

SKILL DEVELOPMENT PROGRAM 18 January to 07 February 2024

A skill development program organized by department of physics on 18-01-2024 to 07-02-2024 funded by PM-USHA for M.Sc. IV Semester student. Under this Program student construct working model these are the following

(1) IOT BASED HOME AUTOMATION- Bhimeshwari, Deseema, Kavita Sahu, Khumendra and Neema

Home automation refers to the automatic way to control of house hold appliances, there are various systems used for home automation that is based on different microcontrollers and take different parameters to monitor and control the home appliances. The system providing facility to control of home appliances by IoT sensor and other communication devices efficiently.

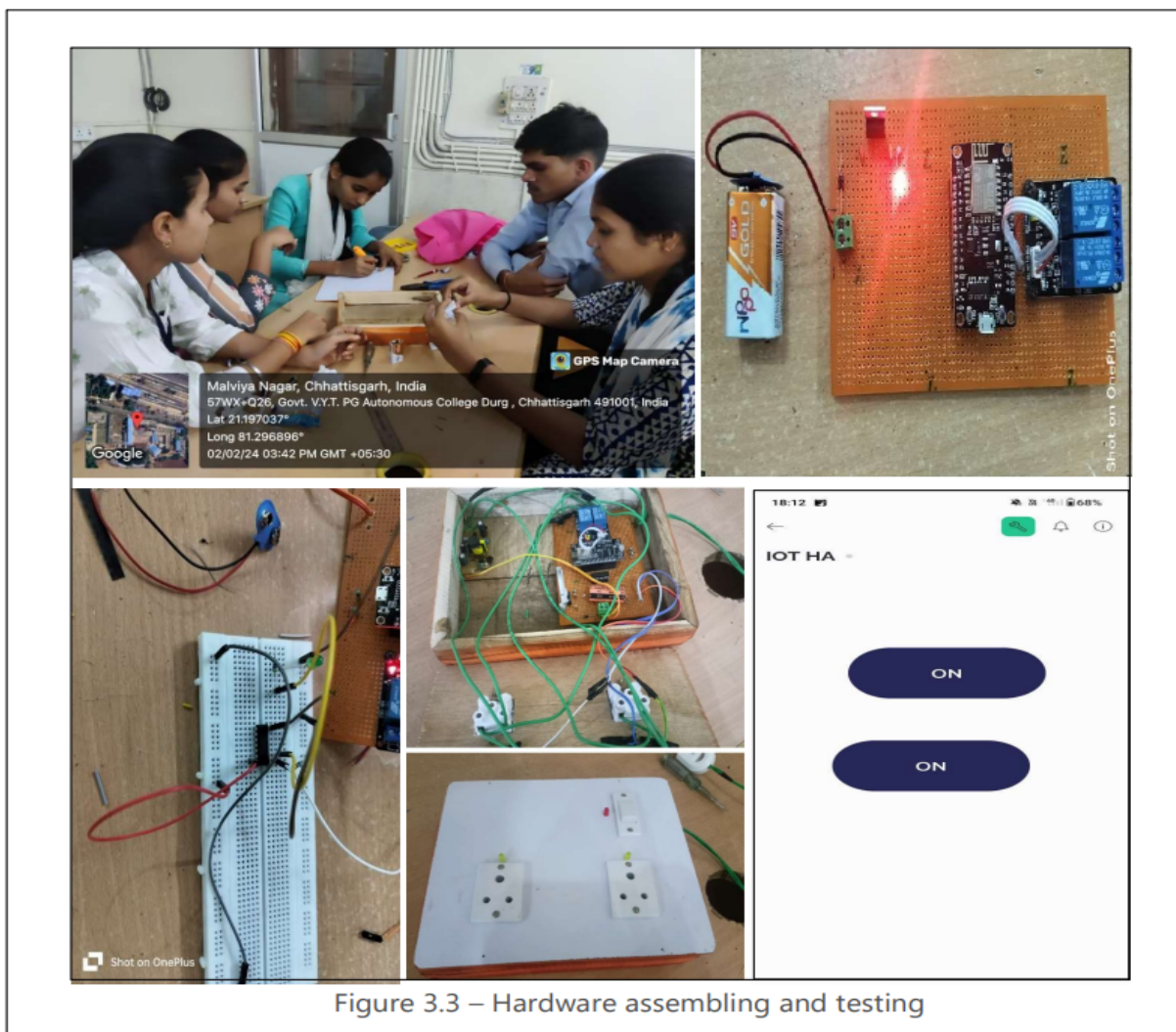


Figure 3.3 – Hardware assembling and testing

Working: - We can control home appliances wirelessly using this switch board from distance. When we press on the ON button displayed on the app for the device 1, The light is switched ON. This light can be switched OFF, by pressing the same button again. Similarly, when the user presses on the ON button displayed on the app for the device 2 the light switched ON, the light can be switched OFF pressing same button again. The app for the device 2 the light switched ON; the light can be switched OFF pressing same button again.

