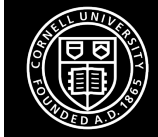
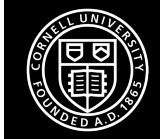


ECE 5725
Embedded Operating Systems
Lecture 3

Prof. Joseph F. Skovira

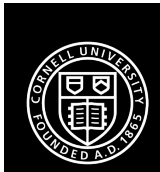


Information

Homework 1

Lab 1

Lab Parts



Course Administration

Academic Integrity
- Original Work
- Correct Citations

Ask if you are unsure

Required Reading:
- http://cuinfo.cornell.edu/aic.cfm

And:
- https://plagiarism.arts.cornell.edu/tutorial/exercises.cfm

Convergence

1960s 1970s 1980s 1990s 2000s present

Unix

Unix/Linux
GNU

Unix
wars

Ubuntu
Debian
Red Hat
SUSE
Arch …

BSD
UC
Berkeley

Minux

Linus Torvalds
Linux Open Source

4004 8008 80186 80286 80386 Pentium Nehalem Xeon

Intel
Arduino
Pic32
ARM
CC1310

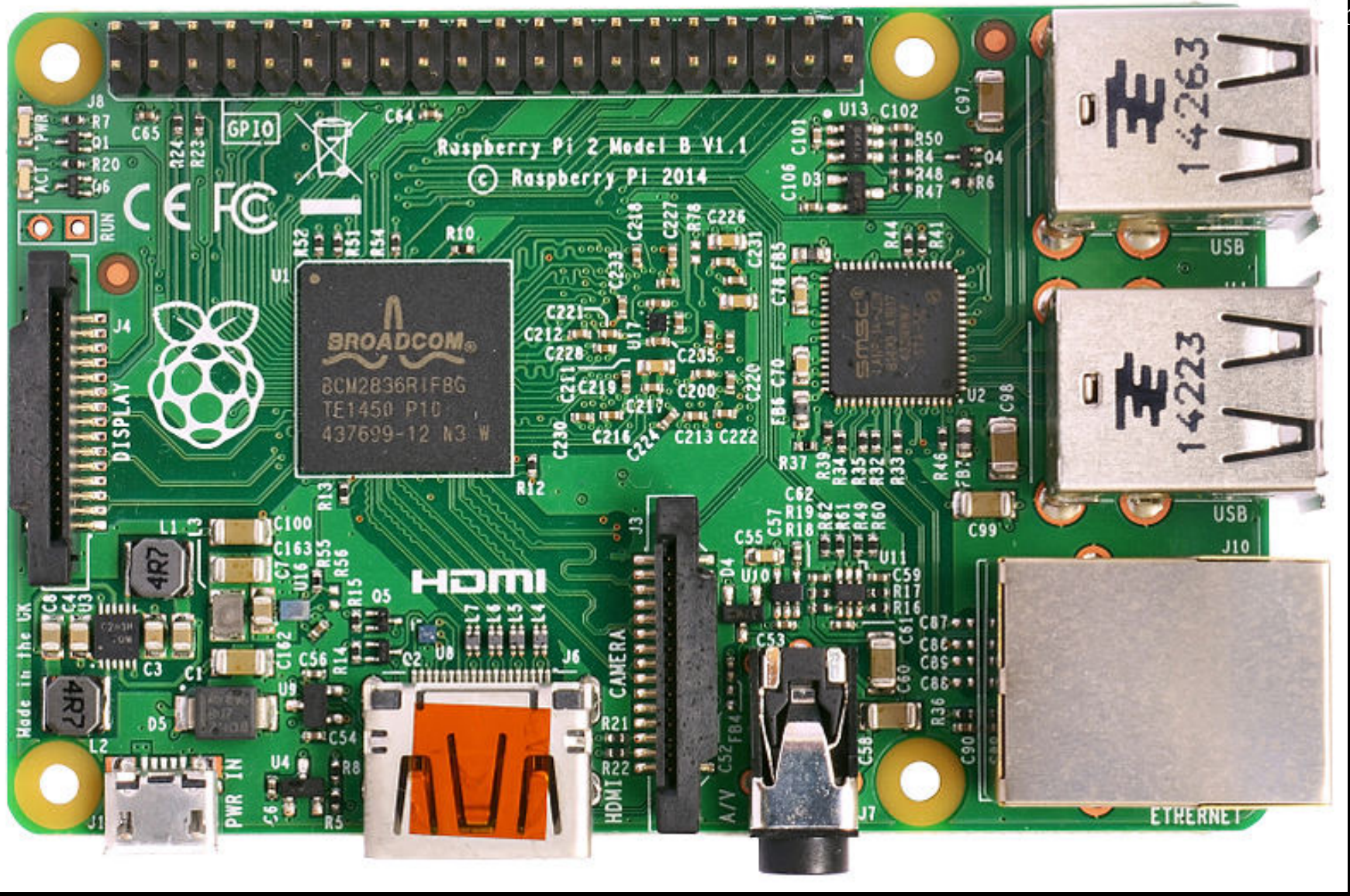
6800 68000

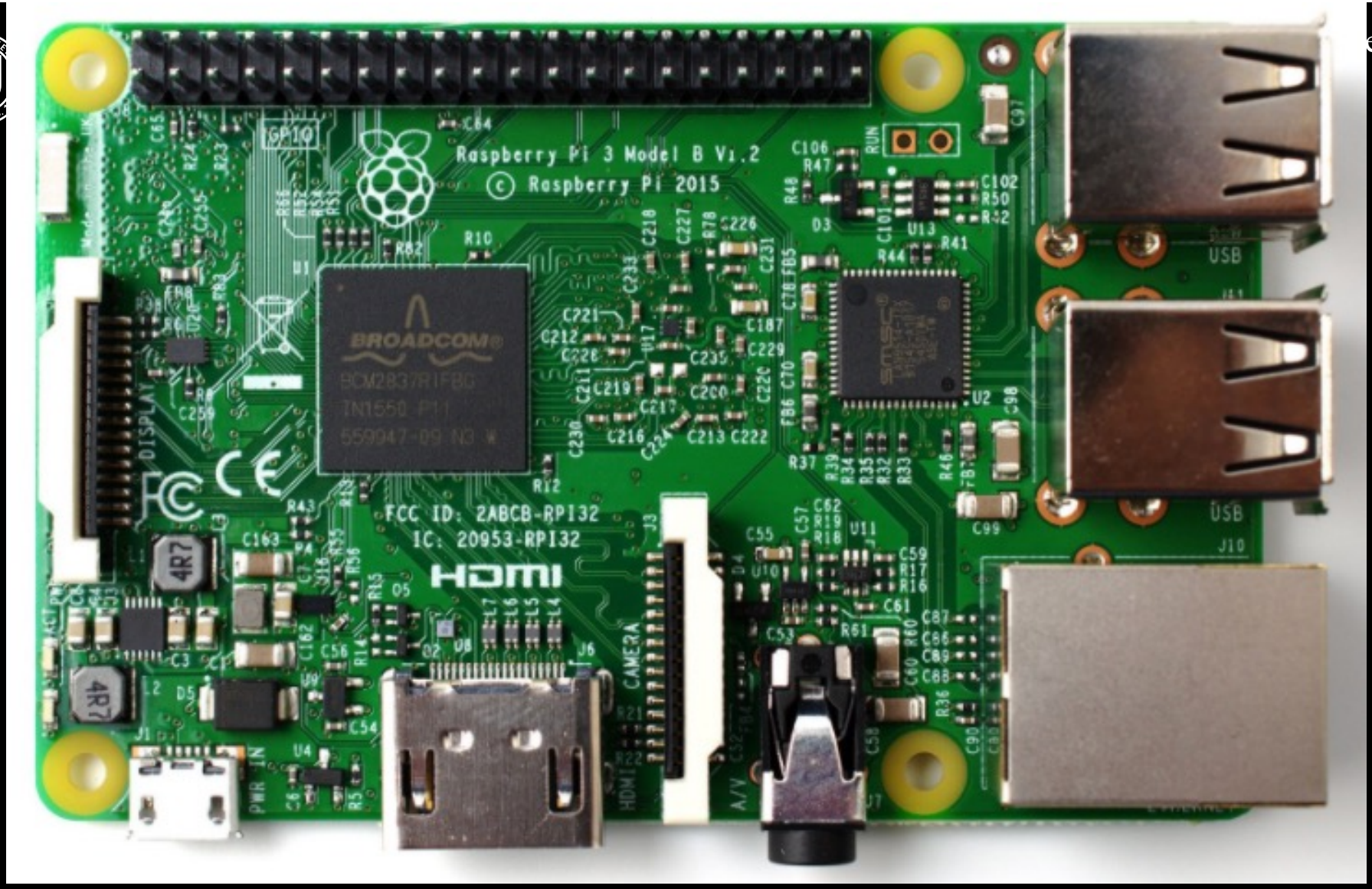
8051

Mainframes MiniComputer Server PCs Game Consoles Cell phones iPhone android

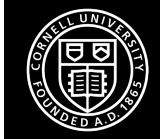
Wearables
IOT
iEverything

re 3


Raspberry Pi 2 Model B V1.1
© Raspberry Pi 2014
BROADCOM
BCM2836RIFBG
TE1450 P10
437699-12 N3 W
GPIO
DISPLAY
HDMI
CAMERA
PWR IN
ETHERNET
USB
USB
Made in the UK


Raspberry Pi 3 Model B V1.2
