GREEN HOUSE MONITORING SYSTEM

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INTRODUCTION

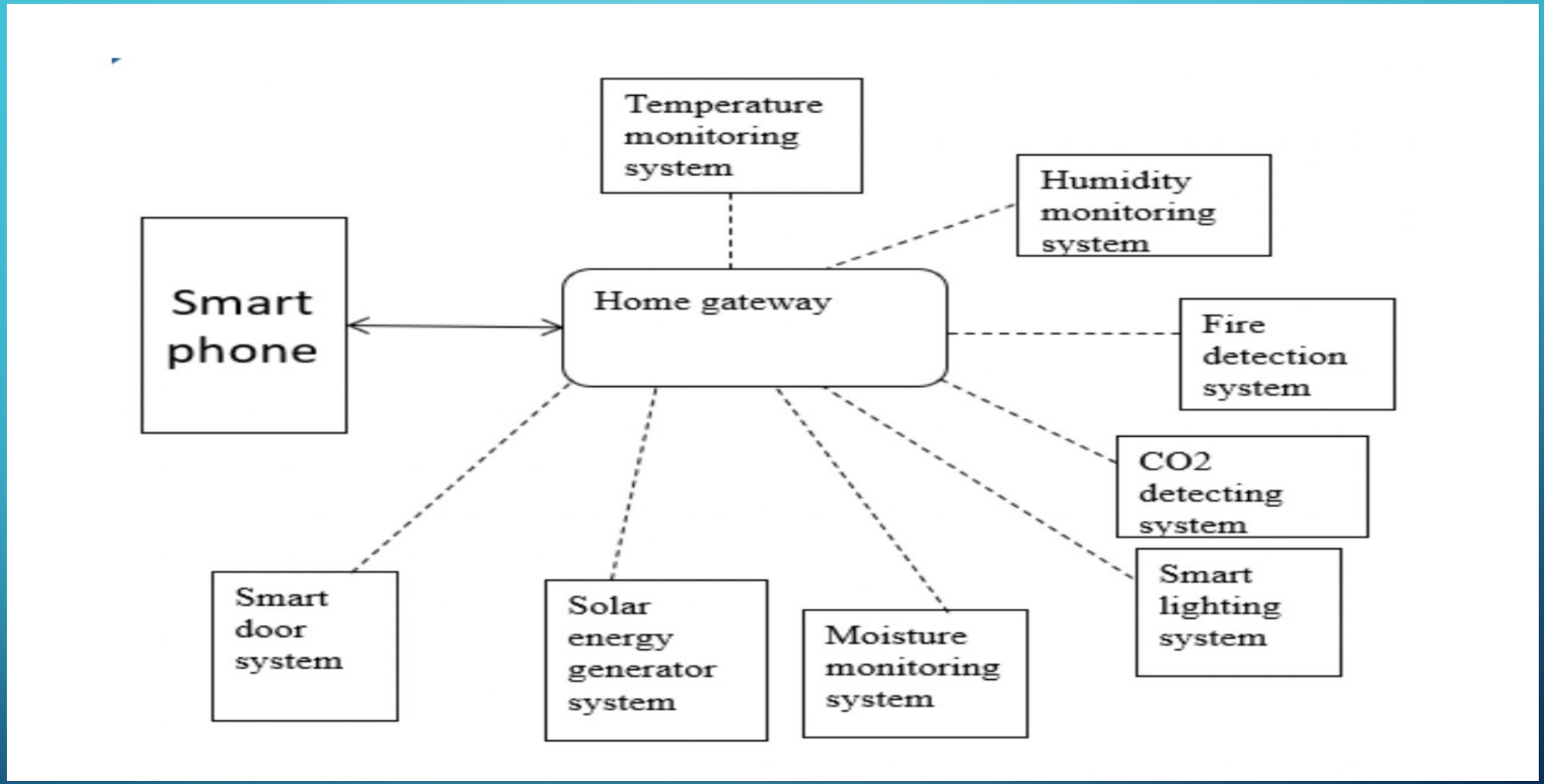
- Greenhouse is used to protect plants from extreme environmental conditions and also growing plants in controlled environments. Greenhouse monitors the extreme environmental conditions in favor of plant growth.
- Greenhouses can be made smarter by using different techniques. IoT is basically connecting the surrounding environment to the network. Greenhouses have to be monitored manually whereas by making it a smart greenhouse that is by using IoT technique it can be monitored from faraway places also.
- Different sensors as per the requirement are used to monitor greenhouse and perform the actions according to the parameters sensed. The conditions are predefined by the maintainer so that the growth of the plant is not affected by environmental conditions.

