

IoT - Based Smart Village

MP Mini-Project

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What's the aim?

To make life easier for the
villagers of Palampur.

Modules

Raspberry Pi



- Healthcare



- Transport



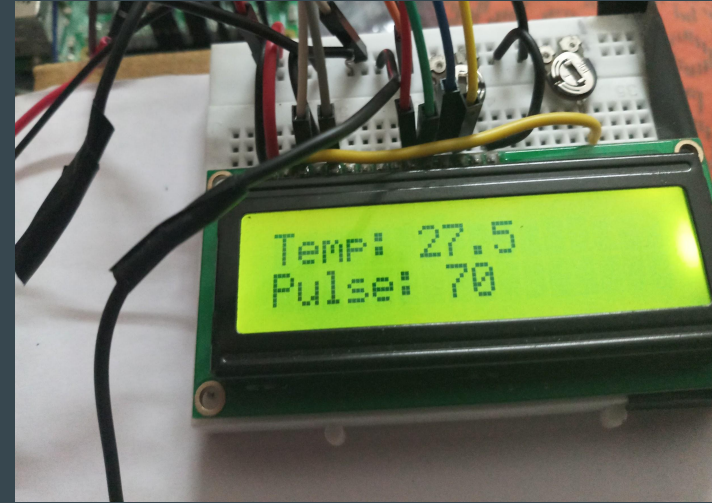
- Warehousing



- Irrigation

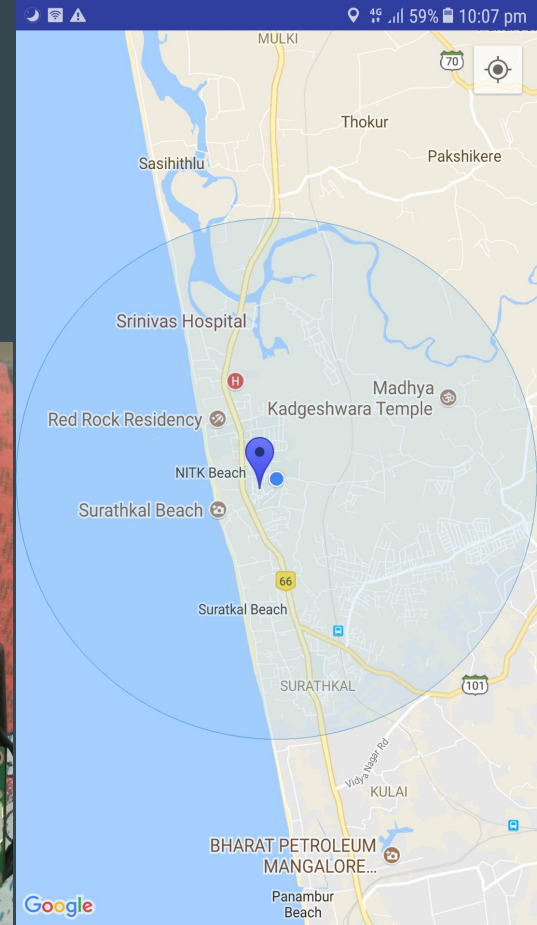
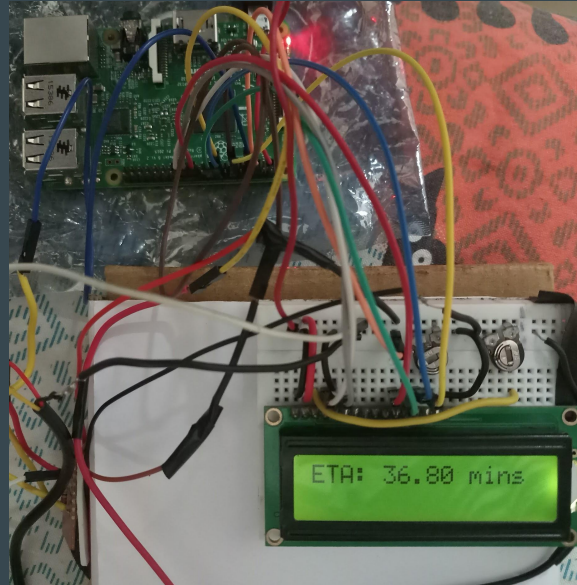
Healthcare - Smart Hospital Bed

- **Sensors:** Temperature, Heartbeat
- **Outputs:** Buzzer, LCD (16x2) , E-Mail
- Patient data continuously recorded
- Doctors can enter thresholds through a UI for the temperature and heartbeat (based on age, fitness levels, current medication, etc.)
- If any abnormality is detected, the doctor is notified by email and local staff are notified by the buzzer



