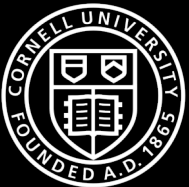


*ECE 5725*  
Design with Embedded Operating Systems

Prof. Joseph F. Skovira



# The Big Shift

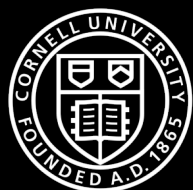
Microcontrollers

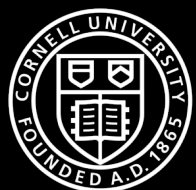
Unix/Linux

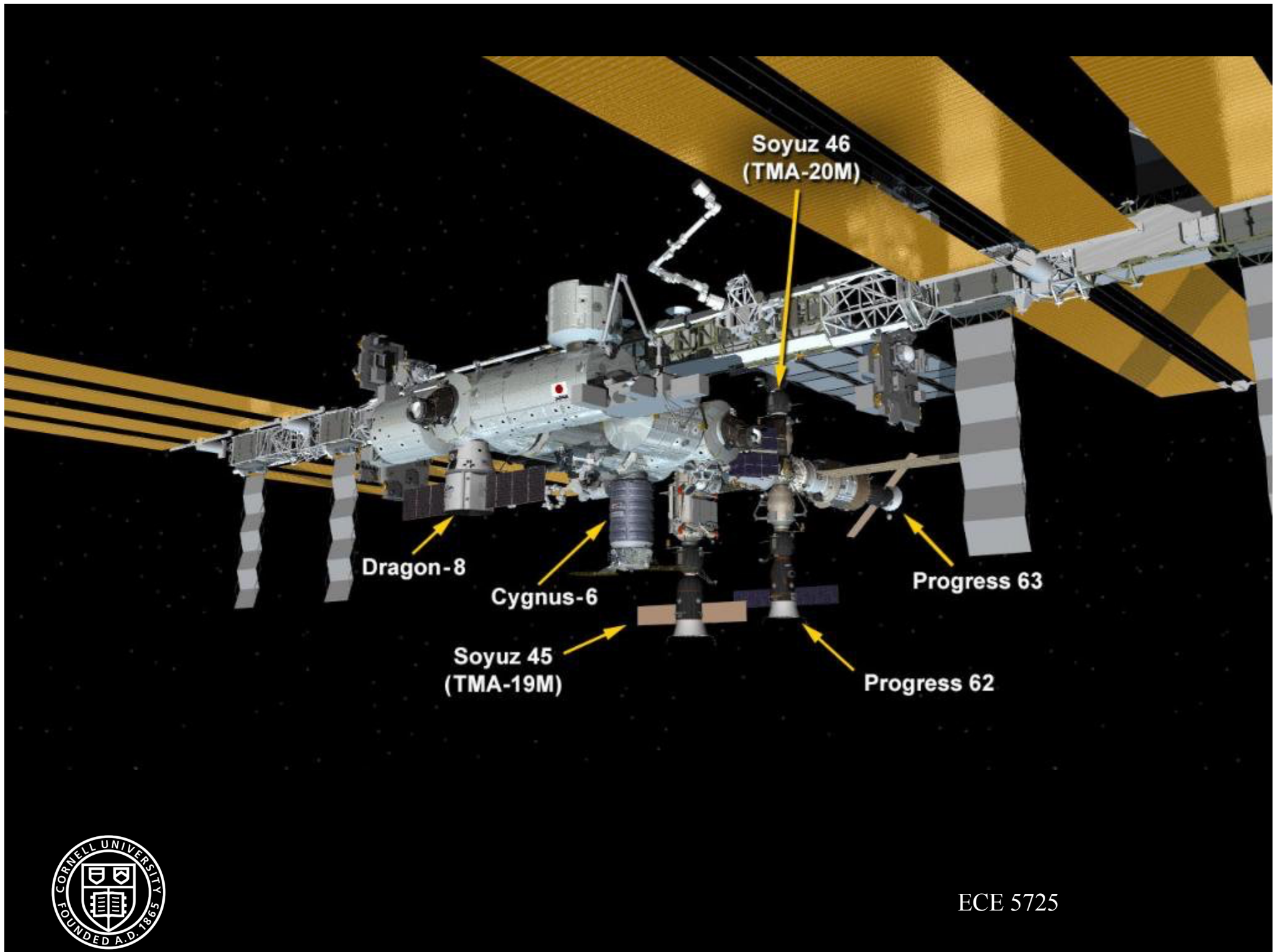
Perception

Big Shift

Industry Examples?







