

## Smart Home : Home Industry Revolution

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Nowadays, technology has become an essential part of human lives. Without the presence of technology, it can be argued that the human civilization will not be where it is now. Among the technologies, one of them was internet. The internet has enabled human to achieve new heights in all the various industries across the world. With the rise of internet usage over the years, a new innovation of technology that relies heavily upon the internet is discovered which is the Internet of Things or known as IoT. One of the main applications of IoT is the Smart Home. Smart Home is an environment consisting of smart home appliances that are controlled by the user over the internet through their smart devices. The aim of this research is to develop a convenient and secure smart home system. The appropriate system development methodology will be XP methodology otherwise known as Extreme Programming. The main advantage of XP for this project is the ability to adapt to unexpected changes in the project. Furthermore, since the main focus of the project is towards the programming part rather than the design of the system, it prevents time from being wasted. This project used an app called Blynk to create the UI on how the homeowner will interact with the IoT devices while a cloud platform called ThingSpeak is used to store all the data variables that are collected by the sensors. In terms of convenience, the homeowner can control the lightbulb via the app. Two sensors are used which are DHT 11 to measure humidity and temperature while MQ2 to measure the gas concentration level around the house. All the measurements are collected and viewable via the Blynk app and ThingSpeak. These measurements also interact with other IoT devices for instance, if the temperature is above 30°C, the air-conditioner will turn on and if the humidity level is above 75%, the fan will turn on. In terms of security, homeowner can open the solenoid door via the app. Finally, if the gas concentration is above 600ppm, a buzzer, LED and water pump will turn on. Some future enhancement could be to implement the smart home into a real environment to collect more accurate data. Next, to integrate ESP32 as the microcontroller instead of ESP8266 as ESP32 has more GPIO pins and has Bluetooth module compatibility, this project help homebuyers to visualize how the interaction between the smart devices and the users. Additionally, this project contributes to the home industry as they can benefit financially by incorporating smart home elements to their existing business model. All in all, the project was successful as homeowners can interact with the smart devices. Smart home has a great potential to grow in the future. It is able to provide users with security, convenience and even energy tracking capability. Although there are concerns such as security and privacy, but with proper and ethical development of IoT Smart Home, these concerns will be solved.

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