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① Smart irrigation system can improve crop yields while saving water. Smart irrigation systems use IOT devices with soil moisture sensors to determine the amount of moisture in the soil and release the flow of water through the irrigation pipes only when the moisture levels go below a predefined threshold.

Let us consider an example of a level-2 IOT system for smart irrigation. The system consists of a single node that monitors the soil moisture level and controls the irrigation system. The device used in the system collects soil moisture data from sensors. the controller service continuously monitors the moisture levels. If the moisture level drops below a

threshold, the irrigation system is turned on. For controlling the irrigation system actuators such as solenoid valves can be used. The controller also sends the moisture data to the computing cloud. A cloud-based REST web service is used for : Storing and retrieving moisture data which is stored in the cloud database. A cloud-based application is used for visualizing the moisture levels over a period of time, which can help in making decisions about irrigation schedules.

The communication protocols used in smart irrigation according to the IoT protocol layer are:-

- Communication APIs : REST SPIs

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- Communication Protocol:
  (a) Link Layer : 802.11
  (b) N/w : IPV6
  (c) Transport : TCP
  (d) Application: HTTP

Explain :-

- REST -based Communication APIs:
  Representational State transfer (REST) is a set of architectural principles by which you can design Web Services the Web APIs that focus on System's resources and how resource States are addressed and transferred.

- Link Layer: Link Layer : 802.11 wifi

S.No.	Standard	S
1	802.11a	5GHz band
2	802.11b & 802.11g	2.4GHz band
3	802.11n	2.4GHz bas
4	802.11ac	5GHz ban

-> Collection of wireless LAN
-> Data Rates from 1 Mb/s to 54 Mb/s

* Network / Internet Layer

-> Responsible for sending of IP datagram from source to destantation network

* Transport Layer

-> Provide end to end capability independent of underlying layer.

* TCP

-> Transmission Control protocol
-> Connection oriented
-> Ensure Reliable transmission

HTTPS

→ forms foundation of www

→ Include commands such as

GET, PUT, POST, HEAD.

→ Follows a request.