PROBLEM STATEMENT

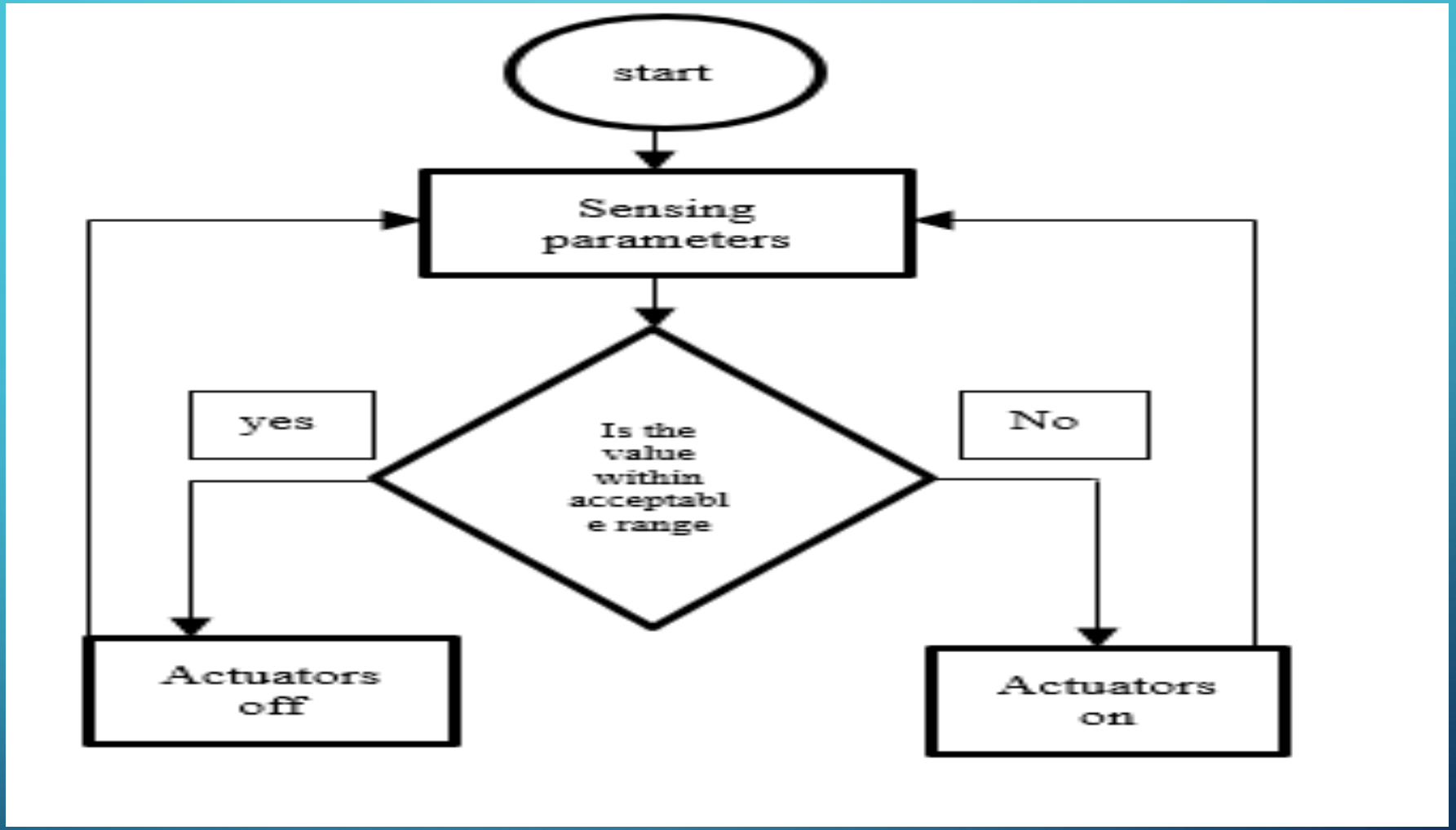
- The whole purpose of this system is to create an effective greenhouse environment which will drastically reduce the cost of labor and also help small scale farmers cultivate crops all year round.

