**THIS DOCUMENT HAS NOT BEEN CREATED YET…**

**Definitions:**

* “ShopLock\_original” refers to the current…
  + …ShopLock hardware,
  + …program on UnoR3, and
  + …Android software/phone.
* “ShopLock” will now be the name for current “ShopLock\_original”…
  + …UnoR3 software as will be modified under this project,
  + …hardware which will not be modified under this project\*, and
  + …Android software program (“Andy” for short) as will be modified or completely rewritten under this project.

*\* I would like to keep the hardware the same so that after each software trial, I can  
 reload “ShopLock\_original” sketch and maintain shop security.*

* “ShopMotion” refers to…
  + Motion detection plus--(temperature, humidity, simulate people home, ShopLock2 comms) software.
  + New, “physically-separate-from-ShopLock/ShopLock\_original” hardware consisting of…
    - Plastic container holding…
      * UnoR3
      * ESP8266 WIFI module = “ShopMotion\_ESP8266” = “Wilson”.
      * Four relays to control two sets of lights and possibly, a boom box (radio), and a spare device (TBD).
      * Two 2-receptacle wall outlets mounted on side of box (four outlets total).
    - Flood lights within the shop.
    - Fluorescent light at foot of stairs to basement.
    - Four motion detection sensors aimed at shop…
      * windows,
      * door to garage,
      * top of stairs, and
      * bottom of stairs.
    - BoomBx/Radio…
    - Temperature/Humidity sensor…
    - A photovoltaic sensor (light sensor) to determine at night if main shop lights were left on in the shop…  
      *Note: The main shop lights are not to be controlled under this project, just monitored with light sensor.*

* “**ShopLock2**” refers to everything, i.e., the combination of…  
    
   **ShopLock**…………………………. and ………………………………………….**ShopMotion**…
* Inputs… (name\_pin)
  + Motion\_stairs\_lower\_2
  + Motion\_stairs\_upper\_3
  + Motion\_door\_garage\_4
  + Motion\_window\_5
  + Temp\_Humid\_6
  + ESP8266\_Serial\_Out\_7
* Outputs…
  + ESP8266\_Serial\_In\_8
  + RGB LED red\_9
  + RGB LED green\_10
  + RGB LED blue\_11
  + Button1\_12
  + Button2\_13
  + PhotoResistor\_A0 (ShopBrightness)
  + Light\_shop\_A1 *(outlet 1)*
  + Light\_stairs\_A2 *(outlet 2)*
  + Radio\_A3 *(outlet 3)*
  + Other\_A4 *(outlet 4)*
  + PhotoResistor\_A5 (ShopBrightness)
  + Unsued pins… 0, 1 (save for serial comm and uploading)

**Hardware needed:**

* Uno for “ShopMotion”
* ESP8266 for “ShopMotion”
* DHT sensor
* Radio
* Stair light
* Flood light
* 4 motion detectors
* Relay box for stair and flood lights and 3rd outlet.
* Two receptacle wall outlet mounted to box.
* 4 relays
* 9V power supply
* Telephone wire
* 15’ white extension cord.
* 4mm cable stables
* Light sensor

**Features:**

* Current ShopLock features to retain… with desired change in red.
  + Service Status (e.g. “Shop is Secure”)
  + Contiuously monitoring since…
  + START MONITORING
  + STOP MONITORING
  + NETWORK SETTINGS
  + Mode (e.g. “Armed”)
  + ARM
  + BYPASS
  + BYPASS UNTIL LOCKED
  + Door status
  + Deadbolt status
  + Church Mode
  + ACTIONS
    - RESET ALARM
    - SOUND ALARM
    - TEST ALARM
    - START SILENT TEST
* Desired changes/New features in ShopLock2 …

Change so phone does not automatically override manual input (and vice versa).

