# Final Project: Phase II

## Due: Nov 21, 2018

The IoT in the user home consists of the Laptop (backend server), 2 Raspberry Pi boards (corresponding to 2 floors in the home – each RPi board implements all sensor and actuator devices on a single floor, except the camera), a mobile phone/tablet with a Camera (as a security webcam) or a standalone webcam which communicates with the RPi board (WiFi or USB), and a Router.

For this Phase II of the final project, the IoT exists. So implement the sensors/actuators in the RPi boards as separate Java Classes with their own MySQL databases. The RPi boards and the laptop coexist in the same WiFi network provided by the router, and the RPi boards communicate with the Laptop server using sockets. For this phase, all IP address are assumed fixed and known.

Optional: The GPIO pins of the RPi boards should be extended out using a breadboard through which the sensors/actuators should be controlled/observed with verification of the same on the user Mobile Device. If you are not planning to implement sensors and actuators through breadboard controls, recognize that these I/Os are all *memory-mapped*, and then use java class scripts to simulate the sensor/actuator controls and write into/read from those memory-mapped locations.

**Deliverables:**

1. App on your mobile device
2. Htdocs php codes on your server
3. Java codes for sensors/actuators running on the RPi boards
4. All databases
5. Server-Client Socket Communication codes for the laptop and the RPi boards
6. Webcam integration with RPi boards
7. Breadboard integration with RPi boards (for sensor/actuator controllability/observability) OR java scripts to simulate memory-mapped I/Os