Soyuz 46  
(TMA-20M)

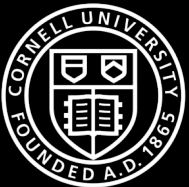
Dragon-8

Cygnus-6

Progress 63

Soyuz 45  
(TMA-19M)

Progress 62

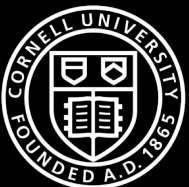




# The Big Shift

How can you identify the ‘Big Shift’?

Other Examples?



# The Big Shift

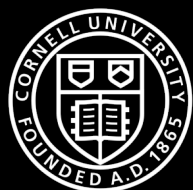
Microcontrollers

Unix/Linux

Perception

Big Shift

Industry Examples?



# Convergence

1960s

1970s

1980s

1990s

2000s

present

Unix

Unix/Linux  
GNU

Unix  
wars

Ubuntu,  
Debian,  
Arch, ...

BSD  
UC  
Berkeley

Minix

Linus Torvalds  
Linux Open Source

4004 8008

80186

80286

80386

Pentium

Nehalem

Xeon

Arduino  
Pic32

ARM

MSP430

FPGA

GPU

8051

6800 68000

Mainframes

PCs

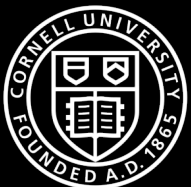
Game  
Consoles

Cell  
phones

iPhone  
android

Wearables  
IOT

iEverything



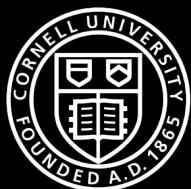
# The Big Shift

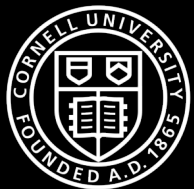
What does this have to do with you?

Are we reaching a shift?

What does it mean for future development?

Plenty!





ECE 5725

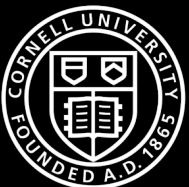
# What about Us?

What does this have to do with us?

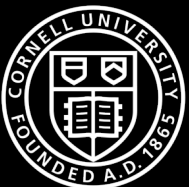
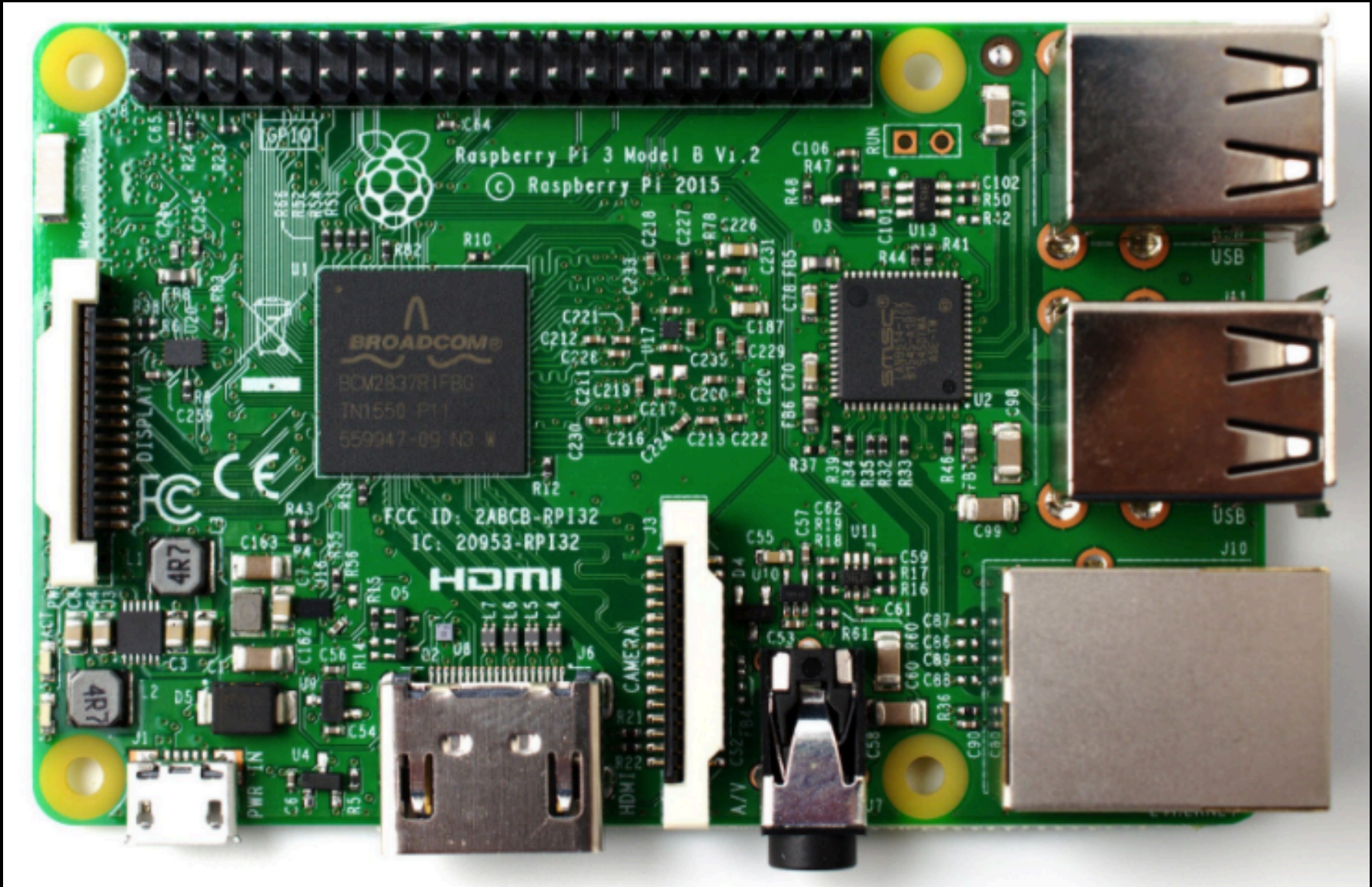
SpaceX, Tesla, Facebook, Twitter

