

DIY PROJECT 4

GROUP NO. 4

TITLE :SMART IRRIGATION SYSTEM USING SOLAR ENERGY



Team members and their roles :

- ▶ **Shivam Goel (21MT30029)** : *Constructing the hardware part of the project .*
- ▶ **Chappa Jayanth (21CS10017)** : *Video editing and coding part of the project .*
- ▶ **Karanki Mohitha (21MI10027)** : *Making Presentation and collecting information .*
- ▶ **Pranjal Khare (21ME30051)** : *Making Presentation and collecting information .*

REGARDING THE PROJECT :

➤ AIM OF THE PROJECT :

Conservation of solar energy and water conservation.

➤ OBJECTIVE :

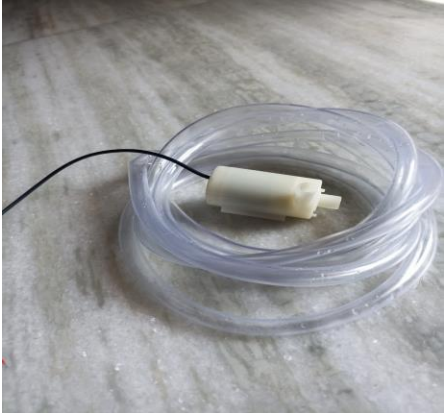
Using the solar energy as a power source to operate the irrigation system and watering the plants without the over wastage of water.

Highlights of the project :

- ❑ *One of the greatest advantages of a smart irrigation system over the traditional watering methods is its ability to save water.*
- ❑ *Traditional watering methods can waste as much as 50% of the water used due to inefficiencies in irrigation ,evaporation and overwatering.*
- ❑ *Through smart irrigation system the soil will get only the required amount of water so there will not be any wasting of nutrients from the soil.*
- ❑ *You will notice a reduction in the number of weeds appearing, this is due to the fact that water will not flow to the areas around the plant .*

COMPONENTS REQUIRED :

*Water pump (3-6v DC)
Flow rate : 80-120L/H.*



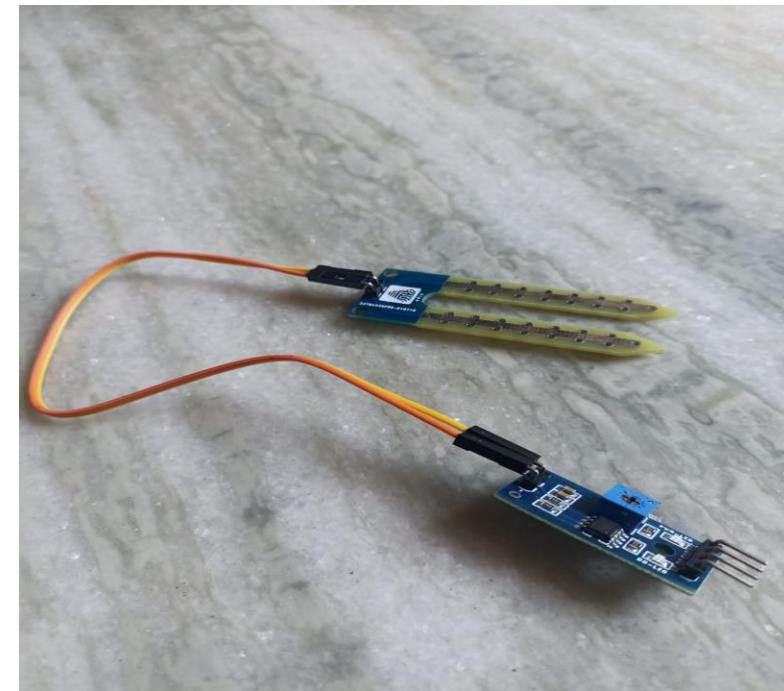
cost : Rs 176

Solar panel (6v, 100mA)



cost : Rs 186 (2panels)

Moisture sensor(3-5v)



cost : Rs 164

*1 channel 5v relay
Module*



cost : Rs 50

Arduino uno



cost : Rs 445

Rechargeable battery (1000mAh, 7.4V)



cost : Rs 250

TOTAL COST : Rs1517 (including taxes, shipment charges)

Main scheme of the project :

- *Process going on when the Sensor is placed in the soil for Irrigation.*

Flow chat :

