SST course overview

The main assignment of this course will be to design and build a home security system. This system will detect movement in the house, and sound an alarm when the inhabitants – the users – are not home when movement is detected. This includes creating a web page that allows the users to configure their alarm system remotely and monitor its state.

To help you with completing this assignment, there will be two workshops that guide you through the most difficult tasks involved in the assignment. The first workshop will teach you how to send data from an Arduino to the ThingWorx Internet of Things platform, and the second will teach you how to send data from the platform to the Arduino.

In addition to this there will be video tutorials available about the workshop assignments and, at the end of the course, the assignment. There is also a forum available for questions that arise outside of the workshops.

Prerequisite skills

This assignment assumes you have the following skills before starting:
- Knowledge on how to design software using a flow chart
- Experience in programming an Arduino:
  - Knowledge of the data types: int, double, float, String, char, char[]
  - Using and defining functions and their return variables
  - Using software developed by others
  - Troubleshooting the code that you're using
  - Installing a library
- Basic knowledge of HTML
- Basic electronics skills:
  - The ability to read electronic diagrams
  - The ability to build circuits from diagrams
  - The ability to calculate resistor values appropriate for these circuits

Side-note

While the system that is designed in the assignment would work as a deterrent, it is of course not a very safe system. In order to maximise safety it would be necessary to have, for instance, the users check a video feed of the room where the alarm was triggered so they can call the police or a security company instead. A more sophisticated system can be developed with the same tools we are using, but for video or audio recordings it would be better to use, say, a Raspberry Pi; the Arduino works great as a sensor/actuator, but has limited capabilities as a processor of information.