© Raspberry Pi 2015
BROADCOM
BCM2837B0
FCC ID: 2ABCB-RPI32
IC: 20953-RPI32
HDMI
CAMERA
DISPLAY
USB
USB
PWR IN
A/V
RUN

GPIO
Raspberry Pi 4 Model B
©Raspberry Pi 2018
J14
PoE
DISPLAY
RUN GLOBAL_EN
J2
J3
FCC ID: 2ABCB-RPI4B
IC: 20953-RPI4B
Made in the UK
HDMI
CAMERA
ACT
PWR
POWER IN
J6
J13
HDMI0
HDMI1
A/V
J7
EDAC

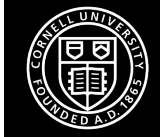


New Approach

Text book = a parts box

Some optional parts as well (buy or borrow)

System available after the semester

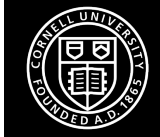


The road ahead

Plan for the class: bottom up?

- Processor
- board
- OS
- design
- applications
  - …

Linux - centric



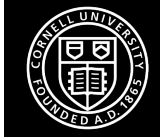
Embedded Operating Systems

Outline syllabus; what will we do?

Leverage Linux to make the most of our embedded designs

Understand Linux components

Interface with external hardware and code that controls it



Embedded Operating Systems

A bit more detail

Linux :

- bootloader
- kernel
  - filesystem
- shared libraries
- system commands and utilities

Interrupts	Process scheduling	Services
Concurrent processes	Performance	Daemons
Signals	Multi-processing	Drivers

ECE 5725 server