INTRODUCTION TO SOFTWARE BUSINESS PRODUCT MANAGEMENT

Week 1 Day 4

Led by: Emily Crose

for

Oakland University

REVIEW OF DAY 3

QUESTIONS FROM DAY 3?

TERMS TO LISTEN FOR

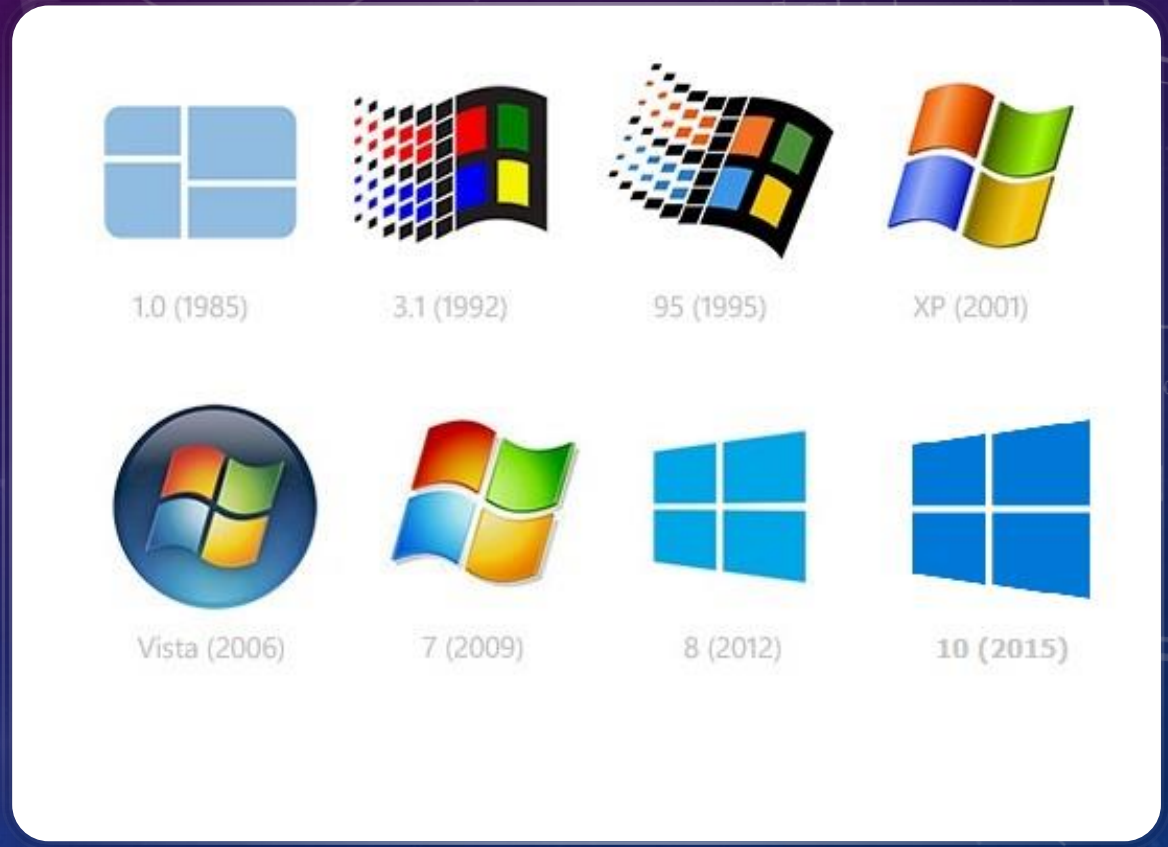
- Cache
  - A small portion of RAM set aside for temporary storage for frequently accessed data
- Process Register
  - A quickly accessible location available to a computer processor
- Heap & Stack
  - Memory management methods