Any Local Examples?

Winkler Lab

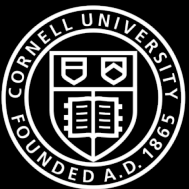


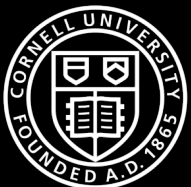
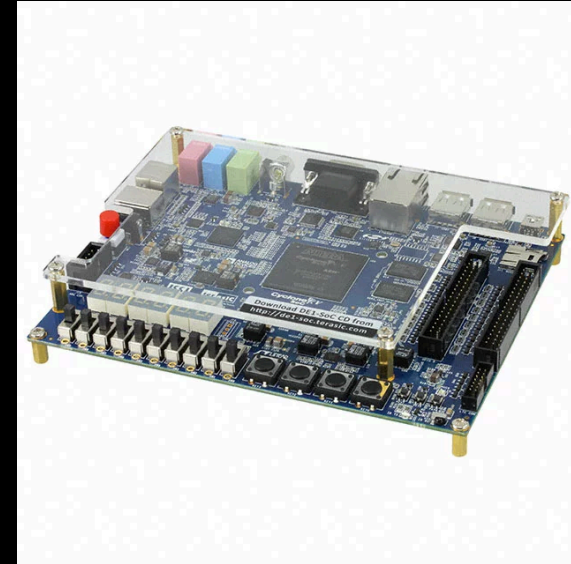
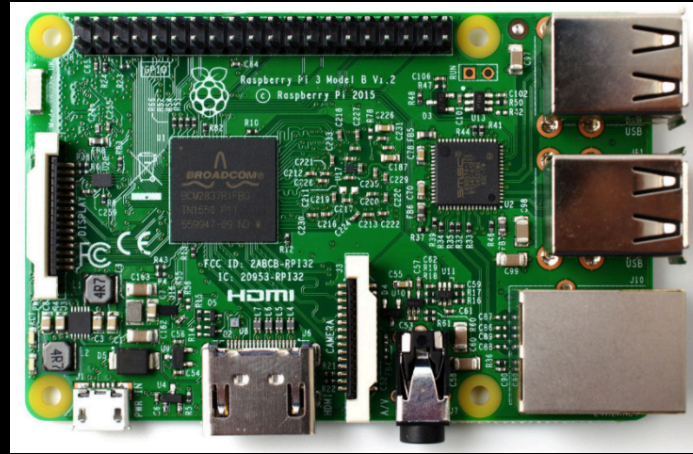
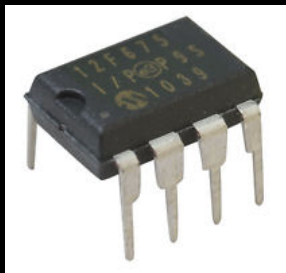
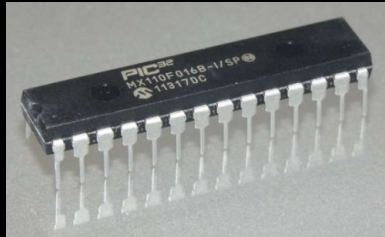
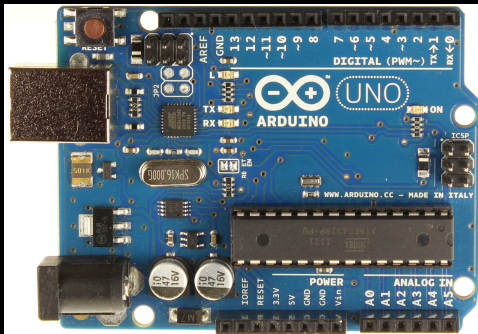






