External Power Source

Output Devices

Raspberry Pi

Server/HUB

Relay Module

Input Devices

Mobile App

Voice Assistant

Other Home Appliances

Light Bulb

Outlet

Door Sensor

**Picture: Architecture of Home automation project.**

Rechargeable Battery

Power Adapter

Cloud

Wi-Fi Router

Note: Here we have used Raspberry pi as our main Server or HUB which communicates with the input and output devices and execute certain commands. We are using our existing home Wi-Fi router to make a wireless connection between the input devices and the raspberry pi server as the input devices are portable. Also wireless connection is much stable and can communicate from a far distance, generally from anywhere inside the house. One the other hand, we are using wired connection between the pi server and output devices because we do not need to move the server and output devices very often. We have bypassed the power adapter with a 5v rechargeable battery to power the pi server so that when there is power outage or load sheading, the server can still run uninterruptedly. The battery will pull charge from the power adapter and store the energy inside itself when there is AC power. Besides, the server will consume the energy from the battery. As soon as the load sheading occurs, the server will start pulling the stored charge from the battery. The battery can survive up to 2 hours.