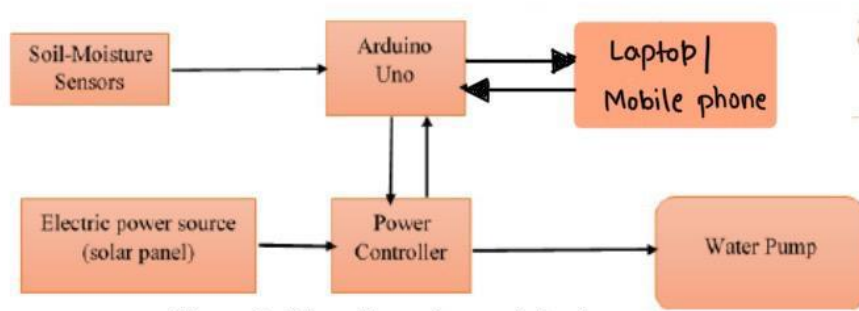
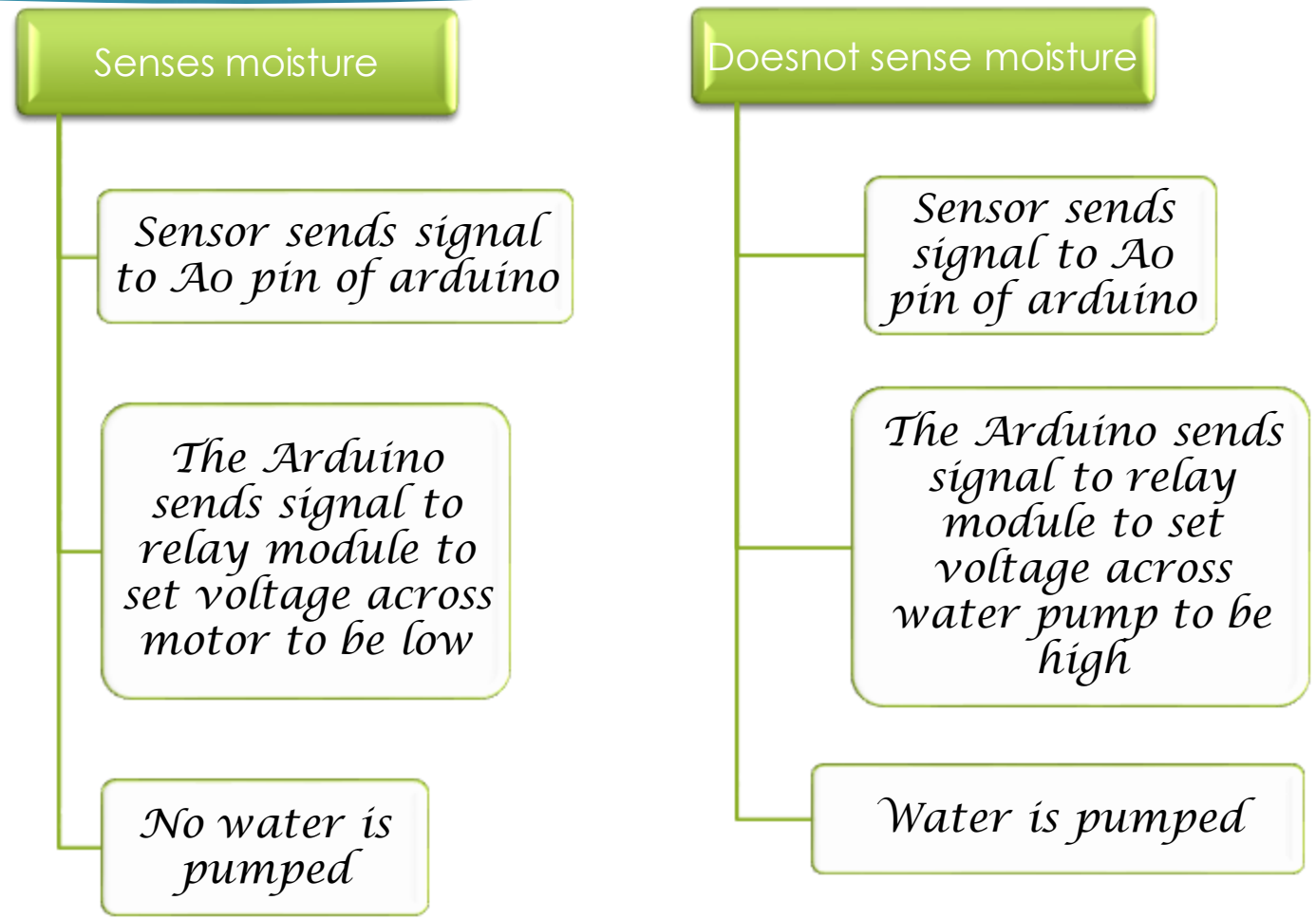
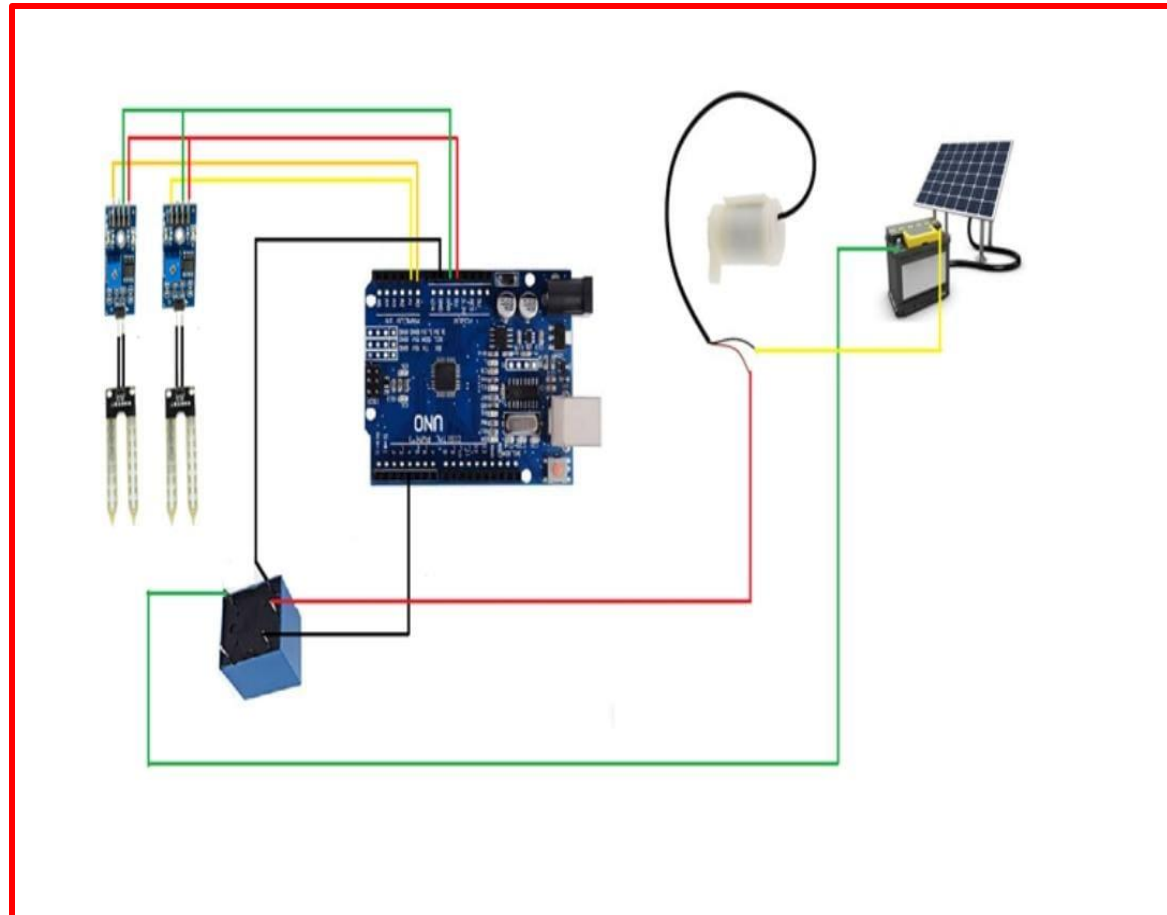


