

CEG-3136

Lab 3



uOttawa

Professor Ayman El-Sawah

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Ekin Berkay - 300237014

Alp Tatar -300241739

Code for the function **system_update_state()**

```
void system_update_state(alarm_system_t *system) {
    ticks++;
    switch (system->state) {
        int k;
        case UNARMED:
            if (system->usr_logged_in != NULL) {
                system->state = WAITING_TO_ARM;
                system->usr_logged_in = NULL;
                ticks = 0;
            }
            break;
        case WAITING_TO_ARM:
            if (ticks >= 500) {
                system->state = ARMED;
                system->usr_logged_in = NULL;
            } else if (system->usr_logged_in != NULL) {
                system->state = UNARMED;
                system->usr_logged_in = NULL;
            }
            break;
        case ARMED:
            if (system->usr_logged_in != NULL) {
                system->state = UNARMED;
                system->usr_logged_in = NULL;
            }
            for (k = 0; k < 64; ++k) {
                if (system->sensor_list[k].state == TRIGGERED) {
                    system->state = ALARMED;
                    break;
                }
            }
            break;
        case ALARMED:
            if (system->usr_logged_in != NULL) {
                if (system->usr_logged_in->is_super_user) {
                    system->state = UNARMED;
                    system->usr_logged_in = NULL;
                }
            }
            for (k = 0; k < 64; ++k) {
                sensorm_reset(&system->sensor_list[k]);
            }
            break;
    }
    system_fsm_coverage_update (system);
}
```

FSM State Coverage Picture after going through all the States

```
^beep^
super89
EXTI1_IRQHandler clk cnt 0x19b2
user super8 has just logged in
Enter passcode to ARM, q to quit:
The system is now UNARMED
q
invalid user entry
FSM State Coverage:
UNARMED 4      3      0      0
ARMING  1      3      2      0
ARMED   1      0      2      1
ALARMED 1      0      0      1
```