METHODOLOGY

- In this project, we are implementing the greenhouse setup using cisco packet tracer. A network is formed by connecting the sensors .
- Temperature sensor to sense the environment temperature, humidity sensor to check the humidity, soil moisture sensor to detect the amount of water present in soil and CO2 detector to check the concentration of CO2 in air.
- Solar cell is used as the energy generator in the designed system and a smart door system is implemented to control the access.



BLOCK DIAGRAM


start
Sensing parameters
Is the value within acceptabl e range
yes
No
Actuators off
Actuators on

FLOW CHART

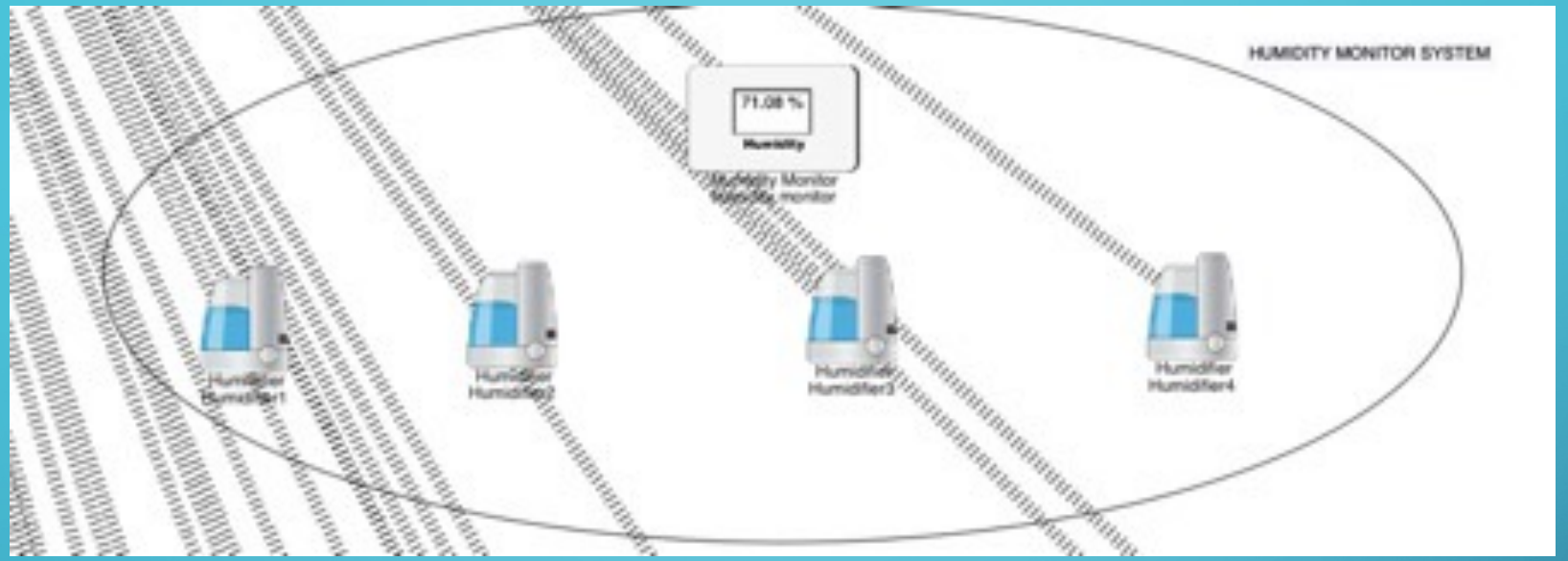
PROPOSED COMPONENTS

- TEMPERATURE MONITORING SYSTEM
- HUMIDITY MONITORING SYSTEM