* + Andy can change alarm status but does not automatically override any manually changed setting done within the shop. In other words, if I set the alarm into BYPASS or BYPASS UNTIL LOCKED modes by pressing the button at the wall mounted system, Andy does not overwrite that entry but rather acknowledges it and accepts it as the desired setting.
  + Temperature/Humidity detection/reporting
    - Temperature and humidity readout on Andy main page. Android software program /phone = “Andy.”
    - Phone set-able temp and humidity upper and lower warning limits for which if outside those limits, ShopLock notifies Andy. (see notifications on next page).
    - A temperature and humidity trend chart would be cool, but not necessary.
  + SimHome setting… Somebody is home simulation:
    - ShopMotion\_8266 (Wilson) will acquire time from website and update that time periodically.
      * This is for simulating when someone is home and for Motion detection (non-alarming state).
      * I don’t want ShopLock to have to rely on phone communications to know date/time.
    - Ability to set from phone a “SimHome” setting from 0000 to 9999.
    - When set to 0, ShopMotion will not simulate someone being home.
    - When set to other than 0, the ShopMotion uno sketch will operate lights and radio at pre-programmed setting. I can’t see more than 9 different “Somebody is home” simulations programmed on the ShopMotion Uno sketch, but allow 0000 to 9999 as it may be handy to code mode by other than a single digit to be more descriptive to me… …perhaps #000 for flood light, 0#00 for basement stairs, and 00#0 for radio, and 000# for 4th outlet which used is yet to be determined.
  + NOTICES (NOTIFICATIONS)…
    - ShopLock to notify Andy of possible problems/concerns.
    - Andy to also track certain problems/concerns that only Andy would know.
    - Andy to report these notices as they occur for the first time via phone vibrate, then to ignore that specific concern until cleared.
    - Andy to vibrate 10 minutes before the top of the hour if any uncleared notices exist.
    - ShopLock will pass to Andy…
      * if a concern is active and
      * a concatenated string describing the concerns.
    - ShopLock triggered notices include (but are not limited to)…
      * Church mode active for too long.
      * ShopLock not “Armed” for too long, i.e., in BY-PASS or BY-PASS until locked state for too long.
      * Main shop lights are on when they likely should not be on.
      * Room temperature is outside desired limits.
      * Room humidity is outside desired limits.
      * Door is unlocked for too long.
      * Any other notification as programmed over time.
    - Andy triggered notifications include…
      * No response from ShopLock for more than (enterable from phone) minutes.
      * Other?
    - Andy to display “NOTICE” message button (red background) if an active concern is in effect.
    - Andy to display “NOTICE” message button (yellow background) if no active concern is in effect but that a notice did occur since notices were last acknowledged.
    - Andy to display “FREE” (or something logical) message if there are no active concerns AND no unacknowledged notices.
    - Once notices are viewed on Andy (perhaps by opening another window), the notices should not be automatically acknowledged… …I still would like to have to clear the notices (all notices could be cleared at once) with a press of a button. This way, if I can’t deal with the issue right away (perhaps I am away from home), I won’t forget about it with the phone vibrate 10 minutes before the top of the hour.
  + Motion detection (non-alarming state)
    - ShopMotion will not turn on flood lights if shop is bright enough as deemed by photo resister (light sensor). *I could never get the lights in the shop to know when to stop coming on. My shop lights were not bright enough to trigger the sensor. So aggravating that I just unplugged it and have to walk through shop in dark until I reach the light switch.*
  + Alarm Armed modes
    - Soft…Activates intrusion alarm if…
* Shop East door to outside is opened.   
  *(I need to be able to move about the shop throughout day without setting off intrusion alarm).*
  + - Medium…Activates intrusion alarm if…
* Shop East door to outside is opened or
* Shop door to garage is opened or
* Motion is detected at the windows.
  + - Hard:
* Shop East door to outside is opened or
* Shop door to garage is opened or
* Motion is detected at the windows or
* Motion is detected at stairs.  
  + Shop Motion Enabled/Disabled (Ability to stop all ShopMotion driven activities with one button). This is so if there are issues, I can with one button press from either the phone, ShopLock, or ShopMotion a button that…
    - Turns off ShopMotion in the sense the outlets it controls will go off,
    - ShopLock ignores any warning messages ShopMotion would have provided,
    - Phone App responds only to original ShopLock issues (e.g., Door opened when armed).

…and this helps in that I can modify ShopMotion code without setting off Shoplock alarm.

