

# KRI CKE TRACK PROTECTI ON

A PROJECT REPORT

*Submitted by*

YOGESWARI .M(17EUEC179)

SUBHASHI NI .B (17EUEC154)

VI SHNU PRI YA.G (17EUEC172)

*In partial fulfillment of the requirements  
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(An Autonomous I nstitution)

ANNA UNI VERSI TY:: CHENNAI 600 025

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# Sri Krishna College of Engineering & Technology



(Approved by AI CTE and Affiliated to Anna University, Chennai)

(ACCREDITED BY NBA & NAAC WITH "A" GRADE)

## BONAFIDE CERTIFICATE

Certified that this project report **"KRICKE TRACK PRODUCTION"** is the bonafide work of **"YOGESWARI.M(17EUEC179), SUBHASHINI.B (17EUEC154), VISHNUPRIYA.G (17EUEC172)"** who carried out the project work under my supervision.

### SIGNATURE

Dr. S. Sophia, Ph.D.,  
Professor & Head

### HEAD OF THE DEPARTMENT

Electronics and Communication Engineering  
Engineering  
Sri Krishna College of Engineering and  
and  
Technology  
Kuniyamuthur  
Coimbatore- 641 008

This project report submitted for the Autonomous Mini Project Viva- voce examination held on\_\_\_\_\_

INTERNAL EXAMINER

### SIGNATURE

Mr. J. R. Dinesh kumar, M.E.,  
Assistant Professor

### SUPERVISOR

Electronics and Communication  
Engineering  
Sri Krishna College of Engineering  
and  
Technology  
Kuniyamuthur  
Coimbatore- 641 008

EXTERNAL EXAMINER

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# ABSTRACT

The project is to overcome the difficulties faced by cricket team. The major difficulties faced by the players during rainy days is, the ball will not bounce and the player will miss the pitch. This can be overcome by using a technical work, which will reduce human work and protect the ground from rain. This project will protect the ground from getting wet and maintains the property constantly. When it rains, players will not get grip-ness to play the game instantly. Hence they are forced to protect the ground from rain, so they are insisted to protect the ground using tarpaulin. The tarpaulin will cover the ground and resist from getting wet .

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## **CHAPTER 1**

### **I NTRODUCTI ON**

The complication for cricket players is diminished by a system which would consist of modern hardware and software components that enable to protect the track , reduces man power in covering the ground and resisting it with rain . It holds an automatic track protection when the controller is activated . when the sensor is sensed , controller gets activated and the track is covered when DC motor is initiated .

## 1.1 OBJECTIVE OF THE PROJECT :

The major issue faced by cricket players during rainy days is, protecting the ground from rain during the match. When the track is not protected from rain, ball will not bounce and this will lead the players to frustration. Due to the lack of awareness among workers, the cricket track may get wet and spoil the entire game. Good weather condition and clear skies can help the batsmen in scoring more runs. Similarly overcast and humid condition can assist the bowling side. Even though the clear sky does not make any difference as far as the seam bowling is concerned. However if the sun is beating hard at the pitch, then usually it takes all the moisture away from the pitch in quick time. Hence making it a batsmen paradise. The implementation of cricket track protection method can protect the track automatically from the rain. This will be effective and reduces man power.

## 1.2 OVERVIEW OF THE PROJECT :

Electronic device that is resistant against any atmospheric condition are used for protecting the cricket track from rain . This setup can protect the track from rain by automatic closure or covering the track using tarpaulin . The sensor gives the information to controller and indicates that , it is raining . so , the DC motor can cover the track using tarpaulin . This project uses the arduino code for sensing the climatic conditions and activates the controller based on the input given by the sensor .

## CHAPTER 2

### LITERATURE SURVEY

#### 2.1 AUTOMATIC ROOF OPENING:

Smita Joshi

[G H Patel College of Engineering and Technology \(GCET\) | GCET](#) ·

Department of Applied Science and Humanities Bsc,  
Msc, BEd, Mphil, Ph.D.