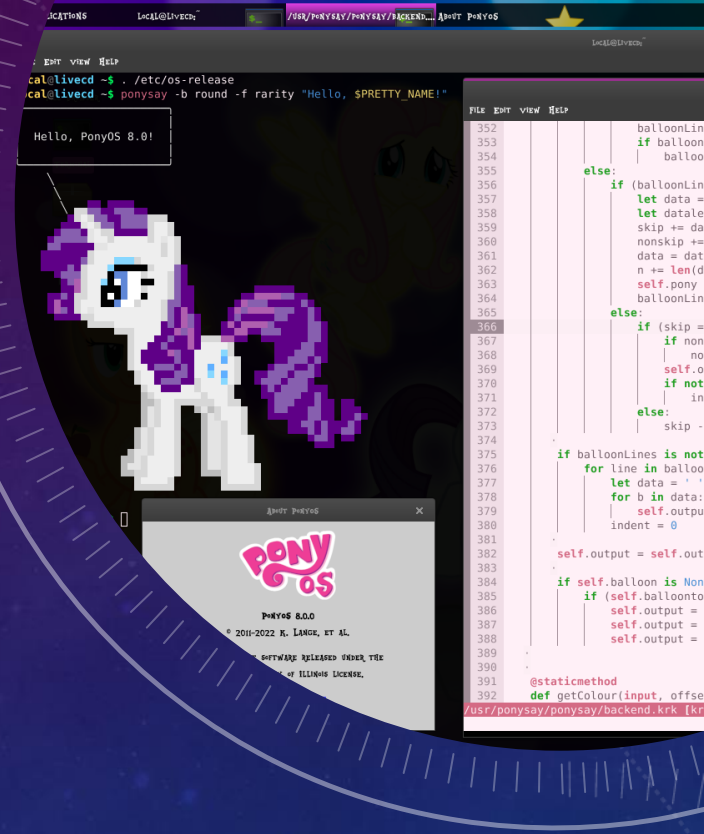
APPLICATIONS & OPERATING SYSTEMS

OPERATING SYSTEMS OVERVIEW

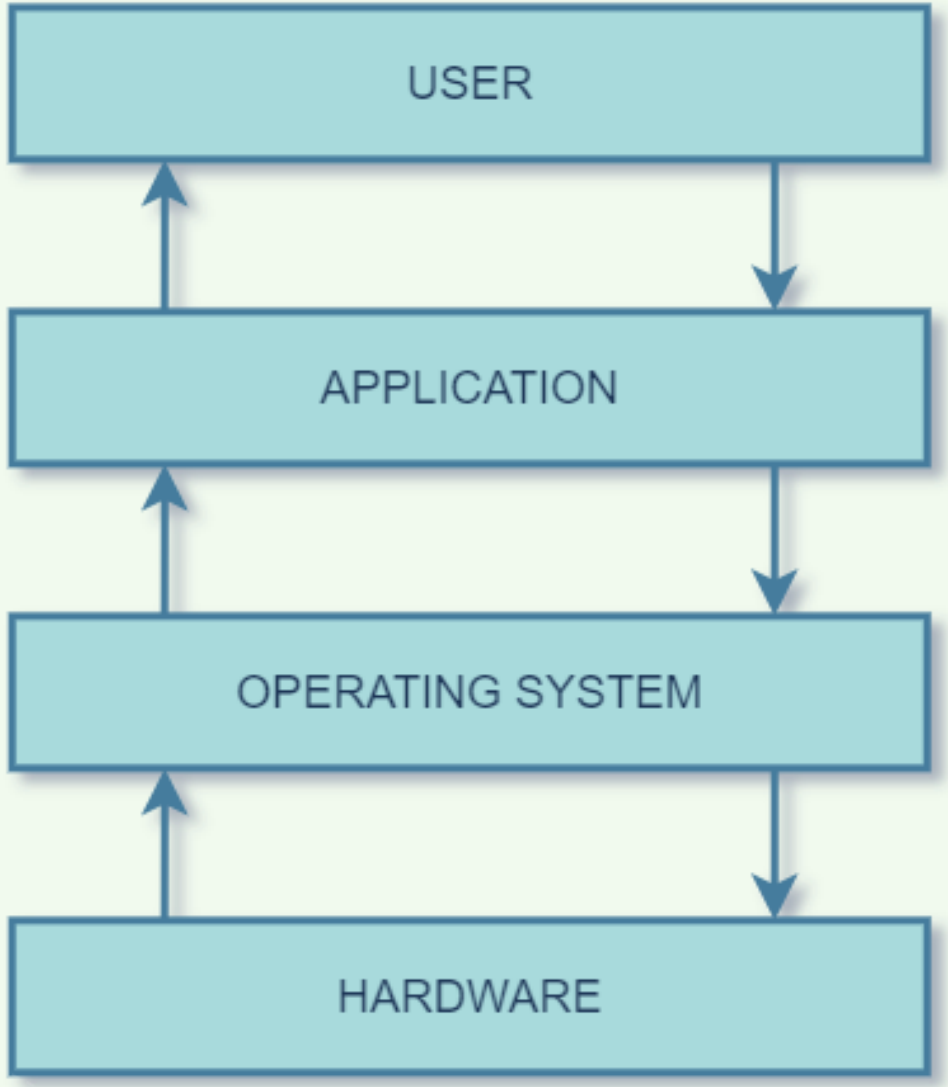
WELL-KNOWN OPERATING SYSTEMS

OLD & OUT OF SUPPORT WINDOWS VERSIONS

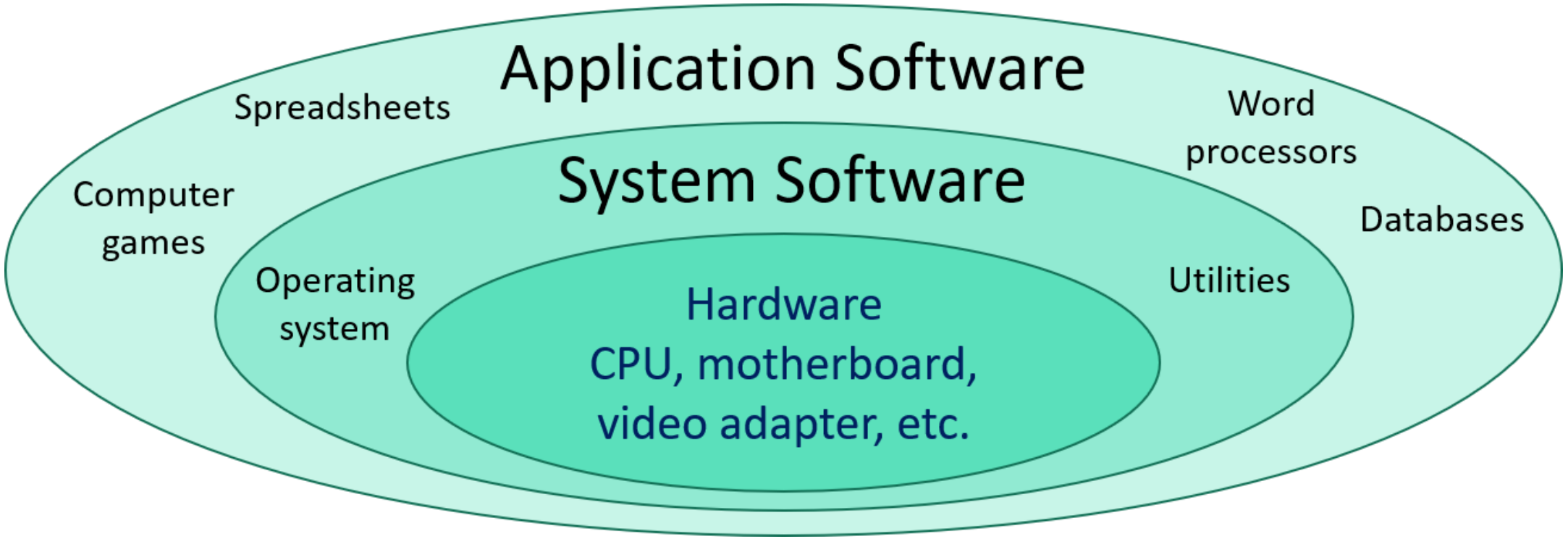




FUNNY LINUX VARIANTS



OPERATING SYSTEMS VS APPLICATIONS


Application Software
Spreadsheets
Word processors
Computer games
System Software
Databases
Operating system
Utilities
Hardware
CPU, motherboard, video adapter, etc.

OS & APP DIFFERENCES

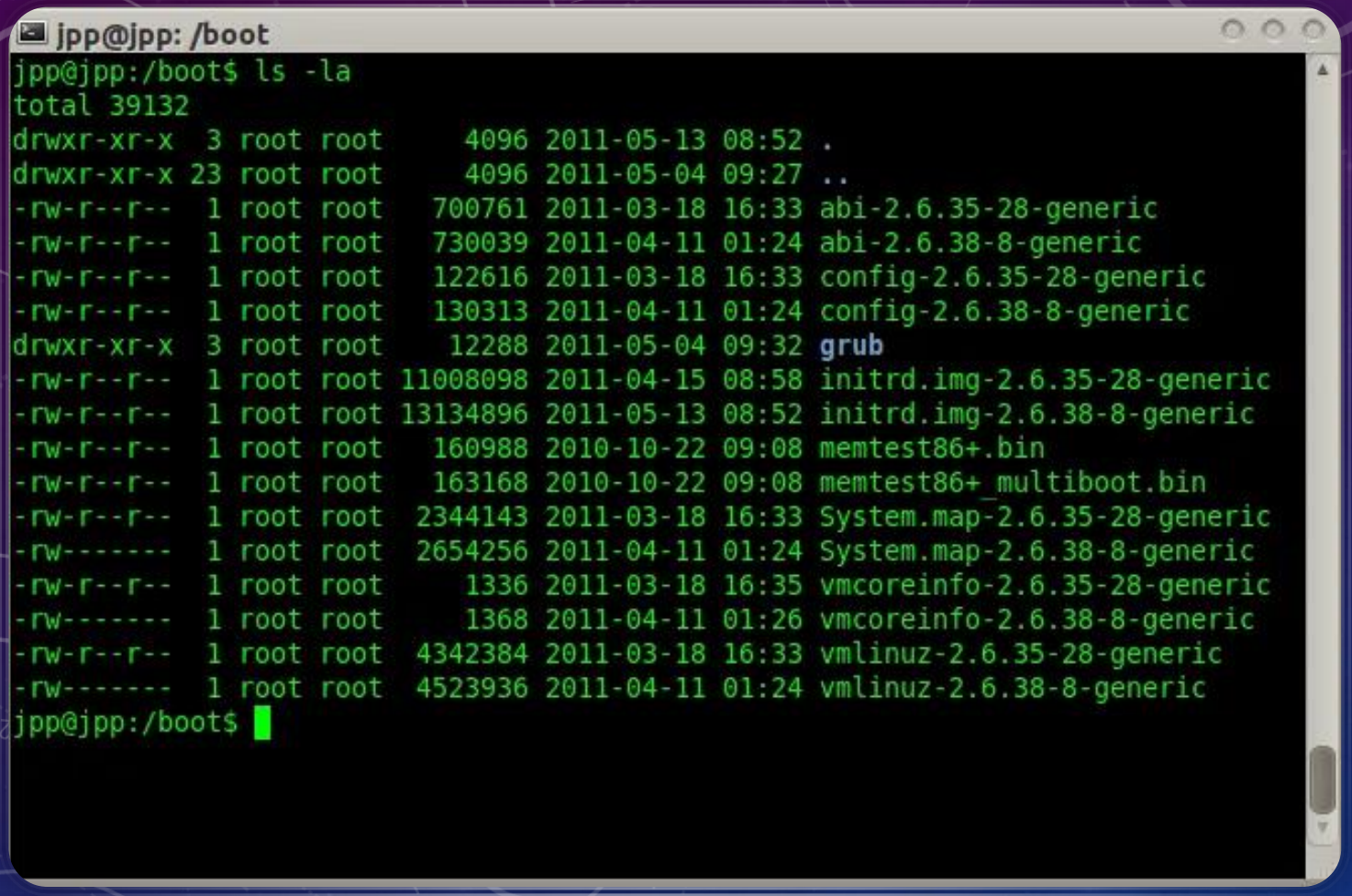
OPERATING SYSTEM VERSUS APPLICATION SOFTWARE

OPERATING SYSTEM	APPLICATION SOFTWARE
A system software that manages computer hardware and software resources and provides common services for computer programs	A software designed to perform a group of coordinated functions, tasks or activities for the benefit of the user
Works as the interface between the user and hardware, performs process management, memory management, task scheduling, hardware device controlling and many more	Performs a single specific task
Developed using C, C++, Assembly languages	Developed using Java, Visual Basic, C, C++
Boots up when the user switches on the computer and runs till he switches off the machine	Runs only when the user requests to run the application
Necessary for the proper functioning of the computer	Cannot be installed without an operating system
Ex: Windows, Unix, Linux, DOS	Ex: Word, Spreadsheet, Presentation, Multimedia tools, Database Management Systems