**COMMUNICATIONS:**

**SHOP LOCK  
(UNO1)**

**router**

**PHONE APP**

**SHOP MOTION (UNO2 / ESP8266)**

**router**

**🡸 = current state sent back**

***Previous items***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **USER INPUTS…** | **“ANDY”  ANDROID PHONE APP** | **SHOP LOCK** | **SHOP MOTION** |
|  | ***Start Monitoring*** | **App use only** | **---** | **---** |
|  | ***Stop Monitoring*** | **App use only** | **---** | **---** |
|  | ***Network Settings*** | **App use only** | **---** | **---** |
|  | ***Server Address*** | **App use only** | **---** | **---** |
|  | ***Refresh Rate*** | **App use only** | **---** | **---** |
| ***#,*** | ***Mode (ARM)*** | **Used and PASSED 🡺** | **Used** | **---** |
| ***Mode (BYPASS)*** | **---** |
| ***Mode (BYPASS UNTIL LOCKED)*** | **---** |
| **#,** | **Security Level (soft, med, hard)** | **PASSED 🡺** | **Used** | **---** |
| ***#,*** | ***Church Mode*** | **App use only** | **---** | **---** |
|  | ***Actions (RESET ALARM)*** | **Used and PASSED 🡺** | **Used** | **---** |
| ***Actions (SOUND ALARM)*** | **---** |
| ***Actions (TEST ALARM)*** | **---** |
| ***Actions (START SILENT TEST)*** | **---** |
| **#,** | **Shop Motion Enabled/Disabled** | **Displayed and PASSED 🡺** | **Used and PASSED 🡺** | **Used** |
| **#####,** | **Flood light time after triggered** | **Displayed and PASSED 🡺** | **PASSED 🡺** | **Used** |
| **#####,** | **Stair light time after triggered** | **Displayed and PASSED 🡺** | **PASSED 🡺** | **Used** |
| **###,** | **Temp low alarm limit (### F)** | **Displayed and PASSED 🡺** | **Used** | **---** |
| **###,** | **Temp high alarm limit (### F)** | **Displayed and PASSED 🡺** | **Used** | **---** |
| **###,** | **Humid low alarm limit (### F)** | **Displayed and PASSED 🡺** | **Used** | **---** |
| **###,** | **Humid high alarm limit (### F)** | **Displayed and PASSED 🡺** | **Used** | **---** |
| **####,** | **SimHome# (####)** | **Displayed and PASSED 🡺** | **PASSED 🡺** | **Used** |
| **#,** | **Alarm state enabled/disabled** | **Displayed and PASSED 🡺** | **🡸Used and PASSED 🡺** | **🡸PASSED  /Used** |
|  |  |  |  |  |
|  | **SHOP LOCK INPUTS…** | **PHONE APP** | **SHOP LOCK** | **SHOP MOTION** |
| ***#,*** | ***Shop door status*** | **Displayed / used** | **🡸PASSED and used** | **---** |
| ***#,*** | ***Shop deadbolt status*** | **Displayed / used** | **🡸PASSED and used** | **---** |
| ***#,*** | ***Alarm mode*** | **Displayed / used** | **🡸PASSED and used** | **---** |
| **#,** | **Security Level (soft, med, hard)** | **Displayed / used** | **🡸PASSED and used** | **---** |
| **#,** | **Manual change in alarm mode** | **Displayed / used** | **🡸PASSED and used** | **---** |
| **####,** | **Shop Brightness (0 to ####)** | **Displayed / used** | **🡸PASSED and used** | **🡸PASSED** |
| **###,** | **Shop Temp now (### F) \*** | **Displayed / used** | **🡸PASSED and used** | **🡸PASSED** |
| **###,** | **Shop Humidity (### %) \*** | **Displayed / used** | **🡸PASSED and used** | **🡸PASSED** |
| **###,** | **Shop Heat Index (### F) \*** | **Displayed** | **🡸PASSED** | **---** |
|  | **\*average of 15 1min intervals** |  |  |  |
| **###,** | **ShopTempDayHigh (### F)** | **Displayed / used / stored?** | **🡸PASSED and used** | **🡸PASSED** |
| **###,** | **ShopTempDayLow (### F)** | **Displayed / used / stored?** | **🡸PASSED and used** | **🡸PASSED** |
| **#,** | **Alarm state enabled/disabled** | **Displayed and PASSED 🡺** | **🡸Used and PASSED 🡺** | **🡸PASSED  /Used** |
| **##,** | **# of active “Notices”** | **Displayed / used / stored?** | **🡸PASSED** | **---** |
| **Text.** | **Notices (Notifications)** | **Displayed / used** | **🡸PASSED** | **---** |
|  | **Time of day** |  |  | **Used** |

**Communications from Andy to ShopLock could be…**

**Mode#,** **Security Level#,** **Church Mode#,** **Shop Motion Enable#, Flood light time#####, Stair light time#####,  
Temp low alarm limit###, Temp high alarm limit###, Humid low alarm limit###, Humid high alarm limit###,   
SimHome####, Alarm state enabled/disabled, unused1, unused2, unused3, unused4, unused5**  
 **#,#,#,#,#####,#####,###,###,###,###,####,#,z,z,z,z,z**

**Communications from ShopLock to Andy could be…**

**Shop door status,** **Shop deadbolt status,** **Alarm mode,** **Security Level (soft, med, hard),** **Manual change in alarm mode, Shop Brightness (0 to ####),** **Shop Temp now (### F) \*,** **Shop Humidity (### %) \*,** **Shop Heat Index (### F) \*,** \*average of five 1min intervals , **ShopTempDayHigh (### F),** **ShopTempDayLow (### F), Alarm state enabled/disabled, unused1, unused2, unused3, unused4, unused5, # of active “Notices”,** **Note1, Note2, Note3, Note4, Note5, Note6, Note7, Note8, Note9, Note10)**

**#,#,#,#,#,####,###,###,###,###,###,#,z,z,z,z,z,#,text1, text2, text3, text4, text5, text6, text7, text8, text9, text10**

**Conversations 1 through 4…**

**SHOP LOCK  
(UNO1 /ESP8266 WIFI shield)**

**router**

**PHONE APP**

**SHOP MOTION (UNO2 / ESP8266)**

**router**

1. **2**

**4 3**

**Shoplock\_uno high level plan…**

/\*

// if time to do so, re-capture time, date.

// Conversation #1…Listen to Andy (Android phone)

// Process inputs and also Andy's information

// Conversation #2…Talk to ShopMotion

// Conversation #3…Listen to ShopMotion

// Process inputs and ShopMotion data

// Conversation #4…Talk to Andy

\*/