```
// indicator and central locking functions
// 21.12.12


//Julian Rogers
//_____________________________________________________________________________

const long timeAlarmon = 300000; // in milliseconds
const long timeLighton = 30000;
int ignition = 0;
int alarm = 1; // active low
int lock = 0;
int unlock = 0;
int hazard = 0;
int leftindicator = 0;
int rightindicator = 0;
int receiver = 0;
int c = 0;
const int count = 3;
int islocked = 0;
int flag = 0;
int alarmEnabled = 0;
int alarmTriggered = 0;
const int tH = 4;
long startTime;
long time;
long lightTime;
int oldVal6 = 0;
int newVal6 = 0;
int debounce;
//_____________________________________________________________________________
_

void setup() {

  pinMode(2,OUTPUT); //LED
  pinMode(3,OUTPUT); //HAZ LED
  pinMode(4,OUTPUT); //Ind
  pinMode(5,OUTPUT); //Ind
  pinMode(14,OUTPUT); //operates warning horn
  pinMode(15,OUTPUT); //interior light
  pinMode(16,OUTPUT); //Alarm siren
  pinMode(17,OUTPUT); //Warning buzzer
  pinMode(18,OUTPUT); //Door lock
  pinMode(19,OUTPUT); //Door lock

  digitalWrite(2,LOW);
  digitalWrite(3,LOW);
  digitalWrite(4,LOW);
  digitalWrite(5,LOW);
  digitalWrite(14,LOW);
  digitalWrite(15,LOW);
  digitalWrite(16,LOW);
  digitalWrite(17,LOW);
  digitalWrite(18,LOW);
  digitalWrite(19,LOW);

  pinMode(6,INPUT); //Ign on detect
  pinMode(7,INPUT); //Alarm sensors
  pinMode(8,INPUT); //Lock switch
  pinMode(9,INPUT); //Lock switch
  pinMode(10,INPUT); //Haz Switch
  pinMode(11,INPUT); //Ind Switch
  pinMode(12,INPUT); //Ind Switch
```

```
  pinMode(13,INPUT); //Receiver

  //unlock doors on battery connection
  digitalWrite(19,HIGH);
  digitalWrite(2,LOW);
  digitalWrite(17,HIGH);
  delay(500);
  digitalWrite(17,LOW);
  digitalWrite(19,LOW);
  delay(1000);
}

//_____________________________________________________________________________

void loop() {

  //oldVal6 = digitalRead(6); // ignition switched supply detect
  alarm = digitalRead(7);
  lock = digitalRead(9);
  unlock = digitalRead(8);
  hazard = digitalRead(10);
  leftindicator = digitalRead(11);
  rightindicator = digitalRead(12);
  receiver = digitalRead(13);

  //-----------------------------------------------------------------------

  newVal6 = 0;
    do {
      oldVal6 = newVal6;
      newVal6 = digitalRead(6);
      if (newVal6 == oldVal6) {
        debounce = debounce + 1;
      }
      else debounce = 0;
    }
    while (debounce < 10);

    ignition = newVal6;







  if (lock == HIGH and ignition == 1) {
    islocked = 1;
    //digitalWrite(2,HIGH);
    digitalWrite(18,HIGH);
    digitalWrite(17,HIGH);
    delay(500);
    digitalWrite(17,LOW);
    delay(500);
    digitalWrite(17,HIGH);
    digitalWrite(18,LOW);
    delay(500);
    digitalWrite(17,LOW);

  }

  //.....................................................................

  if (unlock == HIGH and ignition == 1) {
    islocked = 0;
```

```
    digitalWrite(19,HIGH);
    //digitalWrite(2,LOW);
    digitalWrite(17,HIGH);
    delay(500);
    digitalWrite(17,LOW);
    delay(500);


    digitalWrite(19,LOW);
    delay(500);
  }

  //--------------------------------------------------------------------

  if (leftindicator == HIGH and ignition == 1 and hazard == LOW) {
    for(int c = 0; c < count; c++) {
    digitalWrite(17,HIGH);
    digitalWrite(4,HIGH);
    delay(500);
    digitalWrite(17,LOW);
    digitalWrite(4,LOW);
    delay(500);
    }
  }


  //.....................................................................
......

