

Dorm Room Genie

Keyboard Control Module

- Will accept keyboard inputs and route them to the appropriate module
- Dedicated command inputs verified through successful operation of other modules; i.e., the lock unlocks when the “unlock” button is pushed
- Dedicated commands not accepted during a time or password set operation, or while the system indicates a burglary in progress.
- Data inputs (characters for the password, numbers for times) verified through successful programming of the password and time.
- Keyboard control module will output its current state to the display

Lock Module

- Lock module will demonstrate the following modes of operation
 - Locked
 - Lit LED lights indicate that the lock is held in the latched state; password entry will transition the lock to “entry” mode.
 - Unlocked
 - Unlit LED lights indicate that the lock is held in the unlatched state.
 - Inactive
 - Lit LED lights indicate that the lock is held in the latched state; password entry will not be accepted, however the lock will transition to “locked” mode when the door is opened.
 - Entry
 - Following successful password entry, unlit LED lights indicate the lock has unlatched -- once the door opens, the LEDs light up, indicating that the lock has re-latched itself as it transitions back to “locked” mode
 - Password Set
 - Lock will accept a new password of length 0-16 characters. Successful password storage verified through subsequent successful use of the password to unlock the lock.
- The user may push buttons to change lock state
- Lock module will output its current state to the display

Burglar Alarm Module

- Burglar Alarm module will demonstrate the following modes of operation

- Disarmed
 - The user may push a button to arm the system. If the door is closed at that time, the burglar alarm will transition to “instant” mode. If the door is open, the alarm will transition to “exit” mode.
- Instant
 - The user may push a button or enter the code to disarm the system. The system will transition to “burglary” mode if the door is opened.
- Armed
 - The user may enter the code to disarm the system. The system will transition to burglary mode if the door is opened, or if motion is detected.
- Exit
 - The system will transition to “armed” as soon as the door is closed. The user may also disarm the system by pushing a button.
- Burglary
 - The user may disarm the system by entering the code. The buzzer will sound, and the current system time will be stored.
- Burglary module will output its current state and the time of the most recent burglary to the display

Clock Module

- Clock module will keep the current time
- User will be able to reprogram the time
- Clock module will output its current state to the display

Wake-up alarm module

*Note: Specified times may be shortened for demonstration purposes

- Wake-up alarm module will demonstrate the following modes of operation
 - Alarm Off
 - The alarm will not go off, however the current programmed alarm time is stored
 - Alarm On
 - The alarm has been programmed with a time, and the alarm will trigger the lighting module to begin lighting 15 minutes before the programmed wake-up time, and the alarm buzzer will start beeping once the alarm time has been reached
 - Snooze
 - Snooze operation is available when the alarm has been on and the current time is within 15 minutes of the programmed alarm time.
 - Pressing snooze will trigger the lighting to turn off, and the clock will wait 15 minutes before once again setting off the buzzer
- The user will be able to program the alarm wake-up time
- Wake-up module will output its current state and wake-up time to the display

Lighting Module

- Lighting module will demonstrate the following modes of operation
 - Manual
 - User will be able to turn the lights off, brighten the lights, and darken the lights.
 - Automatic
 - In this mode, a light sensor will be used to automatically adjust the light based on the current level of ambient light
 - Sleep
 - In this mode, the lighting module will work in concert with the wake-up alarm module, in order to slowly wake the user up with light as the time approaches the programmed wake-up time.
 - Burglary
 - The lighting module will enter this mode during a burglary which is specified by the burglary alarm module. The light will flash on and off for the duration of the burglary. Once the burglary is over, the lighting module will resume its mode of operation.
- The lighting module will output its current state to the display

Display Module

The display module is used to display the current state of the system

- Display Module will display the following:
 - Lock Module State
 - Burglar Alarm State
 - Keyboard Control Module State
 - Clock Module State
 - Current Time
 - Wake-up Alarm Module State
 - Programmed wake-up time
 - Lighting Module State

Video Module

- The module will sense motion in the room and output a signal when motion is detected. Verifiable through LED indicators, as well as the motion triggered burglary.
- During a burglary, the module will begin capturing images until the memory is full.
- Following a burglary, the module will playback the captured images.