Smart Plug

A. Overview:

We would like to design a device that can connect to a switchboard and help control devices in an environment from the internet. It would involve an android application/ Webapp that can be used to access the device remotely.
1.The device would be able to switch on/off as and when the user requires (through the app)
2. It would also provide data on the power consumption of the device connected to the ports.
Further we would like to try out the following features at a later stage of the project
1. Automatic switching off on charging the device fully.
2. Regulating the amount of current according to the user's need.(for eg: Regulating the speed of the fan)
3. We would like to use the Google Voice API to enhance the app experience and include voice control.

B.Essential features:

1. Switch on/off option through wi-fi
2. Display of Voltage and current reading of the appliance connected
3. Power off when the device gets fully charged
4. Regulating the current supply to the electrical appliance
5. Creating a mobile app to manipulate all these functions

C.Implementation and D.Timeline:

The first 5 days: Theory

Understanding the components, their utility and how to assemble them.

The next 15 days: Basic Layout

Assembling the components and working out on the first two features.
We won't essentially be focusing on the design yet.

Following 5 days: Basic design of the device

3-D printing the device after creating a draft of it on Solid Works.

Last 15 days: Incorporating the 3rd and 4th feature and creating replicas for demonstration

We would be working on the android app throughout the course of this project.

E.Hardware Requirements:

1. ESP8266
    a. ESP8266 Uart Serial to Wi-Fi Wireless Module for
    b. http://www.inkocean.in/esp8266-remote-serial-wifi-wireless-module-wifi-wireless-module-through-walls-wang-c5a2?gclid=CI6UjNLE9cQCFUonjgodUbkANg)

2. Relay Circuit(single or 4)
    a. Four Channel 4 Ch 12v Uln2003 ...Four Channel 4 Ch 12v ...Four Channel 4 Ch 12v ...

3. Arduino (We aren't Sure of the Model)
    a. http://www.amazon.in/Arduino-UNO-board-DIP-ATmega328P/dp/B006H06TVG?tag=googinhydr18418-21&kpid=B006H06TVG&tag=googinkenshoo-21&ascsubtag=7037cad4-2135-b6a9-02f3-00004f3d12ce
4. ACS 712 CURRENT SENSOR
    a. 30a Range Current Sensor
5. RESISTORS (10k ,330 ohm)
6. POTENTIOMETER (10K)
7. JUMPER WIRES
    a. http://www.amazon.in/Jumper-Wire-male-40-Pcs/dp/B00SJHYN4K/ref=pd_sim_e_4/275-1089671-2219762?ie=UTF8&refRID=060AE283YPD65BB8MS96

F.References:

https://www.youtube.com/watch?v=qU76yWHeQuw
https://www.youtube.com/watch?v=tuOrH9sSykk
http://fpvlab.com/forums/showthread.php?12874-DIY-Current-voltage-and-watt-measuring-%28watt-meter%29-with-Arduino
http://www.instructables.com/id/ARDUINO-ENERGY-METER/
http://arduinotronics.blogspot.in/2012/04/monitoring-power-consumption-with.html

http://www.instructables.com/id/ARDUINO-ENERGY-METER/
About smart plug http://www.ti.com/lit/ug/tidu531/tidu531.pdf

G.Role of the Team Members:

1. Krittika Sheokand: Hardware programming
   Circuit Structure Architect

2. Raghav Mittal: Circuit Structure Architect
   Network Establishment

3. Kanishk Gandhi: App Development and Design
   Hardware Programming

4. R Animesh: Design (Solid Works)
   Circuit Structure Architect

5. Nishit Asnani: App development and Design
   Hardware Programming

H.Contact Details:

1. Krittika Sheokand: krittika@iitk.ac.in, 7755048177
2. Raghav Mittal: raghavm@iitk.ac.in, 7526014441
3. Kanishk Gandhi: kanishkg@iitk.ac.in, 7755048005
4. R Animesh: animeshr@iitk.ac.in, 8604931589
5. Nishit Asnani: nishit@iitk.ac.in, 7755057761

We would like to earnestly thank the electronics club for providing us this opportunity to explore fundamental electronic instruments to construct devices of utility. It would be a great time for us to challenge our innovation and design skills. We appreciate your coordination and support.