- FIRE SAFETY SYSTEM
- CO2 DETECTING SYSTEM
- SOIL MOISTURE MONITORING SYSTEM
- SOLAR CELL
- SMART LIGHT SYSTEM

TEMPERATURE MONITORING SYSTEM

Temperature monitoring system contains temperature sensors, thermostats, heating elements, and cooling elements.

Temperature sensor keeps a check on the temperature of the environment and displays the value on a connected LED or monitor.

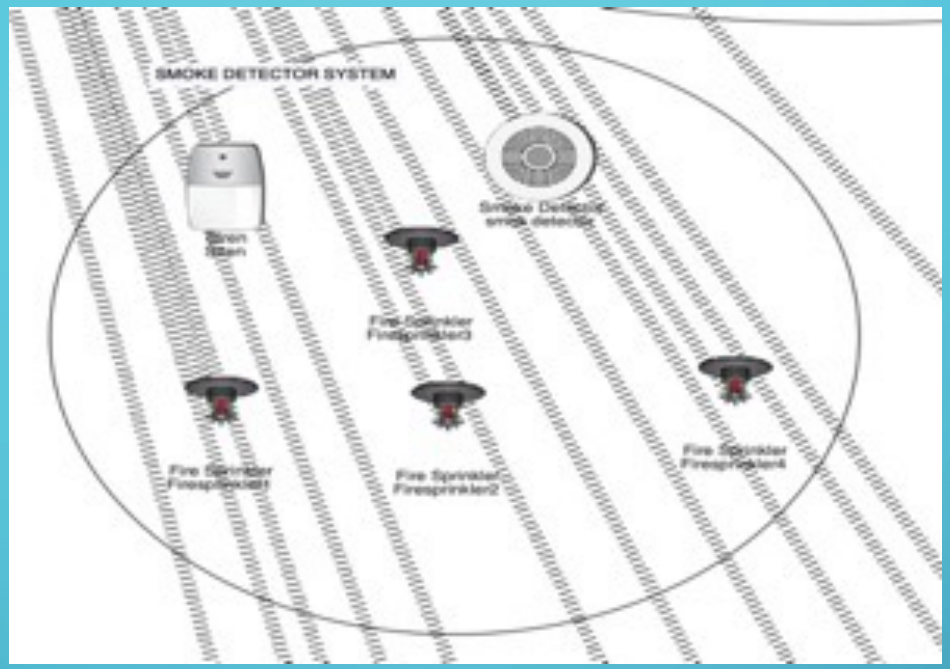


HUMIDITY MONITORING SYSTEM

Humidity monitoring systems contain humidity sensors, humidifiers.

Humidity sensors measure the amount of water (humidity) content present in the air.

Humidifier is used to maintain the moisture content in the air. Humidifier is activated when the humidity percentage in the greenhouse falls below the desired value.