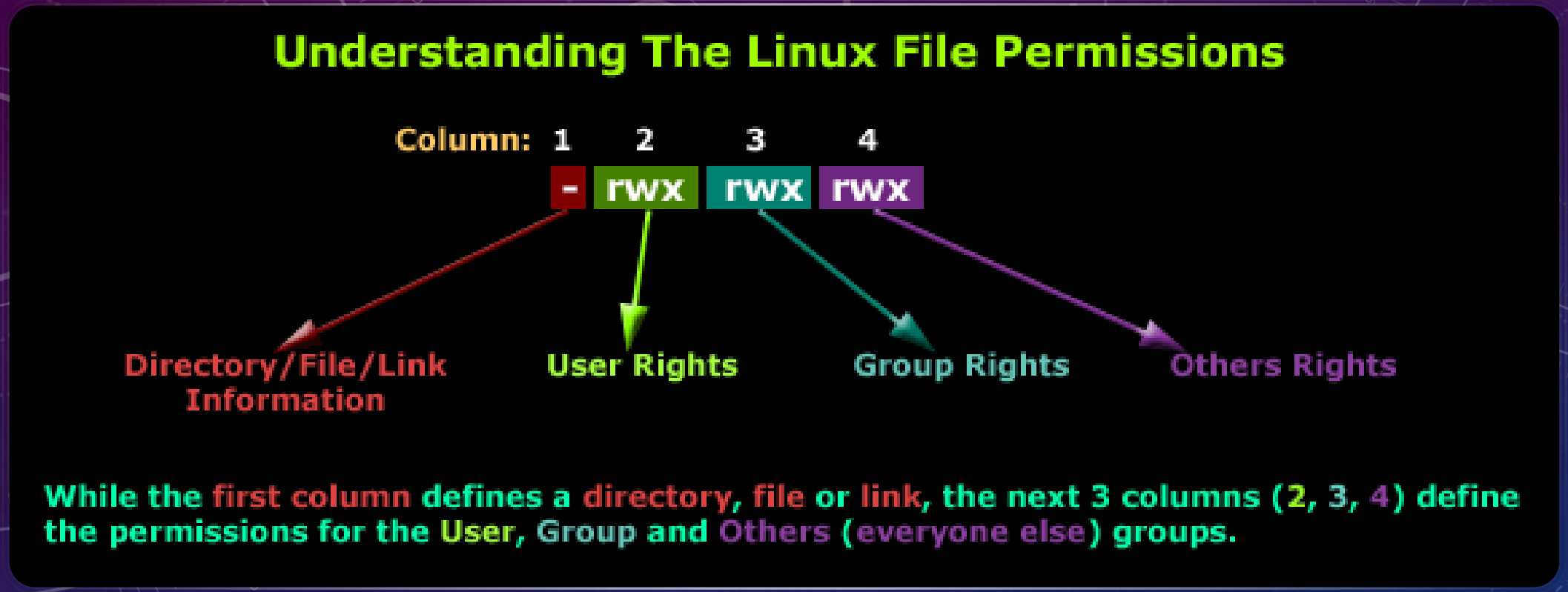
PERMISSIONS

WHAT DO PERMISSIONS DO?

- Allow read, write, and execute permissions for files and folders
- Can be changed with those who have rights to change file and folder permissions levels
- Can be customized for users, groups, and “others”

