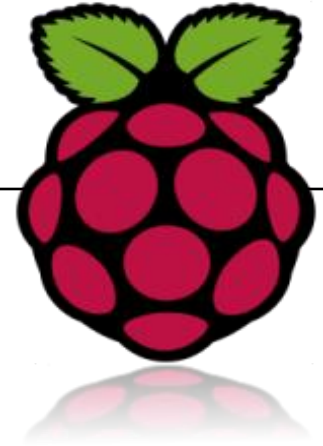


IOT AND RASPBERRYPI



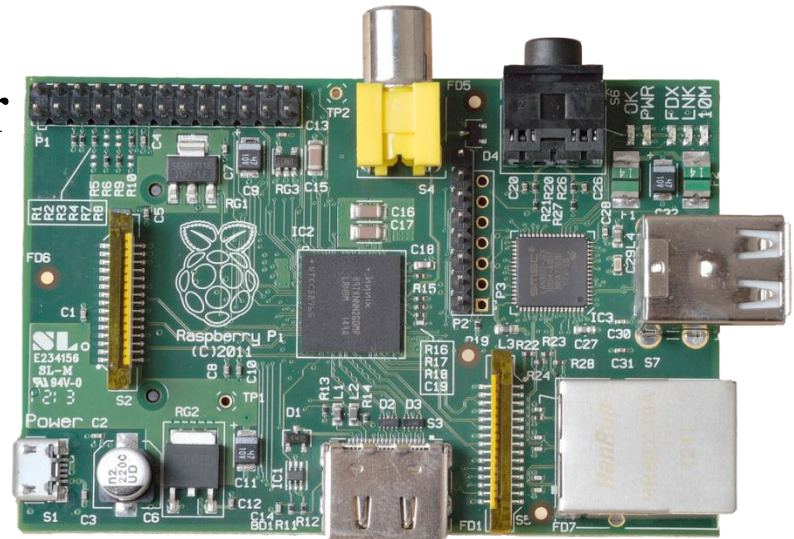
by

SUCHITAV KHADANGA

DEC 11 2016

What is a Raspberry Pi?

- ❑ University of Cambridge's Computer Laboratory
- ❑ A credit card sized PC
- ❑ Plugs into a TV or monitor
- ❑ Low cost~\$35 each
- ❑ Capability:
 - Programming
 - Electronic Projects
 - Office
 - Play HD Videos



Kit Components

- Raspberry Pi board
- Prepared Operating System SD Card
- USB keyboard
- Display (with HDMI, DVI, or Composite input)
- Power Supply

- extras :
 - USB mouse
 - Internet connectivity - LAN cable
 - Powered USB Hub
 - Case

Programming Languages

- The Raspberry Pi Foundation recommends Python
- Any language which will compile for ARMv6 can be used
- Installed by default on the Raspberry Pi:
 - C
 - C++
 - Java
 - Scratch
 - Ruby

Software

OS – Linux variants (www.raspberrypi.org/downloads)
for ARM architecture

- Raspbian “wheezy”
 - Version of Debian linux
- Others (**Noobs**, Arch, Pidora)

Applications – LXDE desktop pre-installed

- **Epiphany**(browser), omxplayer(video), leafpad(editor)
- 35,000+ freely available via Linux repositories
- Scratch – visual programming environment

Disadvantage

- No shutdown/reset
- Only 700 Mhz (1Ghz turbo possible) CPU
- No VGA output
- No on-board realtime clock, uses internet Time via NTP or external RTC daughterboard
- No on-board DAC, unlike Arduino, Beagle Bone Black
- Price high compared to arduino

What Do You Need

- **Quick start guide**
 - <http://www.raspberrypi.org/quick-start-guide>
 - **Compatible devices**
- **AC → 5v, 1 amp minimum (USB charger but these are noisy)**
- **SDcard > 4 Gb, bigger the better (μSDcard or SDcard)**
 - **Download & load OS image**
- **HDMI video (TV or computer terminal, HDMI ->DVI cable)**
 - **Component video, aka old TV**
 - **No VGA!**
- **AC-powered!! USB hub - Keyboard, mouse, etc**
- **Ethernet or Wifi dongle??**