Transport - Bus Location with ETA

- Collecting **GPS** data using a smartphone
- Conductor will open the application and his location will be processed to find ETA
- ETA data is transmitted wirelessly to the Raspberry Pi at the village and displayed on a 16x2 LCD screen



(The App)

Firestore:



Database

Realtime Database

DATA

RULES

BACKUPS

USAGE

https://location-tracking-44232.firebaseio.com/

location-tracking-44232

LocationOfConductor

E0

Distance to Mangalore: 22272.03515625

+

Location

Time: 28.43238639831543

Timestamp: "2017/11/14 20:17:24"

E1

Distance to Mangalore: 22271.39453125

+

Location

Time: 28.431568145751953

Timestamp: "2017/11/14 20:17:32"

Warehousing



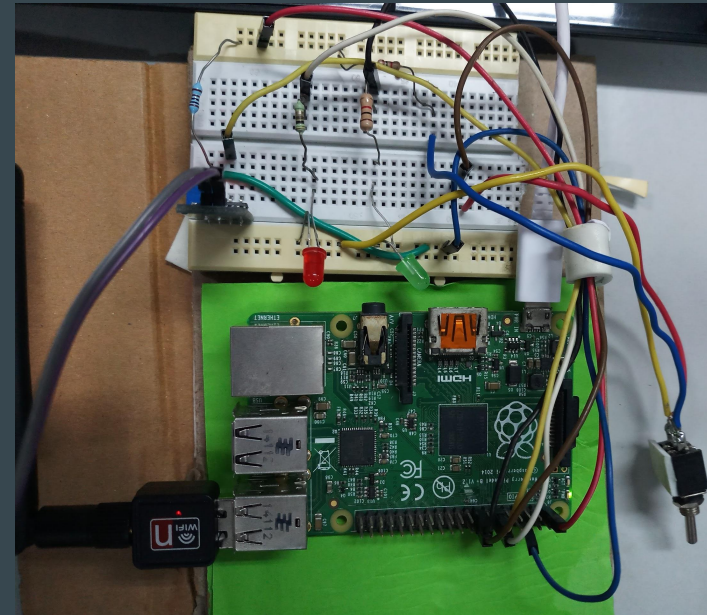
- End-to-end system with many features
- UI for farmers, warehouse administration and company which comes to buy crops
- Keeps track of all new crops the farmers bring in and how much any company buys
- Sends an email to the farmers telling them how much money is added when a company buys crops from the warehouse
- Database visualisation

A screenshot of a form titled "tk #2". It contains three input fields: "Company Name", "Crop", and "Quantity". Below the input fields are two buttons: "Buy" and "Quit".

			Pachha Bale	1000	1300	1100
Malur	03/11/2017	1	Pachha Bale	1800	2200	2000
	07/11/2017	2	Pachha Bale	1800	2200	2000
	08/11/2017	4	Pachha Bale	1300	2000	1375
	10/11/2017	1	Pachha Bale	1800	2200	2000
	13/11/2017	1	Pachha Bale	1800	2300	2000
	14/11/2017	1	Pachha Bale	1800	2300	2000
	15/11/2017	1	Pachha Bale	1800	2300	1875
Mangalore	02/11/2017	1	Elakki Bale	2400	3800	3400
			Nendra Bale	2200	3850	3500
			Other	1700	2050	1800
			Pachha Bale	1400	2200	2000
	03/11/2017	1	Elakki Bale	2400	3800	3400
			Nendra Bale	2200	3850	3500
			Other	1700	2050	1800
			Pachha Bale	1400	2200	2000
	04/11/2017	1	Elakki Bale	2400	3800	3400

Irrigation - Smart Watering System

- **Sensors:** Moisture, Weather data
- **Actuators:** Mechanical Switch
- **Outputs:** LEDs
- Rain prediction data is mined from online, coupled with current moisture levels
- Based on these readings, it is decided whether to turn on a servo motor or not (to turn on the irrigation system or not)



Extensions?

We could...

- Make the transport system more robust. Multiple destinations, enter name of conductor, multiple buses, etc.
- Expand on the healthcare system, by monitoring breathing rate, blood pressure, and adding a proximity/motion sensor
- Understanding each individual crops' requirements and controlling the irrigation system accordingly

Conclusion

Thus, an Internet of Things approach has been used to improve facilities of a village, such as Palampur.

Thank You.