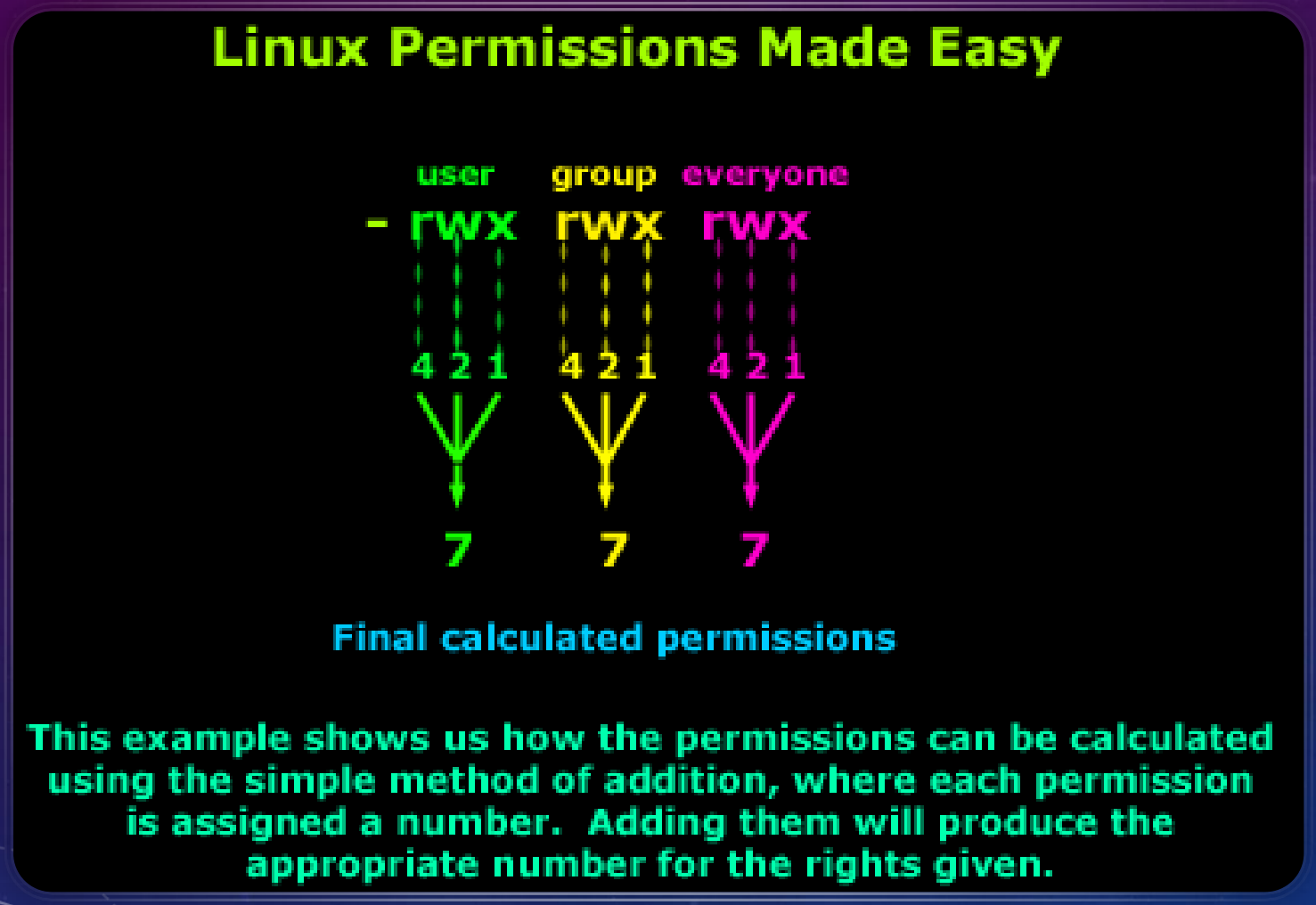


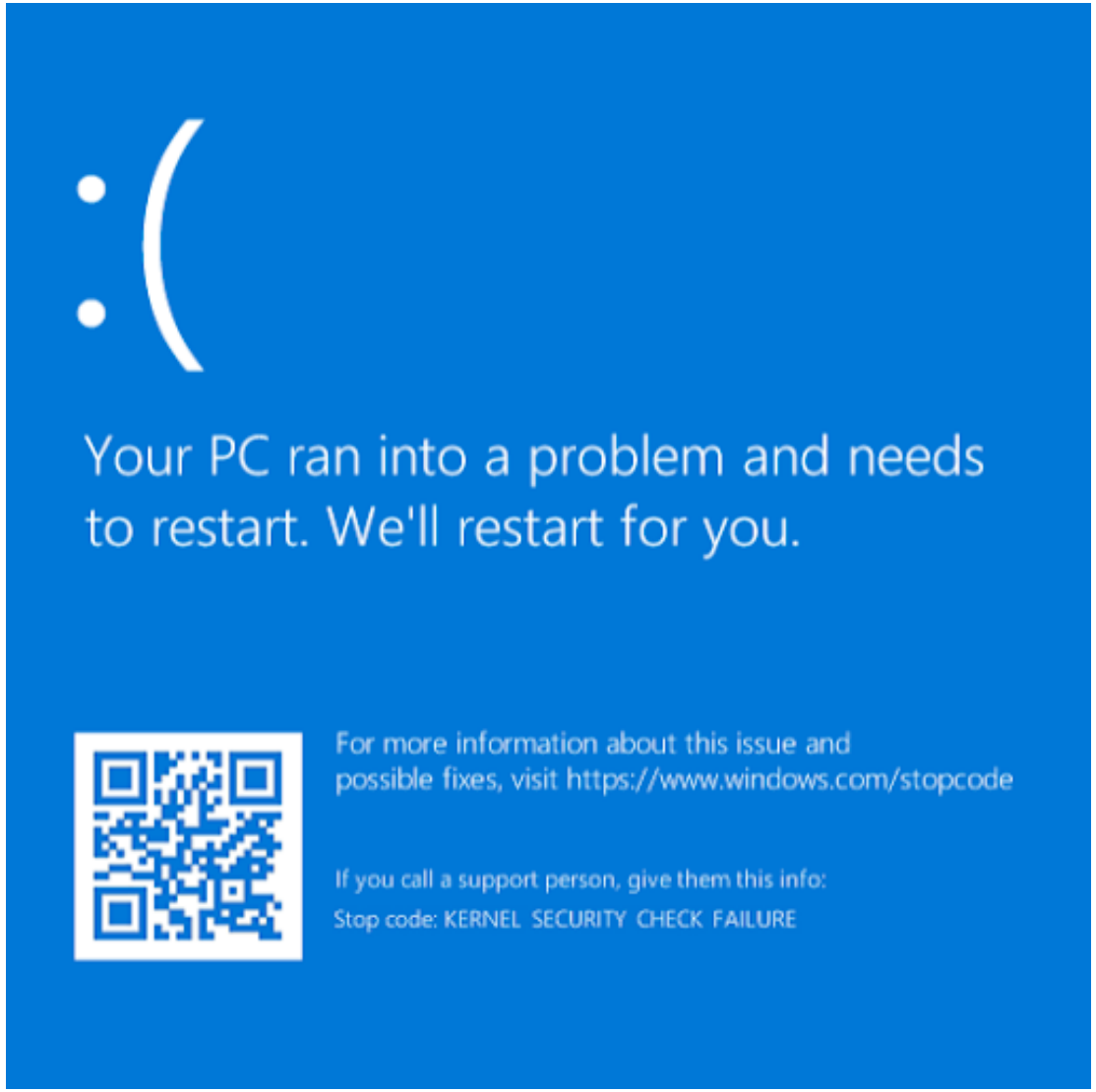
LINUX PERMISSIONS IN PRACTICE



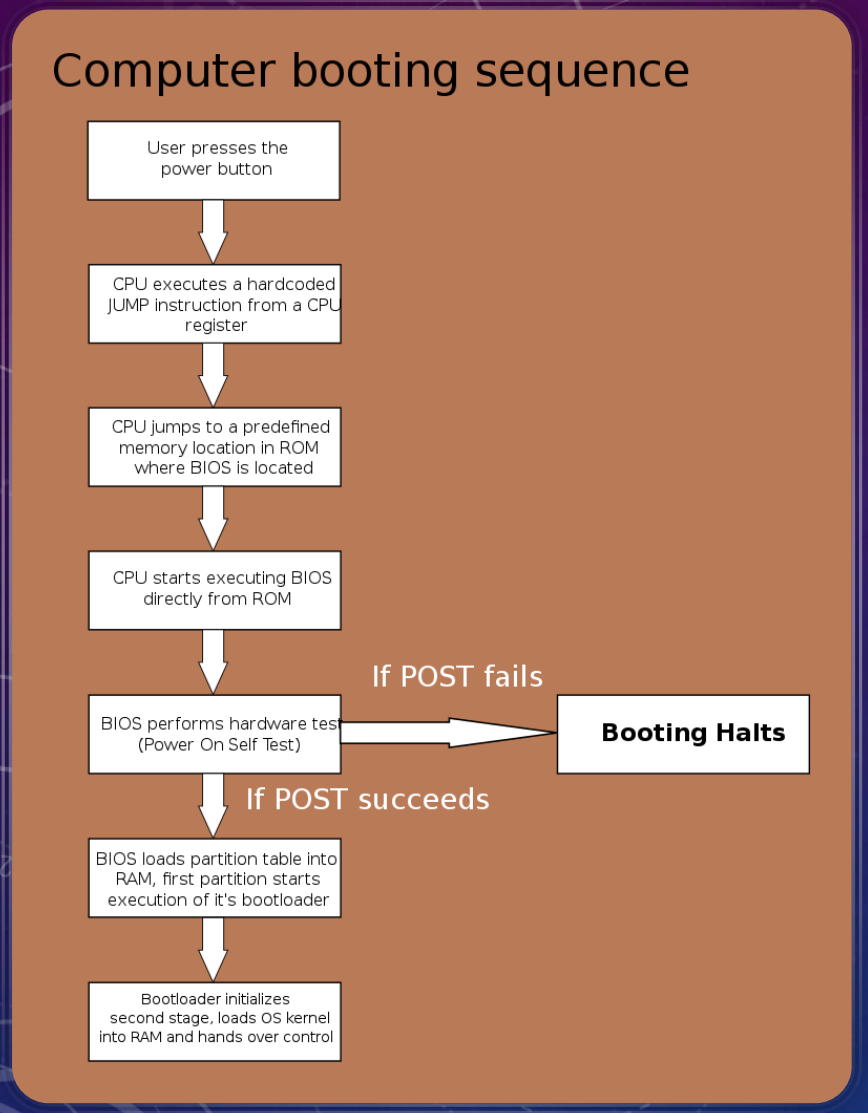
UNDERSTANDING PERMISSIONS

LINUX PERMISSIONS

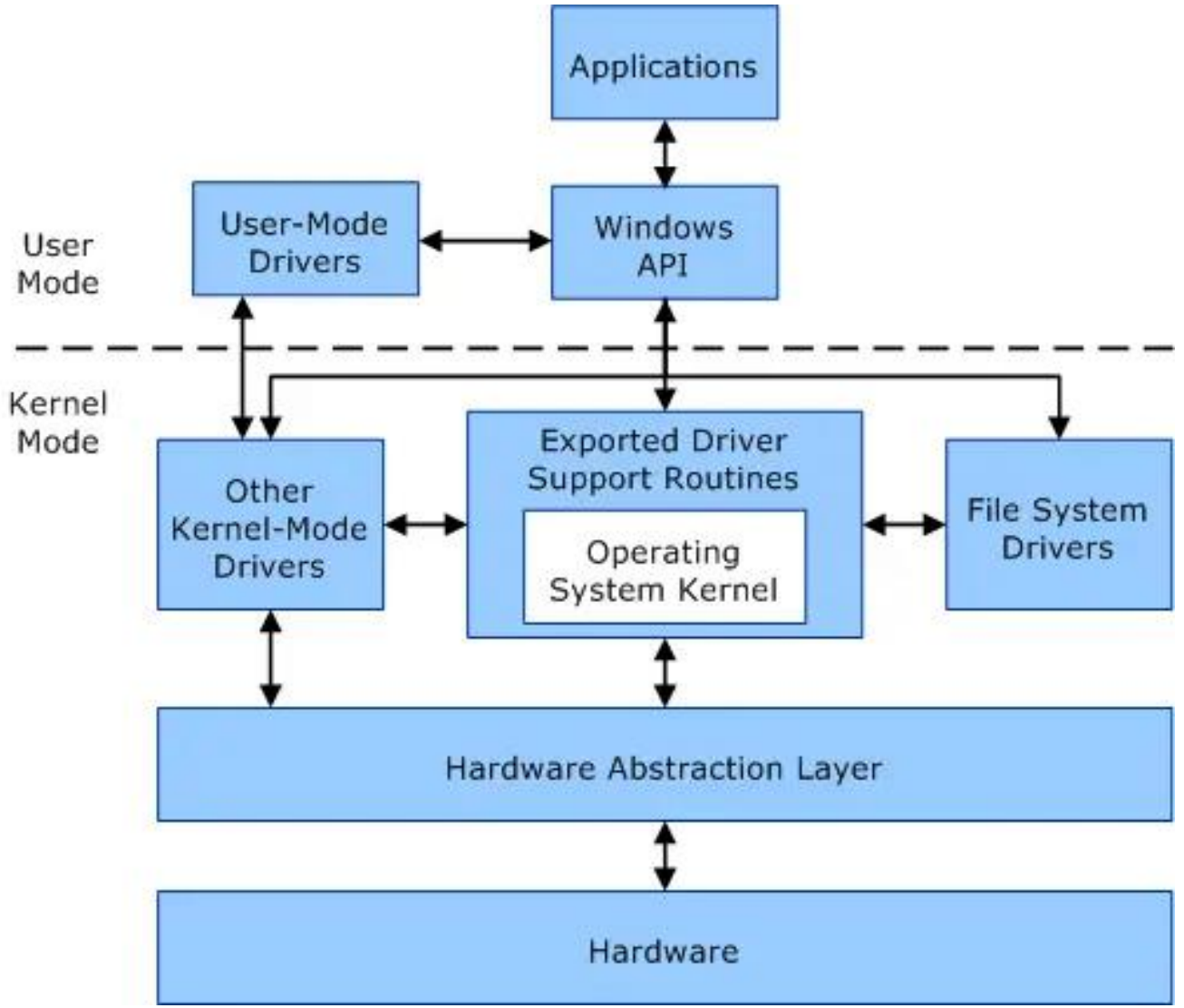


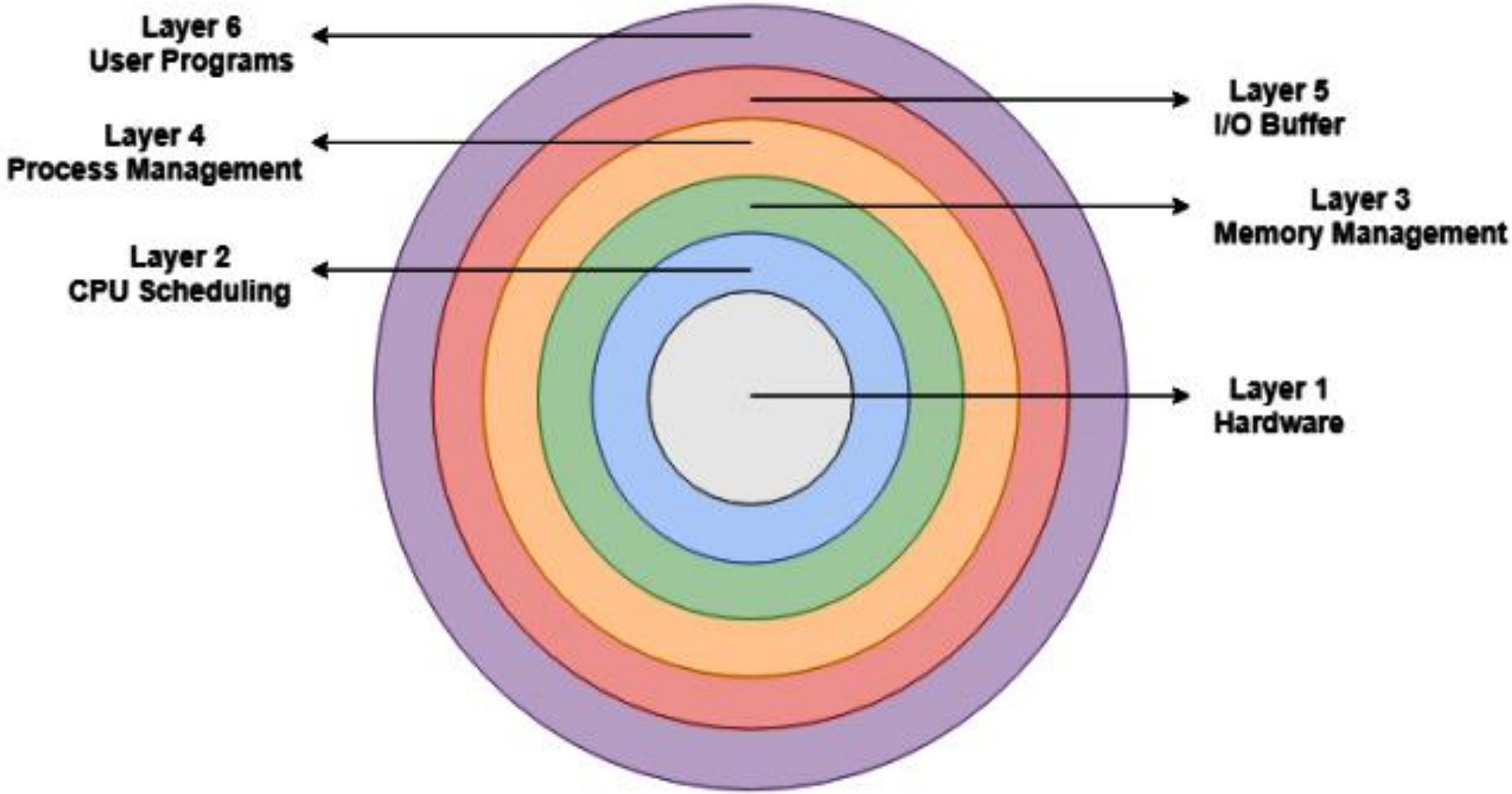

:(
Your PC ran into a problem and needs to restart. We'll restart for you.
For more information about this issue and possible fixes, visit https://www.windows.com/stopcode
If you call a support person, give them this info:
Stop code: KERNEL SECURITY CHECK FAILURE

POWER-ON SELF-TEST (POST)