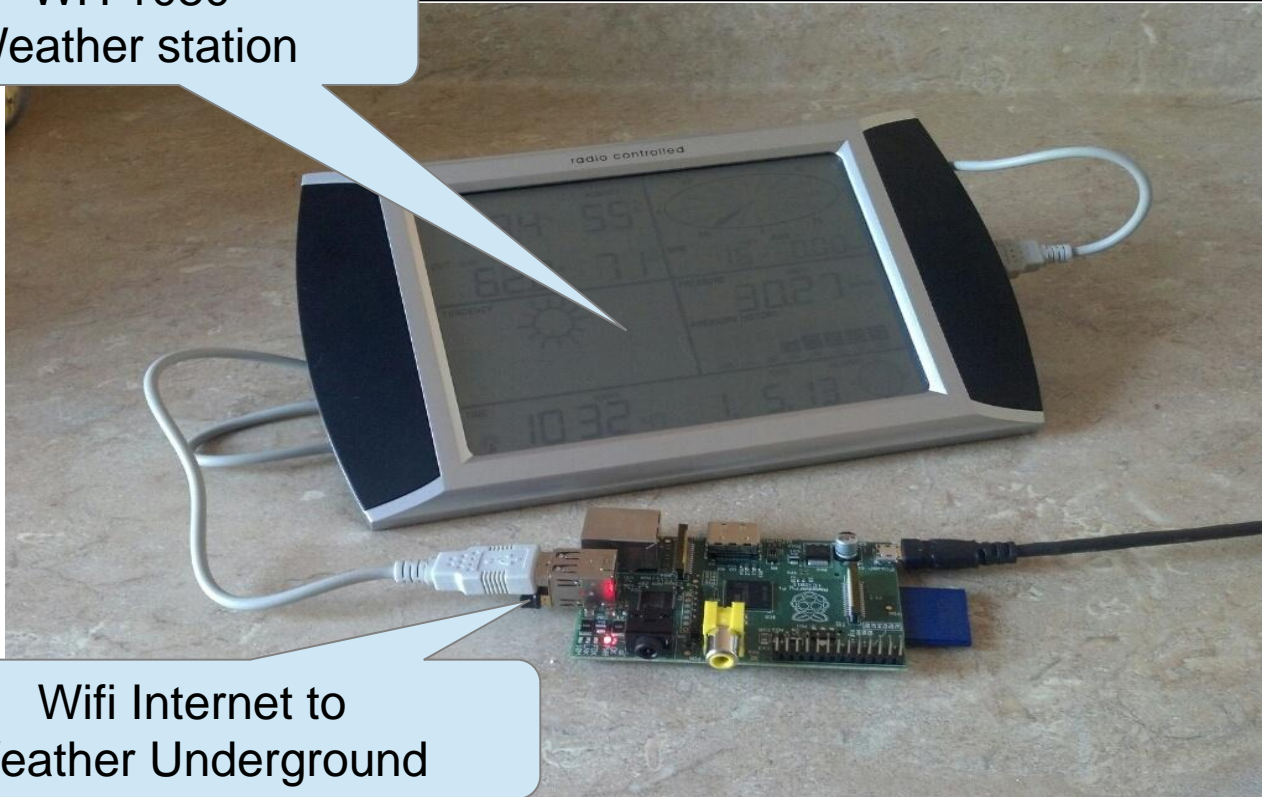


FEW PROJECTS

- ROBOTICS
- GAME CONTROLLER
- Home automation, sensors (temp, humidity, barometric etc)
- Garage door control
- Security monitor (webcam with microphone)

