Project: Build a Burglar Alarm

Thursday 2nd of November, 2017

Project Description

The project is to build a burglar alarm.

Done in groups of 2 or 3.

Expected output:

- individual project report
- code
- demonstration
  - this is in the last week
- presentation by selected groups

It's a lot of work to do in a month, but there's nothing there that we can't do. If you're making a good effort, you will do well, so don't worry about the results – enjoy it!

Dates

- Demonstration in the lab on 27/11
- Presentation in class on 30/11
- Reports & code due to the CS office by 8/12
  - if you really need this date pushed out, he'll do that on a case-by-case basis
  - don't limit yourself – the report can be 60 pages or more if you want

Functionality

1. Time of day
   - logging times of events (e.g. people entering, exiting)
   - displayed by default on LCD

- – this will be covered in the next lab
- include functionality to set time
- display date/time
- ability to set date

2. Alarm zones
- an alarm zone is a wired area being monitored by some sensors, and typically you can turn them on and off

Basic functionality

4 zones with programmable zone types:

- entry/exit
- alarm digital
  - – transition from 0 to 1 or 1 to 0 makes the alarm go off
- alarm analogue
  - – e.g. amount of force on a window, light level in a greenhouse, potentiometer
- continuous monitoring
  - – if someone cuts a wire, the alarm goes off

Programmable: zone 1 could be entry/exit at some time, another type another time, zones 3 and 4 could both be alarm analogue, etc.

Entry/Exit

- set user password
- set exit/enter time
  - – time to enter password before full alarm goes off
- require password to set/reset
  - – also maybe quick set which sets immediately instead of allowing exit time

Alarm Digital

- set active high or active low

Alarm Analogue

- set threshold value
- also maybe sensing many rapid gentle taps

Continuous Monitoring

- activate alarm on H->L transition

Extended functionality: - require engineer password to change settings - set engineer password

When an Alarm Happens

Basic Functionality:

- record zone, date, time in the EERPOM memory
- activate alarm

Saving Settings

- when zone settings are changed, they should be saved in the EEPROM (so that reboot works)

Remote Control

- entering enter/exit passwords
- navigating menus (on the lcd)