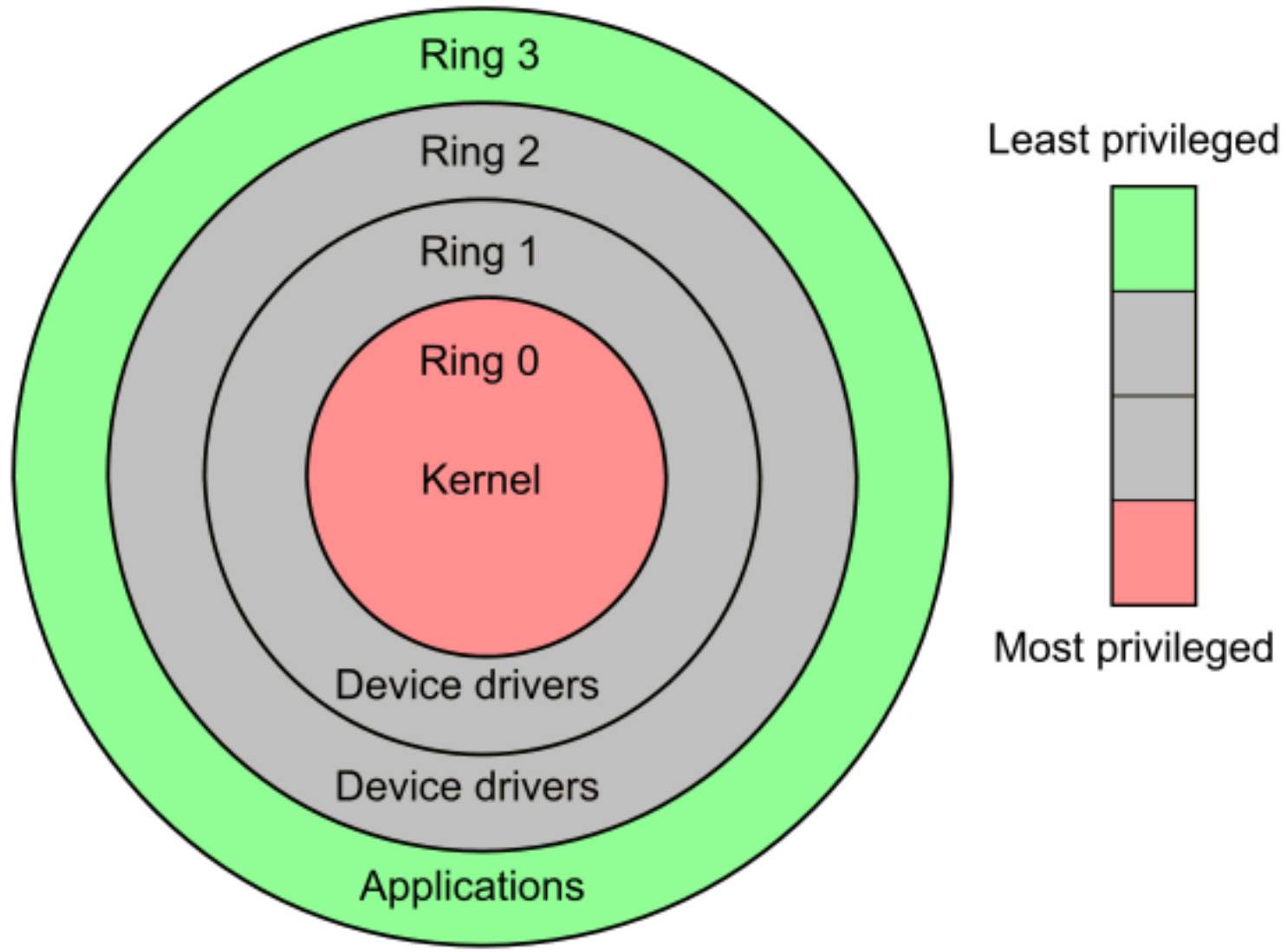


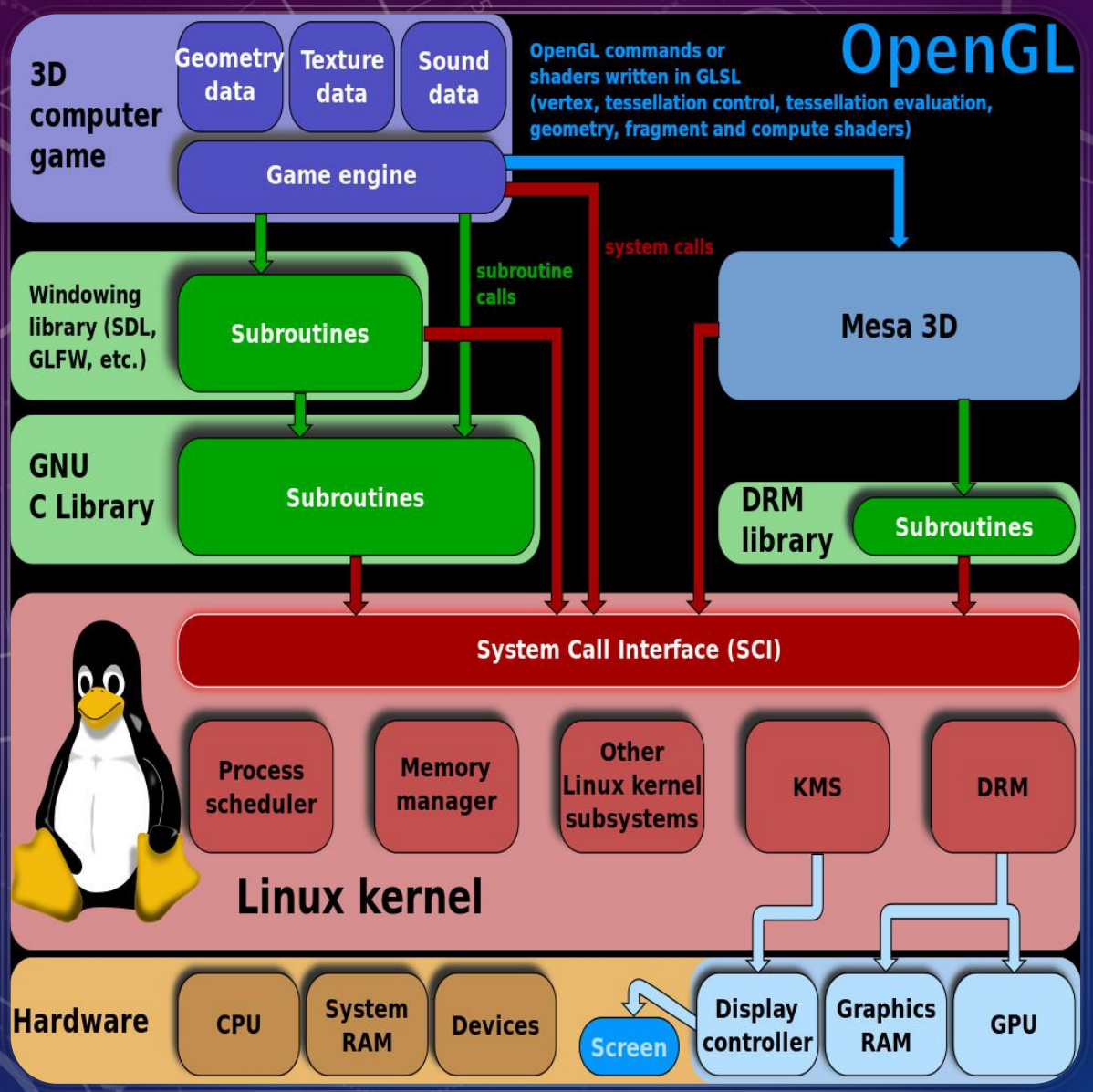
THE KERNEL


Applications
User-Mode Drivers
Windows API
User Mode
Kernel Mode
Other Kernel-Mode Drivers
Exported Driver Support Routines
Operating System Kernel
File System Drivers
Hardware Abstraction Layer
Hardware



Layers of operating system


Ring 3
Ring 2
Ring 1
Ring 0
Kernel
Device drivers
Device drivers
Applications
Least privileged
Most privileged