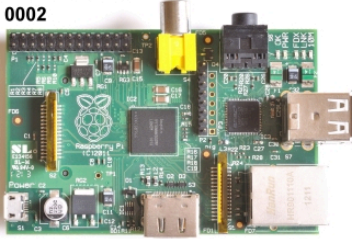
# ECE 5725 server



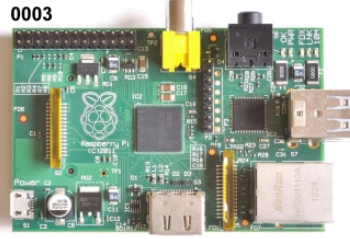




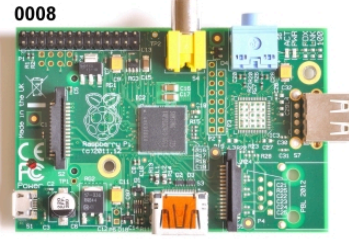
**B Rev 1**  
0002



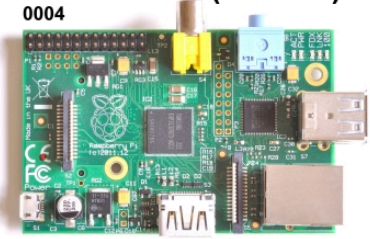
**B Rev 1 links**  
0003



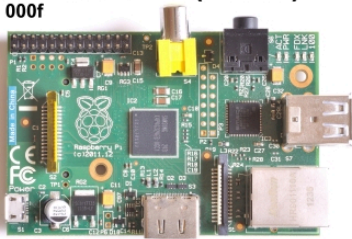
**A**  
0008



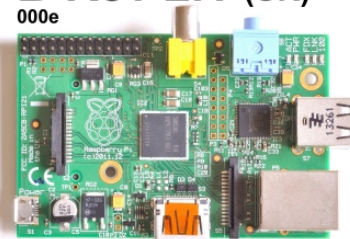
**B Rev 2 (256 MB)**  
0004



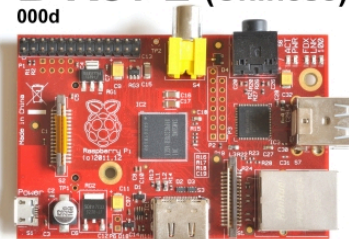
**B Rev 2 (China)**  
000f



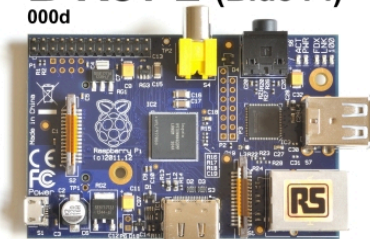
**B Rev 2.1 (UK)**  
000e



**B Rev 2 (Chinese)**  
000d



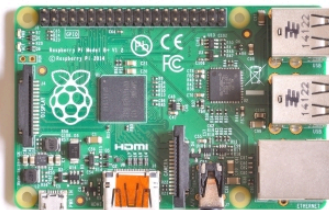
**B Rev 2 (Blue Pi)**  
000d



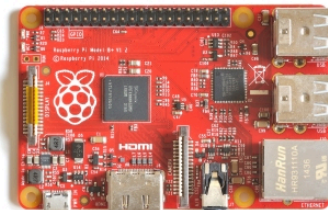
**Compute Module**  
000d



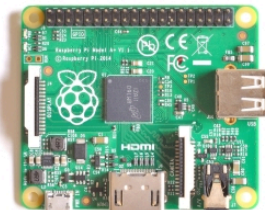
**B+**  
0010



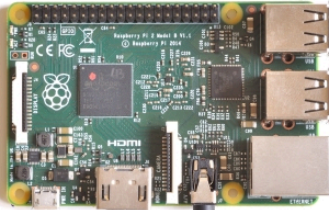
**B+ (Chinese)**  
0010



**A+**  
0012



**2B**  
a01041



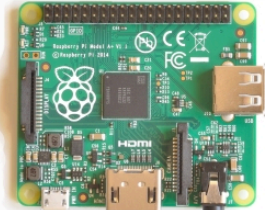
**Zero 1.2**  
900092



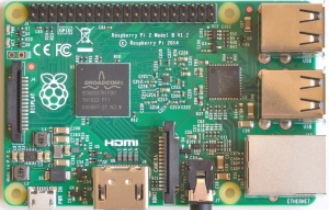
**3B**  
a02082



**A+ 512**  
0015



**2B 1.2**  
a22042



**Zero 1.3**  
900093



**Zero W**  
9000C1



**Compute Module 3**  
a020a0



**Raspberry Pi®**  
**family**

Feb 28 2017

**RasPi.TV**