When unseasonal rain falls on the harvested crops, which are kept to dried up, they rot up and get destroyed due to which farmers have to face enigma. Some crops must be dried before it is sold to the agriculture market yard, so the farmer needs some space for the crops to dry which most of the farmers don't have and it takes loads of time to dry up. As the farmers have

invested their time almost three to four months and huge amount of capital both, in the yield and as it gets ruined by rainfall, farmers assets and time goes in vain. So as farmers faces loss, this device is built up to protect them from severe loss. This device is used in agriculture purpose in a way when the rain drops falls on the rain sensor, the roof automatically gets over the crops kept for drying. This device consists of rain sensor, Arduino- Uno, motors and bio-

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degradable plastic materials for shade. When the rain is detected by the sensor it gives signal to Arduino- Uno. Further Arduino gives signal to the motor due to which the roof gets over the crops and protect crops from being destroyed. And when the rainfall stops the roof automatically opens. This device is simple but very useful for farmers to save their money which they have invested and their time. And above all it runs on the solar energy making it more cost effective and ecofriendly.

## **2.2 Smart Automation System Using Arduino and Rain Drop Sensor**

**Prof . Abhijit G Kalbande , Vrushabh S Golait , Shubham V Bhadange**

**Assistant Professor, EXTC Department, PRMCEAM,- Badnera,  
Amravati. UG Student, EXTC Department PRMCEAM,- Badnera,  
Amravati**

In this paper we present Idea related to agricultural based system in which as per our Observation during the rainy seasons the cultivated crops gets affected due to the heavy rain fall. The main theme of this project which is presented in the paper is that to prevent the crops from the heavy rain and save the rain water. The rain sensor and soil moisture sensor is used for the working of automatic roof. This system involves protects the crops by the auto roof which covers the whole field.

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The rain sensor is activated when there is a rain fall. The soil moisture sensor will sense the water level in the field. If the water level is beyond the normal level it will gives intimation to the controller. So when both the sensor is ON, it will gives intimation to the controller, GSM and it will indicate to the DC motor and it will automatically open the roof. In this project, the roof is open automatically when both the sensor is ON. This complete system can be handled manually If there is any problem with opening the roof automatically, it is blend idea with controlling operation done through Arduino. GSM is report the conditions in the field through SMS to the mobile phone. The

power is supplied to this project is using renewable energy sources as solar power. Direct power supply can also be fabricated which affect the basic cost to build entire system.

## **2.3 SMART AUTOMATION SYSTEM USING ARDUINO AND RAIN DROP SENSOR**

**Prof. Abhijit G Kalbande**

**Assistant Professor, EXTC Department, PRMCEAM, Badnera, Amravati**

In this paper we present Idea related to agricultural based system in which as per our observation during the rainy seasons the cultivated crops gets affected due to the heavy rain fall. The main theme

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of this project which is presented in the paper is that to prevent the crops from the heavy rain and save the rain water. The rain sensor and soil moisture sensor is used for the working of automatic roof. This system involves protects the crops by the auto roof which covers the whole field. The rain sensor is activated when there is a rain fall. The soil moisture sensor will sense the water level in the field. If the water level is beyond the normal level it will give intimation to the controller. So when both

the sensor is ON, it will give information to the controller, GSM and it will indicate to the DC motor and it will automatically open the roof. In this project, the roof is open automatically when both the sensor is on. This complete system can be handled manually. If there is any problem with opening the roof automatically, it is a blend idea with controlling operation done through Arduino.

GSM is report the conditions in the field through SMS to the mobile phone. The power is supplied to this project is using renewable energy sources as solar power. Direct power supply can also be fabricated which affect the basic cost to build entire system.

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### **CHAPTER 3**

### **REQUIREMENTS**

#### **3.1 HARDWARE SPECIFICATION:**

- Raindrop sensor



- DC motor
- Relay circuit

### **3.2 SOFTWARE SPECIFICATION:**

Arduino UNO

## **CHAPTER 4**

### **PROJECT DESCRIPTION**

#### **4.1 INTRODUCTION:**

The major issue faced by cricket players during rainy days is, protecting the ground from rain during the match . when the track is not protected from rain , ball will not bounce and this will lead the players to frustration . Due to the lack of awareness among workers , the cricket track may get wet and spoil the entire game . Good weather condition and clear skies can help the batsmen in scoring more runs . similarly overcast and humid condition can assist the bowling side . Even though the clear sky doesnot make any difference as far as the seam bowling is concerned . However if the sun is beating hard at the pitch , then usually it takes all the moisture away from the pitch in quick time . Hence making it a batsmen paradise . . The implementation of kricke track protection method can protect the track automatically from the rain . This will be effective and reduces man power .