KERNEL OPERATION

OPERATING SYSTEM SUPPORT

10 MINUTE BREAK

APPLICATIONS

TYPES OF APPLICATIONS

Mobile applications

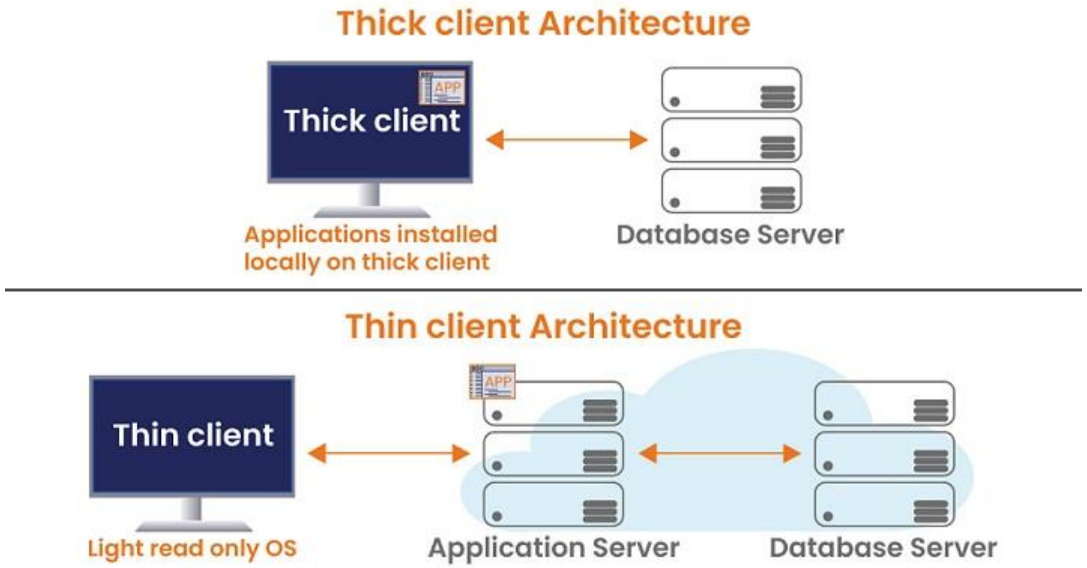
Desktop applications

Embedded applications

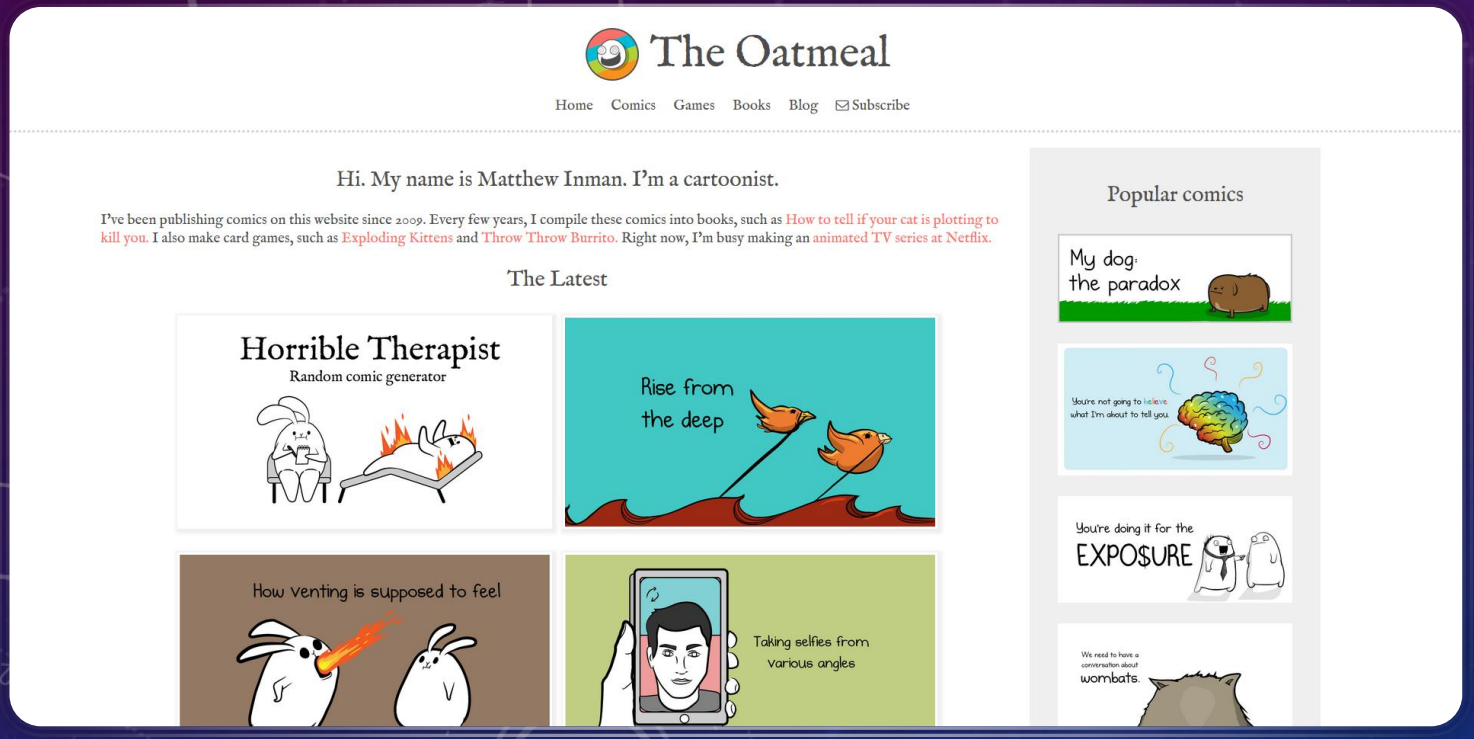
Web applications

DESKTOP APPLICATIONS

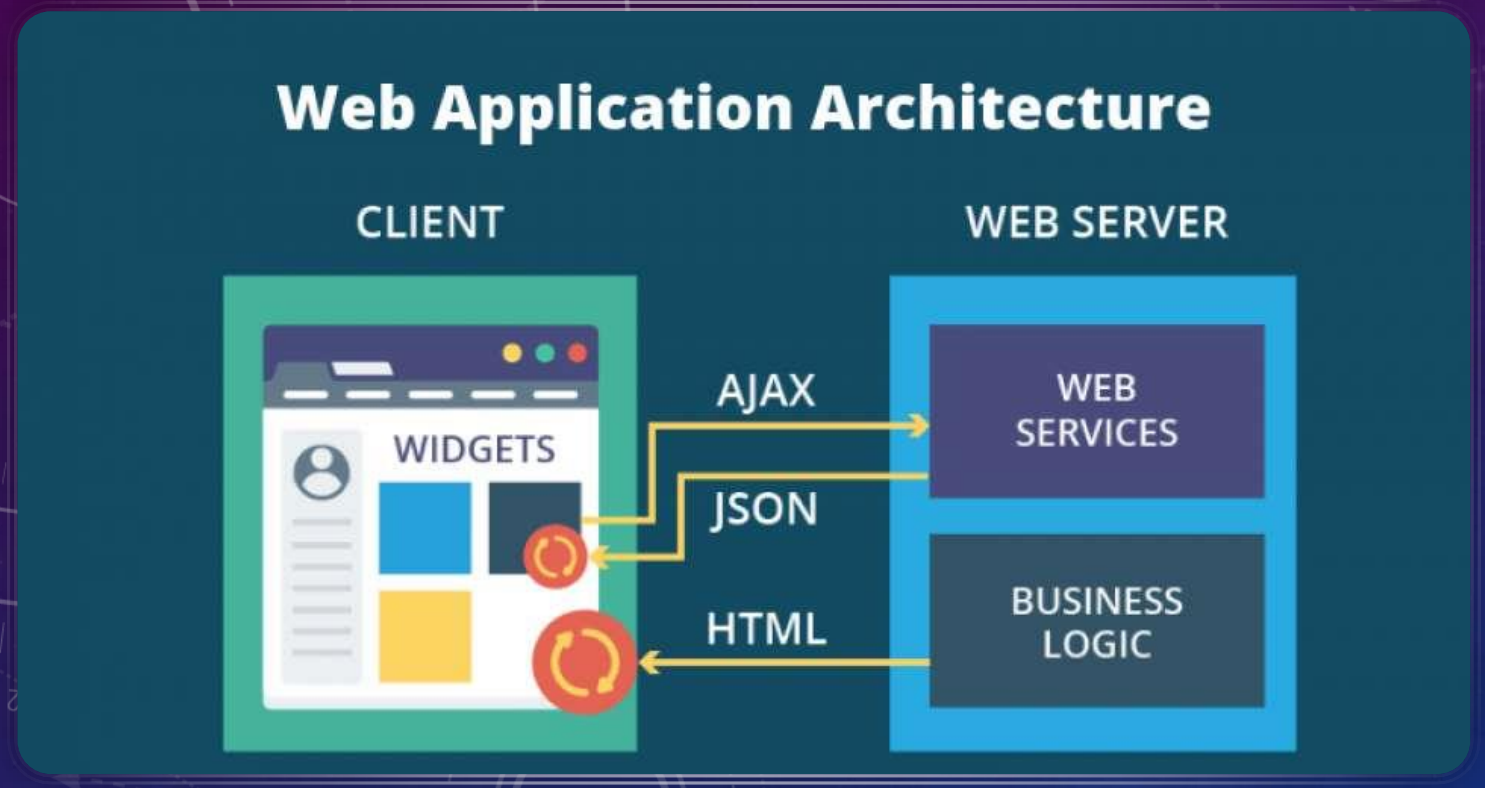
“THIN” CLIENT VS “THICK” CLIENT



MOBILE APPLICATIONS

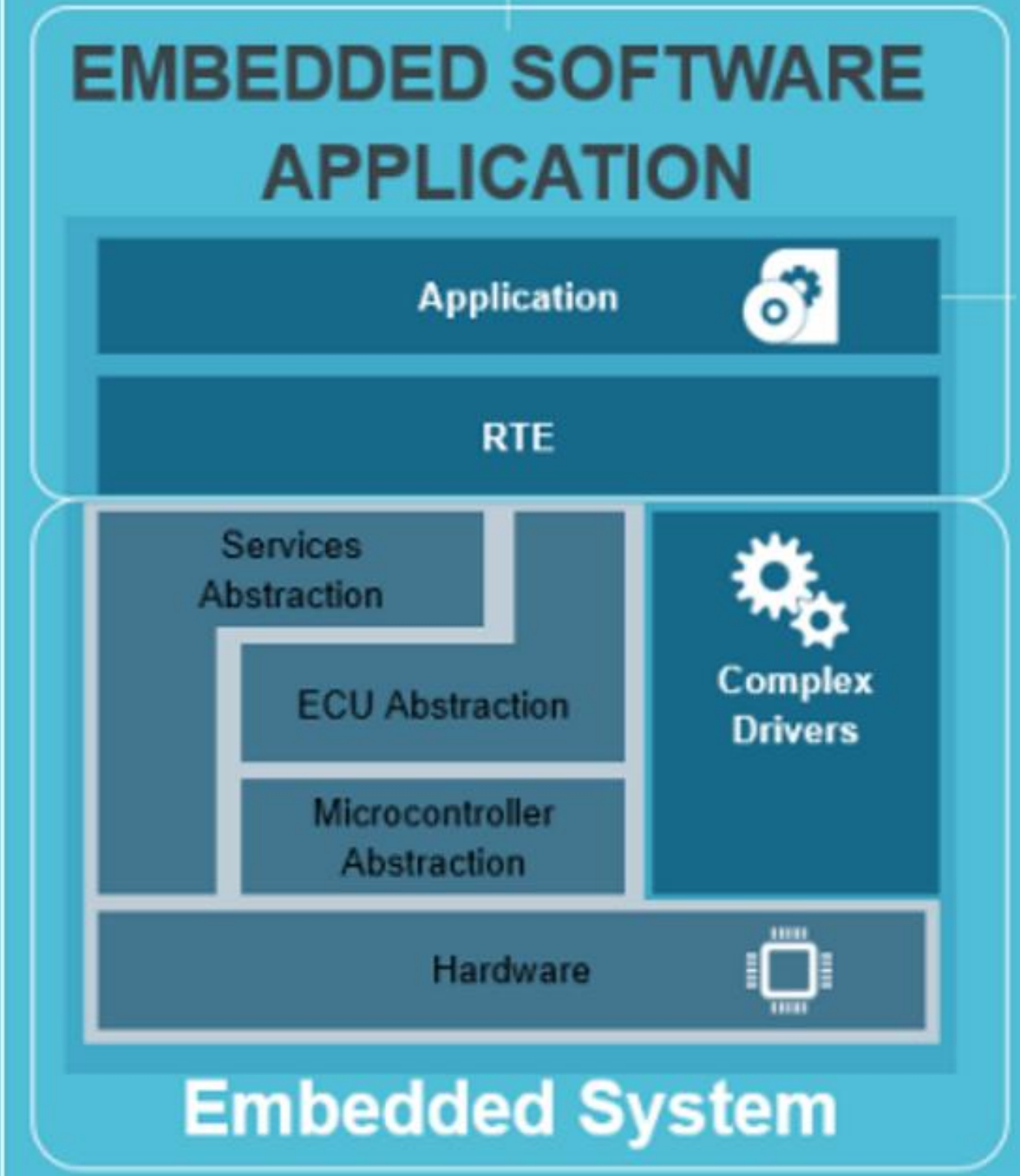

The Oatmeal
Home Comics Games Books Blog Subscribe
Hi. My name is Matthew Inman. I'm a cartoonist.
I've been publishing comics on this website since 2009. Every few years, I compile these comics into books, such as How to tell if your cat is plotting to kill you. I also make card games, such as Exploding Kittens and Throw Throw Burrito. Right now, I'm busy making an animated TV series at Netflix.