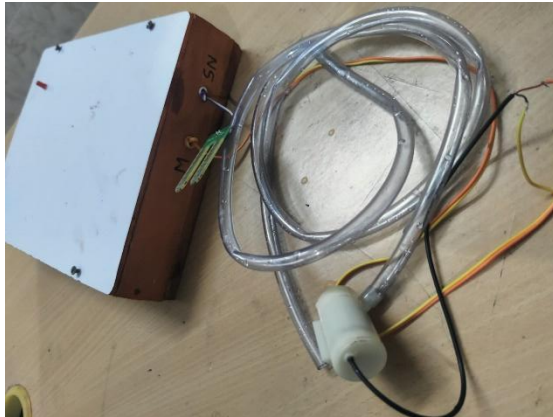
APPLICATION: - For controlling home appliances wirelessly from distance.

(2) REAL DATA SOIL MONITORING SYSTEM -by Kushal Salecha, Jhalak Verma, Kavyansh Sahu and Bhuneshwari

Introduction: This system measures the soil moisture level of the soil. It is an IoT based system, so it is connected with internet. The soil moisture level can be seen using BlynkIoT mobile app and also the water pump can be remotely controlled using the same app.

Working: This system is using Esp8266 wi-fi module as microcontroller, which is connected to a soil moisture sensor. The sensor reads the soil moisture level and send data to ESP8266 sends this data to the user interface like mobile, computer etc. There is a switch in user interface to control the water pump so we can water the plant by turning on the switch.

Applications: · Automatic irrigation: The system can be used to automatically irrigate crops, gardens, and lawns. This can help to save water and ensure that plants are getting the right amount of water. · Saves water: The system can help to save water by automatically irrigating plants only when they need it.



(3)Real Time Digital Clock Pannel Board - By Tejashvi, Rahul, Gamini and Lachchandai

Hardware Setup: The digital clock consists of a microcontroller (such as Arduino or Raspberry Pi), a real-time clock (RTC) module, and a display unit (LED, LCD, or OLED display).

Internet Connectivity: The microcontroller is connected to the internet using Wi-Fi, Ethernet, or other connectivity options.

Time Synchronization: The microcontroller retrieves the current time from an NTP (Network Time Protocol) server over the internet.

Display: The current time obtained from the NTP server is displayed on the digital display unit.

Updating Time: The clock periodically synchronizes with the NTP server to ensure accurate timekeeping.

User Interface (optional): Some clocks may have additional features such as alarm settings, temperature display, etc. Overall, the clock continuously updates itself by retrieving the current time from the internet, ensuring it remains accurate.

Application

1. This clock is used in data logging applications.
2. It can be used in time stamps
3. As an alarm and timer.
4. As a simple clock in houses, offices etc.
5. It is also used in: -
 - a) Institute
 - b) Hospitals
 - c) Park
 - d) Railway Stations
 - e) Bus Stations
 - f) Shopping mall
 - g) Public place
 - h) Score board



(4)Agriculture solar insert trapper _ By Vaman Lal, Payal, Minakshi, Lalita and Vibha

Solar insect trapper is a solar powered product use for trapping insects and flies.

Solar insect traps are important for several reasons.

- Firstly, they provide an environmentally friendly alternative to using pesticides, which can have adverse effects on people, animals, and the environment.
- Secondly, solar insect traps can efficiently control mosquitoes, which are carriers of infectious diseases, in areas where there is a high risk of infection.
- Additionally, solar insect traps can be used in terrains with limited access to power supply, such as rice fields and forests, allowing for effective monitoring and control of flying insects.
- Furthermore, solar insect traps have a simple structure, long service life, and good insect trapping effect, making them an effective tool for insect control.
- Overall, solar insect light traps offer a sustainable and effective solution for managing insect pests while minimizing the negative impacts on the environment and human health.





(5) SOLAR BASED SMART PHONE CHARGER – By Vishvjit , Eswari, Khomeshwari, Kavita and Kareena

PRINCIPLE: The Solar-Based Smartphone Charger operates on the principle of photovoltaics. Solar cells within the charger directly convert sunlight into electricity. By harnessing solar energy through built-in solar panels, the charger transforms sunlight into electrical energy, enabling the charging of smartphones.

WORKING: A solar smartphone charger utilizes solar panels to capture sunlight and convert it into electrical energy. This energy can either be stored in a battery or directly used to charge a phone via a USB connection. The charger typically incorporates photovoltaic cells that absorb sunlight, generating electricity through the photovoltaic effect. This eco-friendly solution facilitates phone charging even in off-grid locations or areas with limited access to conventional power sources.

APPLICATION: A solar-based smartphone charger finds utility in various scenarios, including:

- **Outdoor Activities:** Ideal for camping, hiking, or any outdoor pursuits where access to traditional power outlets is scarce.
- **Emergency Situations:** Provides a reliable power source during power outages or emergencies when electricity is unavailable.
- **Traveling:** Convenient for maintaining smartphone charge while on the move, particularly in remote or rural areas.
- **Sustainability:** Promotes the adoption of renewable energy sources for daily technological requirements, reducing dependence on fossil fuels.
- **Education:** Serves as a practical tool for teaching about renewable energy and sustainability by demonstrating the application of solar power in charging devices.