## **MODULES:**

The project is sub- divided into two different modules . They are ,

- Rain detection
- Automatic track protection

## 4.2 MODULE DESCRIPTION

### 4.2.1 RAIN DETECTION:

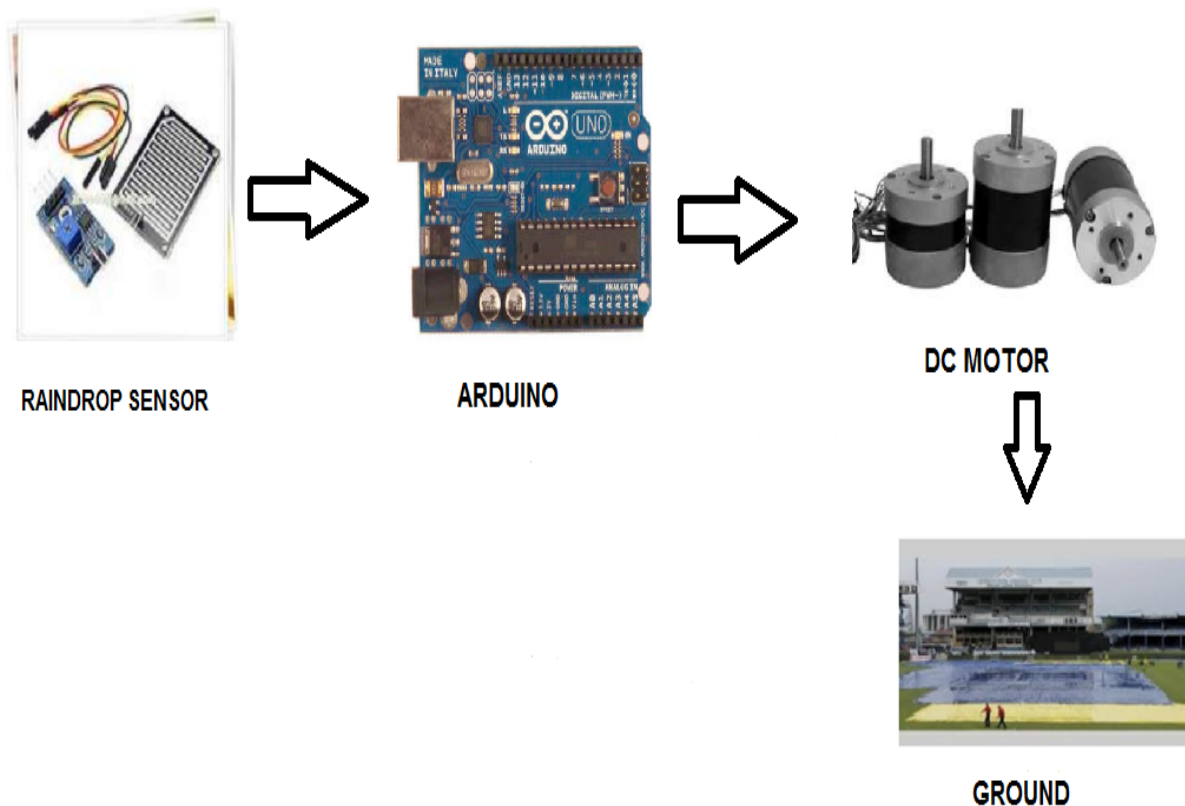
This system uses raindrop sensor for determining the environmental condition and senses the humidity of rain. When the sky is cloudy during the match and if it rains, the raindrop sensor is activated. The information given by the raindrop sensor is transmitted to the controller (ARDUINO-UNO). Arduino is the software required to connect the raindrop sensor. The software program required for interfacing the Arduino with raindrop sensor is specified in source code.

