Open Source Home Automation

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The goal of this project was to engineer a Home Automation system that was completely Open Source and centralized. Design constraints were the cost of the project, and also the method of control. The system, in order to meet the criteria, had to be cheaper than any “consumer” counterpart, and also had to be controlled by a central user interface. To achieve this, the project tested a Raspberry Pi, an embedded system computer, as a central controller. After finding a controller, the communication protocol X10, was picked to communicate with devices such as lights. An open source IP camera was used as a security camera. Different sensors were used to detect weather elements. After choosing the hardware, Open Source home automation software was chosen and modified for the needs of the project. The software chosen was Domoticz, an open source embedded system operating system. When assembled, the components created a scalable, centralized, and complete home automation system. A user could control their house from an HTML5 web interface and could automate certain tasks depending on need. A cost analysis was completed, and the Open Source Home Automation system was cheaper in all cases, including expansion, than its consumer counterparts.

Awards Won: