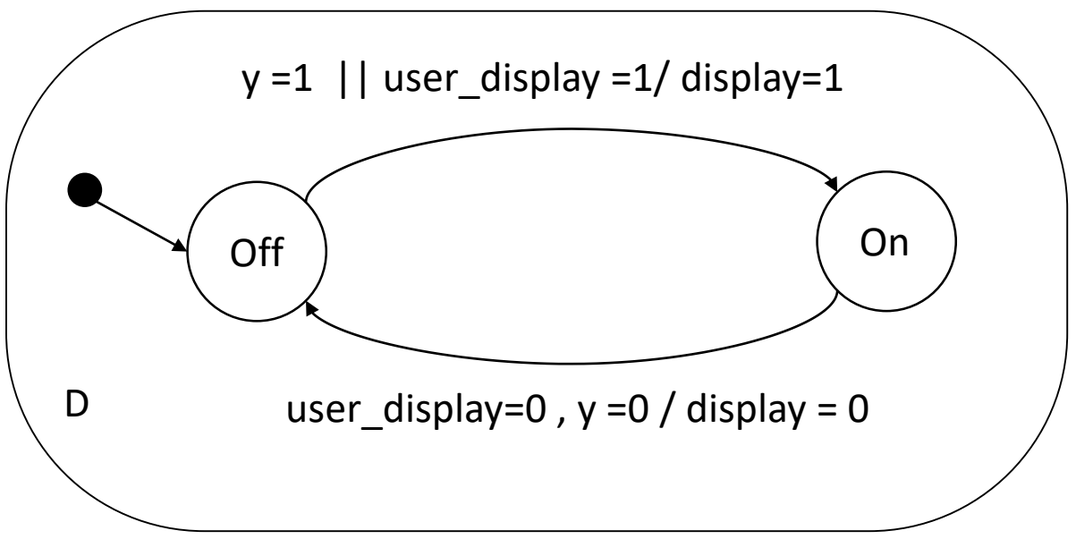
Input:

y = command from processor

user_display= users uses the display

Output:

display = display is either on or off



Processor Module

Input:

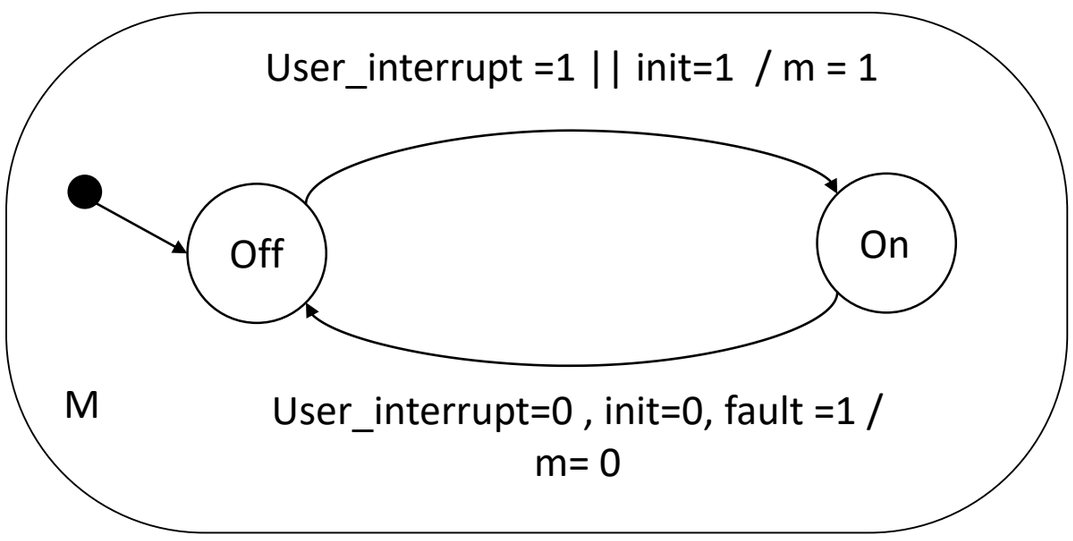
Init=power to processor

user_interrupt = user selects a particular function on mmi

Fault = system failure

Output:

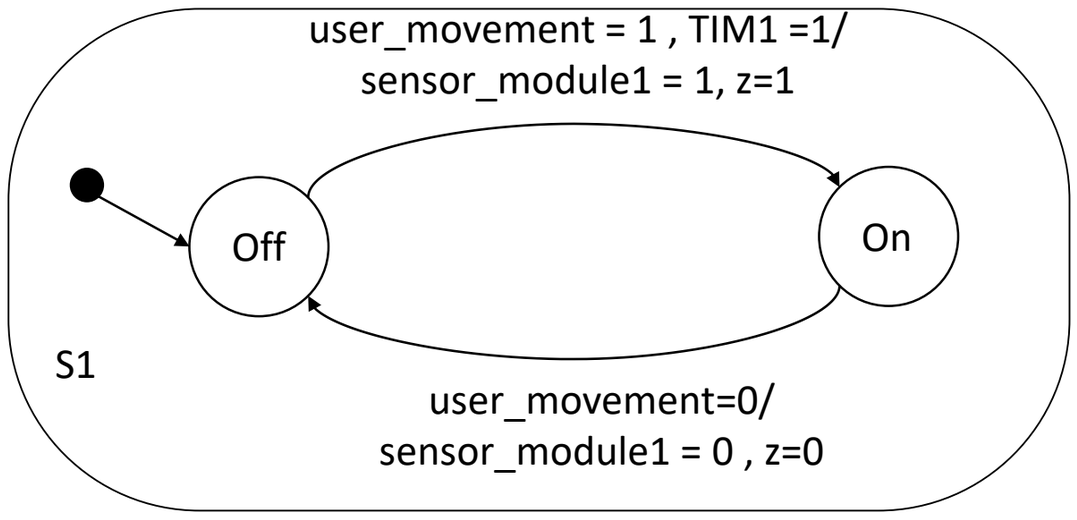
m = processor is either on or off



Sensor System Overview

Sensor 1
Input:
TIM1 = when timer is finished
user_movement = user is either in the room or not

Output:
z = user is in room or not
sensor_module1= sensor system for checking the motion is on or off



Sensor 2
Input:
TIM2 = when timer is finished

Output:
sensor_module2= pressure sensor system for checking if the user is in bed or not