### 4.2.2 AUTOMATIC TRACK PROTECTION:

When the information from raindrop sensor is given to the

controller , it gets activated. The software code specified in the controller runs based on the sensor input and further activates the relay setup . Relay circuit acts as a switch . When the relay is ON, DC motor initiated and track will be automatically covered by tarpaulin . This setup protects the track from rain and reduces manual power .

#### 4.3 BLOCK DIAGRAM:



## 4.4 WORKING PRINCIPLE :

### 4.4.1 WORKING PRINCIPLE OF RAINDROP SENSOR :

Raindrop sensor is basically a board on which nickel is coated in the form of lines. It works on the principle of resistance. When there is no rain drop on board. Resistance is high so we get high voltage according to  $V=IR$ . When rain drop is present it reduces the resistance because water is a conductor of electricity and the presence of water connects nickel lines in parallel so reduced resistance and reduced voltage drop across it.

### Pin Configuration Raindrop Sensor:

It consists of two parts one is a black board with nickel layers on it and other is an integrated chip provided with some output pins. Board has 2 output pins and chip has 6 pins.

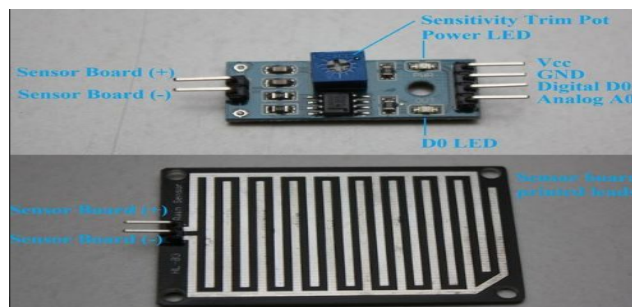
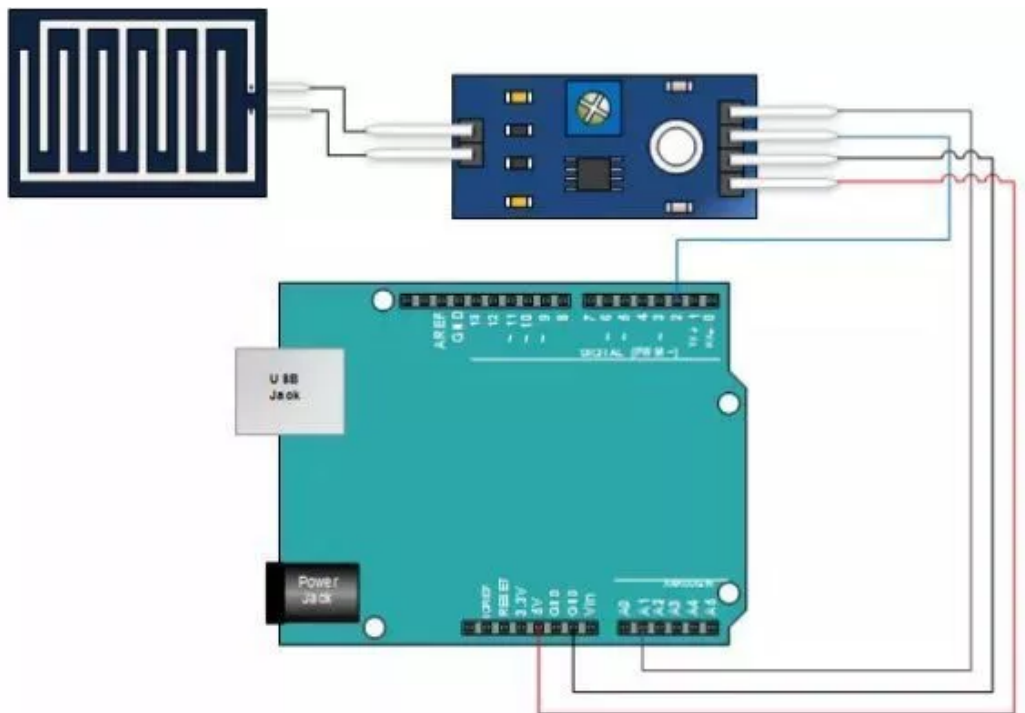