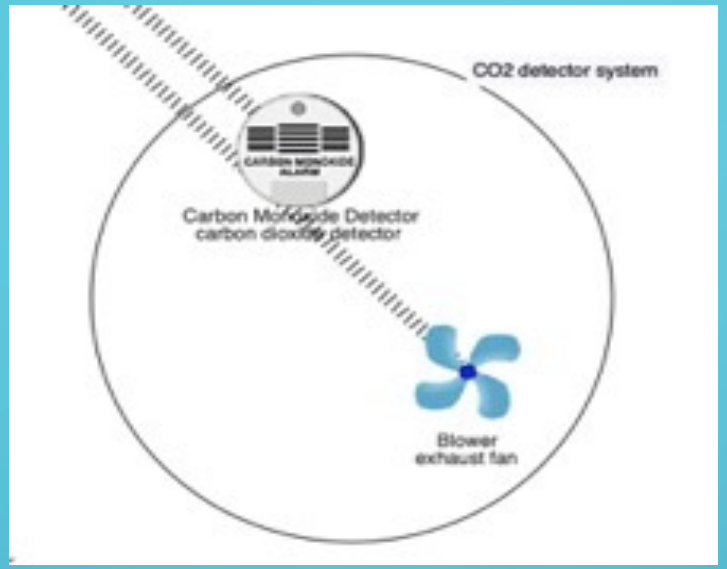


FIRE SAFETY SYSTEM

Smoke detection system contains a smoke detector, fire sprinkler, Siren.

A smoke detector is a device that senses the presence of smoke .
As soon as the fire is detected a message is delivered to the security panel and the fire alarm is activated.

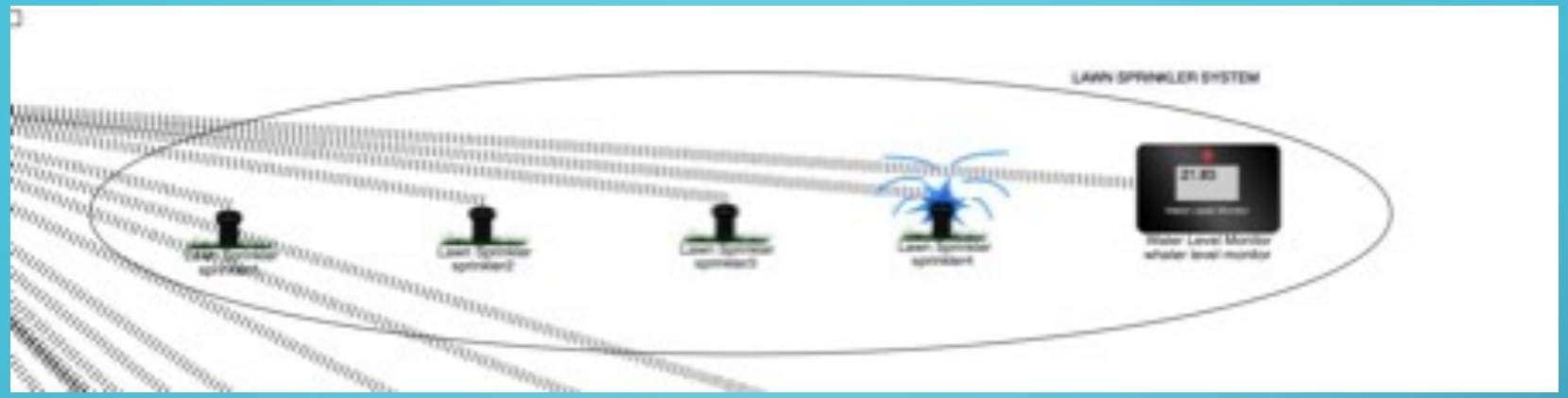
When there is any fire emergency, the sprinkler will be activated by itself as soon as the smoke detector detects smoke.



CO2 DETECTING SYSTEM

The CO2 detecting system contains a CO2 detector, exhaust fan. Carbon dioxide detector is a device which senses the concentration of carbon dioxide in the atmosphere.

