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OSGi BASED SMART HOME PORTAL

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Title: OSGi Based Smart Home Portal

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Component based software engineering techniques using OSGI framework have been used for developing a smart-home portal. As local sensors are an integral part of the the smart-home ecosystem, a RaspberryPi was used to interface the following sensors: DHT11 for temperature and humidity; A simple switch and buzzer system; A passive infrared sensor (PIR) for motion detection. Apart from that, logic circuits such as OR gate were written in the software and the GPIO assignment was made available to user of the smart-home portal using the OSGi Configuration Admin Service. Similarly, the communication between GPIO and the software counterpart(logic circuit) was made possible by using OSGi Wire Admin services. Finally, a light-weight server Jetty was used following OSGi HTTP Service specification and all the front-end web services were deployed using simple Java Servlets for redirection and REST services implementation. The communication between front and backend is facilitated using AJAX. This resulted in a simple web portal that lets the user configure GPIO for the RaspberryPi and interface devices to various Pin of his/ her choosing and after configuration provides a near real-time display of sensor readings.