FIG 4.1 PIN CONFIGURATION

#### 4.4.2 INTERFACING RAINDROP SENSOR WITH ARDUINO:

This project is about the interfacing of Raindrop sensor with Arduino. The rain sensor module is an easy tool for rain detection. It can be used as a switch when raindrop falls through the raining board and also for measuring rainfall intensity. The module features, a rain board and the control board that is separate for more convenience, power indicator LED and an adjustable sensitivity through a potentiometer.



### 4.4.3 INTERFACING RELAY CIRCUIT WITH DC MOTOR :

A Relay based DC motor controller works with an H- bridge arrangement. With an H- bridge circuit, the polarity across a load can be altered in both directions.

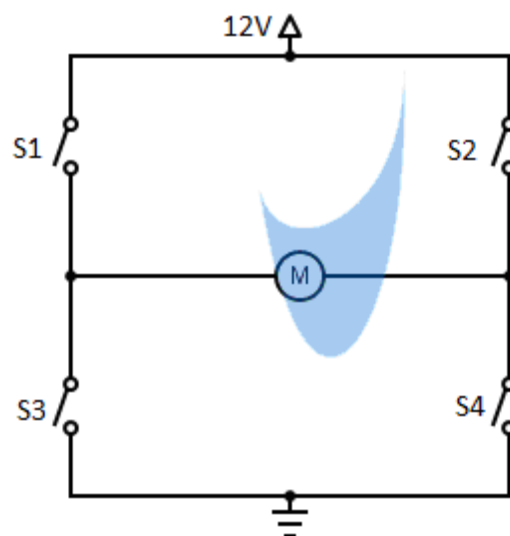


FIG 4.3 RELAY CIRCUIT

In Dual SPDT motor driver circuit, the DC motor terminals are connected between the common poles of the two relays. The normally closed terminal of both relays is connected to negative

or ground. And the normally open terminals are connected to the positive terminal.

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The coil terminals of the relay are connected to the supply with a push switch. The Switch S1 and S2 control the relay 1 and relay 2 respectively.

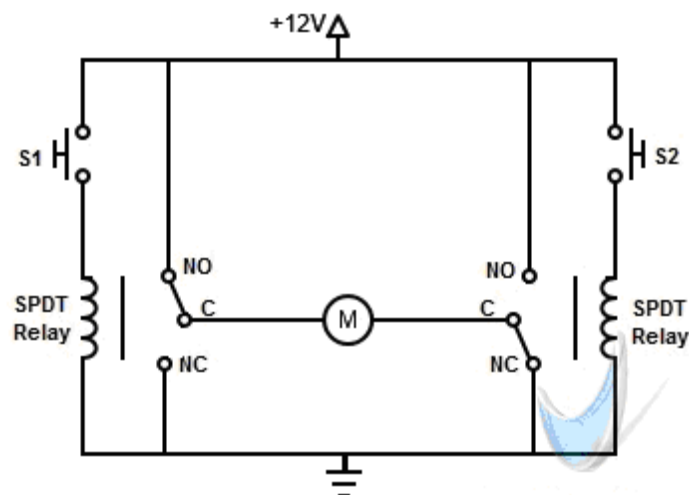


FIG 4.4 RELAY CIRCUIT

In the circuit diagram shown, the switch S1 is ON and switch S2 is OFF. So, the motor terminals will have a positive polarity on the left side and a negative polarity at the right side. Thus, the



motor turns in a clockwise direction. Similarly, when the S2 is ON and S1 is OFF, the motor turns in an anticlockwise direction.

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### 4.5 MERITS AND DEMERITS:

#### MERITS:

- It helps in saving money by switching off the irrigation system when it rains. This saves money by cutting off bills on electricity consumption.
- It extends life of rain sensor based systems such as car wiper, irrigation systems by running them only when it is necessary.
- Rain sensors help save water during rain events and hence water is available during summer and applications such as firefighting etc.
- Operating principle is very easy.
- It consumes less power for operation.