There are basically two types of CO2 detectors, IR and chemical sensors

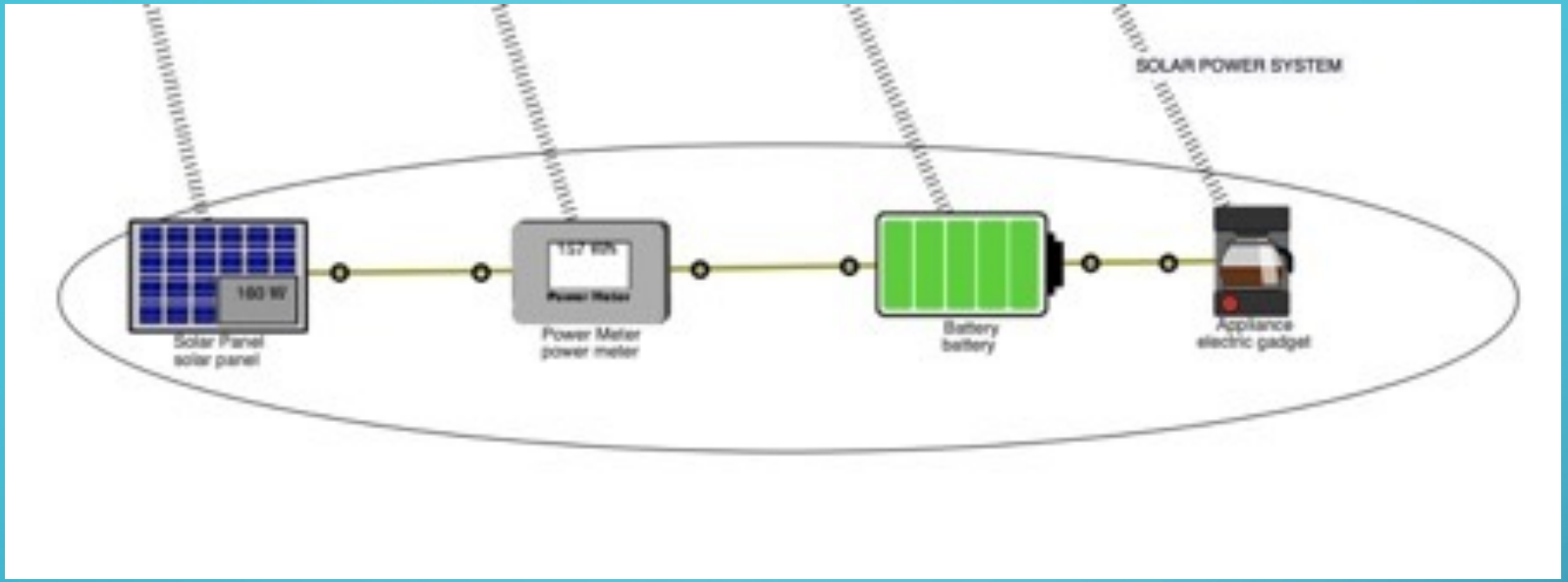


SOIL MOISTURE MONITORING SYSTEM

Soil moisture monitoring system contains a water level monitor, lawn sprinkler.

Water level monitor measures the water content present in soil which is the indication for moisture content in soil. Particular amount of moisture has to be maintained in soil for healthy plant growth.

When the moisture content falls below the preset value water sprinkler is activated



SOLAR CELL

Solar cell contains a solar panel, power meter, and battery.

A solar panel converts sunlight into electricity by using the appropriate technique.

The power produced by the solar panel can be known using the power meter (which measures power across the device to which it is connected).
The electricity generated by the solar panel is converted and stored in a battery which is connected to all the devices.

CONCLUSION AND FUTURE ENHANCEMENT

- Greenhouses are used a lot nowadays to increase productivity and grow plants in a controlled environment. Making it smarter eases the work of the maintainer as there is no need to monitor the environmental conditions manually.
- There are many sensors are used to sense and actuators are activated according to the predefined conditions.sensors and devices required to maintain the greenhouse conditions with electricity generation using solar energy, smart lighting and other monitoring systems.