**Smart Home Security System (SHOSEM)**

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**Brief Information:**

This a system which based on my group project for Computer Architecture class where we are supposed to build a system for a household that will prevent any breaches from happening. This consist of three main sensors,

1. Motion Sensor - it will detect any movement in secured areas, and it will capture the person activity.
2. Door lock sensor – if the sensor was not intact or broken it will activate the system alarm.
3. Breach sensor – it is a sensor for an area that is not covered by other main security sensor such as windows or another accessible door (sliding door).
4. Owner authorizations- owner can disable/disarm the security system by entering their registered passcode.

**State Transition Table**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Conditions |  | | | | | | | | | | | | | | | | | | | | | | |
| 1. Motion sensor triggered? (q0) | T | T | F | T | T | T | F | F | F | F | T | T | T | T | T | F | F | F | F | F | T | T | F |
| 1. door lock sensor triggered? (q1) | T | F | F | F | T | T | F | T | F | T | F | F | T | T | T | T | F | F | F | T | F | F | T |
| 1. Breach sensor triggered? (q2) |  |  |  | F | F | T | F | T | T | F | T | F | F | T | T | T | T | F | F | T | F | T | F |
| 1. Owner authorized?   (q3) |  |  |  |  |  |  |  |  |  |  |  | F | F | F | T | T | T | T | F | F | T | F | T |
| 1. System Activated Disarm   (q4) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. System Alarm Activated (q5) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | | | | | | | | | | | | | | | | | | | | | | |
| Action |  | | | | | | | | | | | | | | | | | | | | | | |
| 1. Accept |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x |  |  |  |  |  |
| 1. Reject | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |  | x | x | x | x | x |

**State Transition Diagram**

L = {FFFT}

Start

F

F

T

Q0

Q4

(final state)

Q1

Q2

Q3

F

F

F

T

T

T

Q5

(Trap State)