## 3.2 Functional Requirements

**User**

**Turn On**

**Choose a Device**

**Turn Off**

**Adjust**

**Get Sensor Info**

**Update Sensor Info**

# In order to make the user manipulate the system, we need 5 general functions working on a home appliance included in the home automation system with the help of sensors and required connections. Each function is explained with the use cases below.

### 3.2.1 Use Case: Choose a Device

**user**

**Choose a Device**

**Brief Description**

The user will select the device to control.

**Initial Step-By-Step Description**

Before this step is used the devices selected should be plugged in.

1. The user selects the device and sees its current condition.
2. The user can manipulate the appliance with given commands.

### 3.2.2 Use Case: Turn On

**user**

**Turn On**

**Brief Description**

The user will start the home appliance.

**Initial Step-By-Step Description**

Before this step is used the device which is used should be selected.

1. The user sees sensor info’s after selecting the device which appliance will be turned on with.
2. The user turns on appliance with given info’s or changes them into his/her needs.

### 3.2.3 Use Case: Get Sensor I**n**fo

**user**

**Get Sensor Info**

**Brief Description**

The user can see appliances current condition and configuration at any time. Even though it is done by the system periodically, user can see this information at any time with this functionality.

**Initial Step-By-Step Description**

Before this step is used user should select a device.

1. User should select get device info to refresh it.

### 3.2.1 Use Case: Adjust

**user**

**Adjust**

**Brief Description**

The user can adjust the configurations of appliances.

**Initial Step-By-Step Description**

Before this step is used user should select a device.

1. The user should make sure that sensor info is not obsolete by updating the sensor info.
2. The user can adjust the configurations of the device.

### 3.2.4 Use Case: Update Sensor Info

**user**

**Update Sensor Info**

**Brief Description**

The user can update the configurations of appliances after doing the necessary adjustments.

**Initial Step-By-Step Description**

Before this step is used user should select a device and make adjustments.

1. The user should make sure that the configurations are correct.
2. The user should press update sensor info button to set the adjustments.

### 3.2.1 Use Case: Turn Off

**user**

**Turn Off**

**Brief Description**

The user will stop the home appliance.

**Initial Step-By-Step Description**

Before this step is used the device which is used should be selected.

1. The user sees sensor info’s after selecting the device which appliance will be turned off with.
2. The user turns off appliance with given info’s.

## 3.3 Non-functional Requirements

### 3.3.1 Performance requirements

The resulting home automation system should perform on home appliances and various sensors having the ability of compatibility more than the ones in the market. Additionally a more general communication protocol and wireless controller hardware should be used to make the system perform on much more devices. The system should access data in reasonable time. The data transfers between the devices such as actuators and sensors with master controller should not exceed the time limit of 3 seconds and lie under the throughput of 250 Kbps. Additionally, the system should service with the 7 days / 24 hours availability. The system should work smoothly with other existing connection networks at home.

### 3.3.2 Design constraints

The reporting of the project should be in IEEE standards and its diagrams should be drawn in UML standards. The interface between the system components should be well described to make the user control easier. As an environment constraint, master controller software should be developed on Linux system. Moreover, there is another constraint on wireless communication protocol. In this system, ZigBee wireless protocol should be used to make the devices communicate. The transmitted information between the devices should be carried in encrypted form, as a security constraint.