Rasp Pi Weather Server

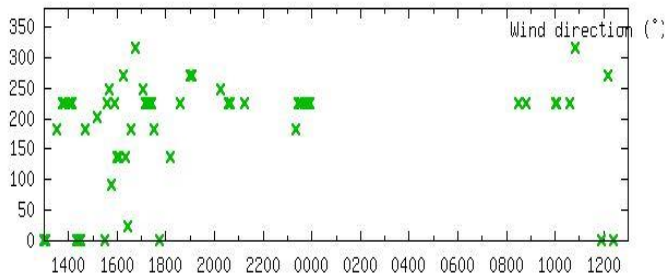
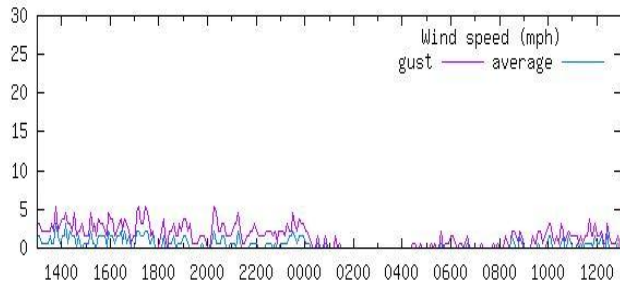
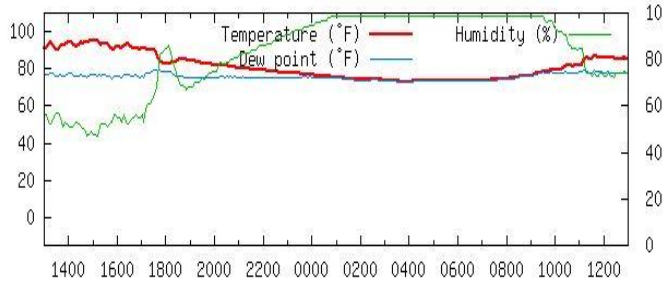
WH 1080
Weather station



Wifi Internet to
Weather Underground

Weather graphs

Last 24 hours graphs



AccuWeather.com®

Aiken, SC

Currently

86°F

Cloudy
RealFeel®: 99°F
Winds: Calm

Your Forecast

Today
A thunderstorm in spots early
High 91°/Low 69°

Tomorrow
Cloudy, a thunderstorm; humid
High 89°/Low 69°

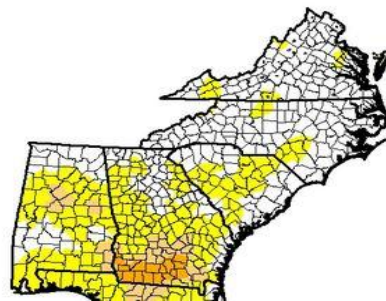
Monday
Mostly cloudy
High 85°/Low 67°

Tuesday
Partly cloudy and humid
High 86°/Low 68°

Wednesday
Partly cloudy and humid
High 90°/Low 70°

Radar [Enlarge](#) | [Animate](#) | [Zoom](#)

U.S. Drought Monitor Southeast



September 2, 2014
(Released Thursday, Sep. 4, 2014)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	59.82	40.38	8.04	2.33	0.00	0.00
Last Week 9/26/2014	68.84	31.16	6.52	1.65	0.00	0.00
3 Months Ago 6/2/2014	93.26	6.74	0.90	0.00	0.00	0.00
Start of Calendar Year 1/2/2013	91.82	8.18	0.00	0.00	0.00	0.00
Start of Water Year 10/1/2013	90.70	9.30	0.00	0.00	0.00	0.00
One Year Ago 9/2/2013	100.00	0.00	0.00	0.00	0.00	0.00