- Installation of rain sensor based systems are very much simple.
- Individual rain sensor costs very less.

## **DEMERITS:**

- The rain sensor based system functions when water falls on the sensor directly.

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- The cost of overall system increases as additional components are needed along with rain sensor.
- In order to avoid false detection of rain, it requires rain sensor to take decision after few minutes.

## **APPLICATIONS:**

- On windscreen of car to automatically start the wipers.
- On roof of houses and offices to take necessary action against rain.
- In Weather Station.

## CHAPTER 5

### RESULTS

#### 5.1 RESULTS:

#### SOURCE CODE :

```
// Raindrop sensor + arduino + DC motor
```

```
const int sensorMin = 0;
```

```
const int sensorMax = 1024;
```

```
int motorpin = 8;
```

```
void setup()
```

```
{
```

```
    Serial.begin(9600);
```

```
    pinMode(8,motorpin);
```

```
}
```

```
void loop()
```

```
{
```

```
    int sensorReading = analogRead(A0);
```

```
        18
```

```
    int range = map(sensorReading, sensorMin, sensorMax, 0, 3);
```

```
    switch (range)
```

```
    {
```

```
        case 0:
```

```
            Serial.println(" RAI NI NG" );
```

```
            Serial.println(" MOTOR I N ON STATE" );
```

```
            digitalWrite(motorpin,HIGH);
```

```
            break;
```

```
        case 1:
```

```
            Serial.println(" RAI N WARNI NG" );
```

```
            Serial.println(" MOTOR I N ON STATE" );
```

```
digitalWrite(motorpin, HIGH);  
break;
```

case 2:

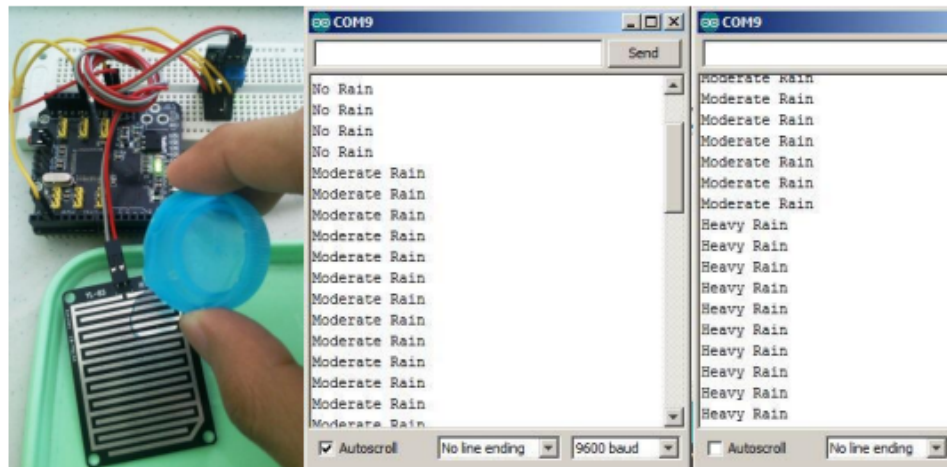
```
Serial.println(" NOT RAI NI NG" );  
Serial.println(" MOTOR I N OFF STATE" );  
digitalWrite(motorpin, LOW);  
break;  
}
```

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```
delay(1000);
```

```
}
```

As water is continuously dropped to the module,



**OUTPUT:**

FIG 5.2 OUTPUT FOR RAI NI NG CONDI TI ONS

## **CHAPTER 6**

### **CONCLUSION AND FUTURE SCOPE :**

This project aims at reducing the man power and protecting the track automatically by implementing the cricket track protection technique in cricket ground . The proposed systems architecture is reliable . The greatest advantage of this system is accuracy of raindrop sensor , which activates the controller and initiates the DC motor to protect the track .

### **FUTURE ENHANCEMENT :**

A Wi-Fi zone should be enabled to convey the information for representative, that there is a rain warning and the setup is insisted to protect the entire ground from rain. This enhancement will support the players and representatives by getting the prior information.

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