Presence Based Lighting Control: -

* The automatic lighting control in our context refers to turning on and off the lights depending on the presence of subjects in the environment.
* Passive Infrared sensors is used to detect the presence. PIR is a sensor that is sensitive to person’s skin temperature through emitted black body radiation in the mid frequency range in contrast to the background objects at room temperature.
* A light sensor is used to detect the adjust the brightness in the room depending on the amount of the light available in the surrounding. Energy gets saved in these scenarios.

Occupancy Prediction: -

* The number of occupants in the building is detected and stored for every fixed interval of time. (Ex. Monday 9:00 to 9:15 Number of Occupants = 20)
* The data is stored in the cloud repository. After at least receiving a week’s data the occupancy prediction is made for the next week based on this data.
* The prediction algorithm is a simple average of the past number of occupants at that time interval.

HVAC System Control Based on local sensors and Weather forecast: -

* User desired temperature is taken as an input.
* Indoor and Outdoor Temperature Sensor is used to get the real time feedback of the Temperatures.
* Weather forecast is used to predict the Outside Temperature changes in the next hour from now.
* The heating and cooling system is switched on and off based on the difference in the Temperatures observed between the library and the surroundings.
* The Weather forecast and the occupancy predication is also taken into consideration of the HVAC control.

Burglar Alarm System.

* PIR sensors and library timings are used to detect suspicious entry into the building in unexpected times. Once these suspicious movements are detected, a notification is sent to the responsible alerting the situation.