Intensity



Raspberry Pi camera



Case & lens

\$30

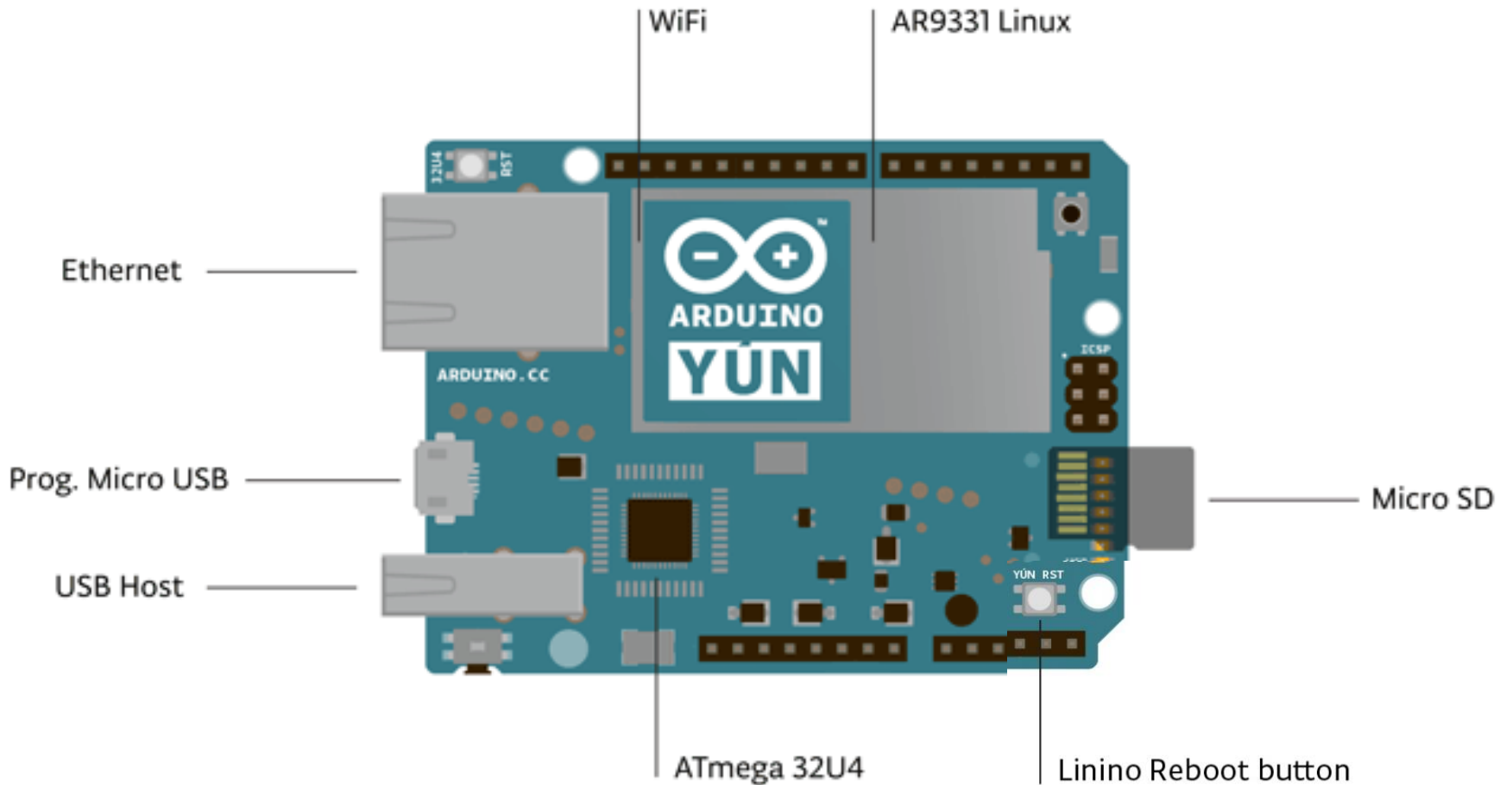


\$25



OTHER BOARDS

ARDUINO-UNO



Beaglebone Black

Price ~\$55