  if (rightindicator == HIGH and ignition == 1 and hazard == LOW ) {
    for(int c = 0; c < count; c++) {
    digitalWrite(17,HIGH);
    digitalWrite(5,HIGH);
    delay(500);
    digitalWrite(17,LOW);
    digitalWrite(5,LOW);
    delay(500);
    }
  }

  //.....................................................................
.....

  if (hazard == HIGH or (alarmTriggered == 1 and alarmEnabled == 0)) {
    digitalWrite(17,HIGH);
    digitalWrite(3,HIGH);
    digitalWrite(4,HIGH);
    digitalWrite(5,HIGH);
    delay(500);
    digitalWrite(3,LOW);
    digitalWrite(17,LOW);
    digitalWrite(4,LOW);
    digitalWrite(5,LOW);
    delay(500);
  }

  //--------------------------------------------------------------------------
------

  if (receiver == LOW and islocked == 0 and ignition == 0) {
    islocked = 1;
    alarmEnabled = 1;
    digitalWrite(18,HIGH);
    digitalWrite(17,HIGH);
```

```
  delay(500);
  digitalWrite(17,LOW);
  digitalWrite(18,LOW);
  for(int c = 0; c < count; c++) {
  digitalWrite(4,HIGH);
  digitalWrite(5,HIGH);
  delay(500);
  digitalWrite(4,LOW);
  digitalWrite(5,LOW);
  delay(500);
  }
}

else if (receiver == LOW and islocked == 1 and ignition ==0) {
  islocked = 0;
  alarmEnabled = 0;
  digitalWrite(14,LOW); // cancel spare
  digitalWrite(15,HIGH);// interior light on
  lightTime = millis();
  digitalWrite(16,LOW); // cancel siren
  digitalWrite(19,HIGH); // unlock
  digitalWrite(17,HIGH);
  delay(500);
  digitalWrite(17,LOW);
  digitalWrite(19,LOW);
  for(int c = 0; c < count; c++) { // flash indicators
  digitalWrite(4,HIGH);
  digitalWrite(5,HIGH);
  delay(500);
  digitalWrite(4,LOW);
  digitalWrite(5,LOW);
  delay(500);
  }
}

if((millis() - lightTime) > timeLighton or ignition == 1) {
  digitalWrite(15,LOW); // light off after 30 seconds or when ignition on
}


//--------------------------------------------------------------------

if (alarm == LOW and alarmEnabled == 1) {
 c = 1;
 digitalWrite(17,HIGH);
 digitalWrite(14,HIGH); // 14 operates warning horn
  delay(50);
  digitalWrite(17,LOW);
    digitalWrite(14,LOW);
 startTime = millis();

  do {
     alarm = digitalRead(7);
    if (alarm == LOW) {
      c = c + 1;
      do {
       alarm = digitalRead(7);
      }
      while (alarm == LOW);
    }

   time = millis() - startTime;
  }
  while ( time < 2000);
```

```
  }

  //.....................................................

   if (c > tH) {
    alarmTriggered = 1;
    c = 0;
    digitalWrite(16,HIGH); // sound siren
    alarmEnabled = 0;
    startTime = millis(); //timer for alarm
    }
  //.....................................................

  if ((millis() - startTime) > timeAlarmon and alarmEnabled == 0 and
alarmTriggered == 1) {
    digitalWrite(16,LOW); // turn off siren after one minute
    alarmEnabled = 1;
  }

  //.....................................................

  if (ignition == 0 and alarmTriggered == 1 and islocked == 0) {

    digitalWrite(2,HIGH);  // LED on
    while (ignition == 0) {
      ignition = digitalRead(6);
      digitalWrite(17,HIGH); // sound buzzer
      delay(100);
      digitalWrite(17,LOW);
      delay(100);
    }
    digitalWrite(2,LOW);  // LED off
    alarmTriggered = 0;
  }

  //-------------------------------------------------------------
 if (islocked == 1 and ignition == 0){

   if (hazard == LOW) {
     delay(500);
   }

   if (flag == HIGH) {
    digitalWrite(2,LOW);
    flag = LOW;
   }

   else {
   digitalWrite(2,HIGH);
   flag = HIGH;
   }
 }

 else if (islocked == 1 and ignition == 1){
   digitalWrite(2,HIGH);
 }
 else if (islocked == 0){
   digitalWrite(2,LOW);
 }
}
//.....................................................
```