Figure 2, Flow chart of smart irrigation system



CIRCUIT DIAGRAM and code :



```
int AC_WATER_PUMP = 13;
int sensor = 8;
int val;
void setup() {
  pinMode(13, OUTPUT);
  pinMode(8, INPUT);
}
void loop() {
  val = digitalRead(8);
  if (val == LOW)
  {
    digitalWrite(13, LOW);
  }
  else
  {
    digitalWrite(13, HIGH);
  }
  delay(400);
}
```


ACTIVITY PLAN AND DIFFICULTIES FORESEEN :

WEEK 1 : Discussion on the project topic .

- selection of the topic for the project .

WEEK 2 : No Progress due to midsem exams .

- no difficulty faced

WEEK 3 : Ordered all the components and distributed the roles

- Can we directly use the solar panel to charge the battery ?

WEEK 4 : prepared presentation , generated the code , made hardware

- Damage of the arduino and could not proceed the process for hardware part

Week 5 : completion of hardware part of the project

- No difficulty faced

CONCLUSION :

- ❑ *This project saves time, money and water consumption, by providing smart control irrigation system using power generated from solar energy .*
- ❑ *This smart control irrigation system is beneficial in places where there are shortage of water, absence of electrical grid and huge farming lands.*
- ❑ *Smart irrigation systems can optimize water levels based on things such as soil moisture .*
- ❑ *The great advantage of this project is generation of power using renewable source of energy (i.e solar energy).*

FUTURE SCOPE :

- ▶ *Noise sensor could be added to protect the farm field from the animals or even human get closer to the farm by producing a noisy sound as an alarm or buzzer.*
- ▶ *We can do sensor data monitoring through mobile and control the water pumps through mobile apps.*
- ▶ *By monitoring soil moisture levels, a smart water irrigation system allows farmers to automate their irrigation processes and reduce water use.*

Thank You!