The Latest
Horrible Therapist
Random comic generator
Rise from the deep
How venting is supposed to feel
Taking selfies from various angles
Popular comics
My dog: the paradox
You're not going to believe what I'm about to tell you
You're doing it for the EXPOSURE
We need to have a conversation about wombats.

WEBSITE



WEB APPLICATIONS

EMBEDDED SOFTWARE & SYSTEMS

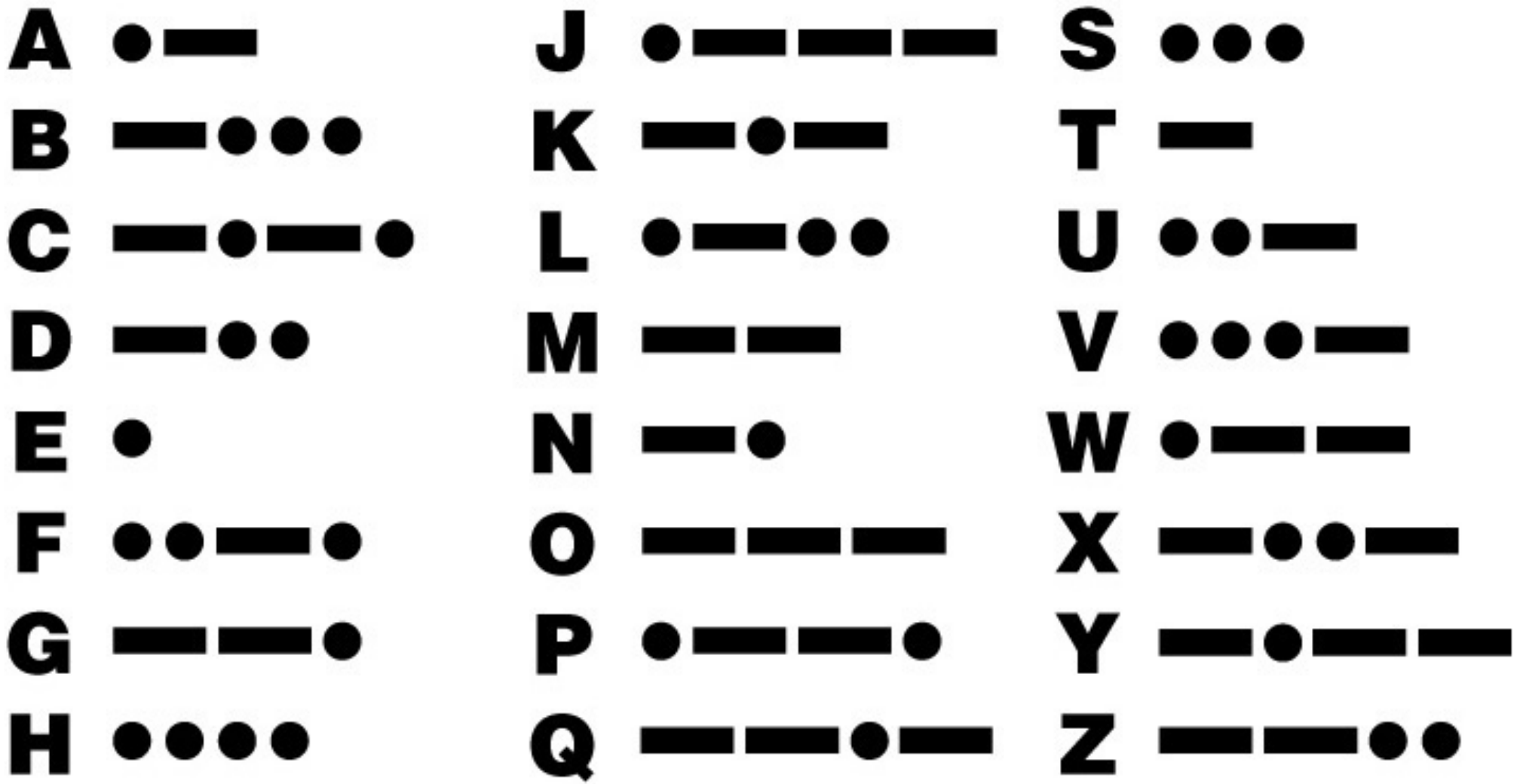

EMBEDDED SOFTWARE APPLICATION
Application
RTE
Services Abstraction
ECU Abstraction
Microcontroller Abstraction
Complex Drivers
Hardware
Embedded System

WHERE DOES IOT FIT?

- What do we know about IoT?
  - Inside of consumer electronics
    - Embedded applications?
- Can IoT be more than one category?

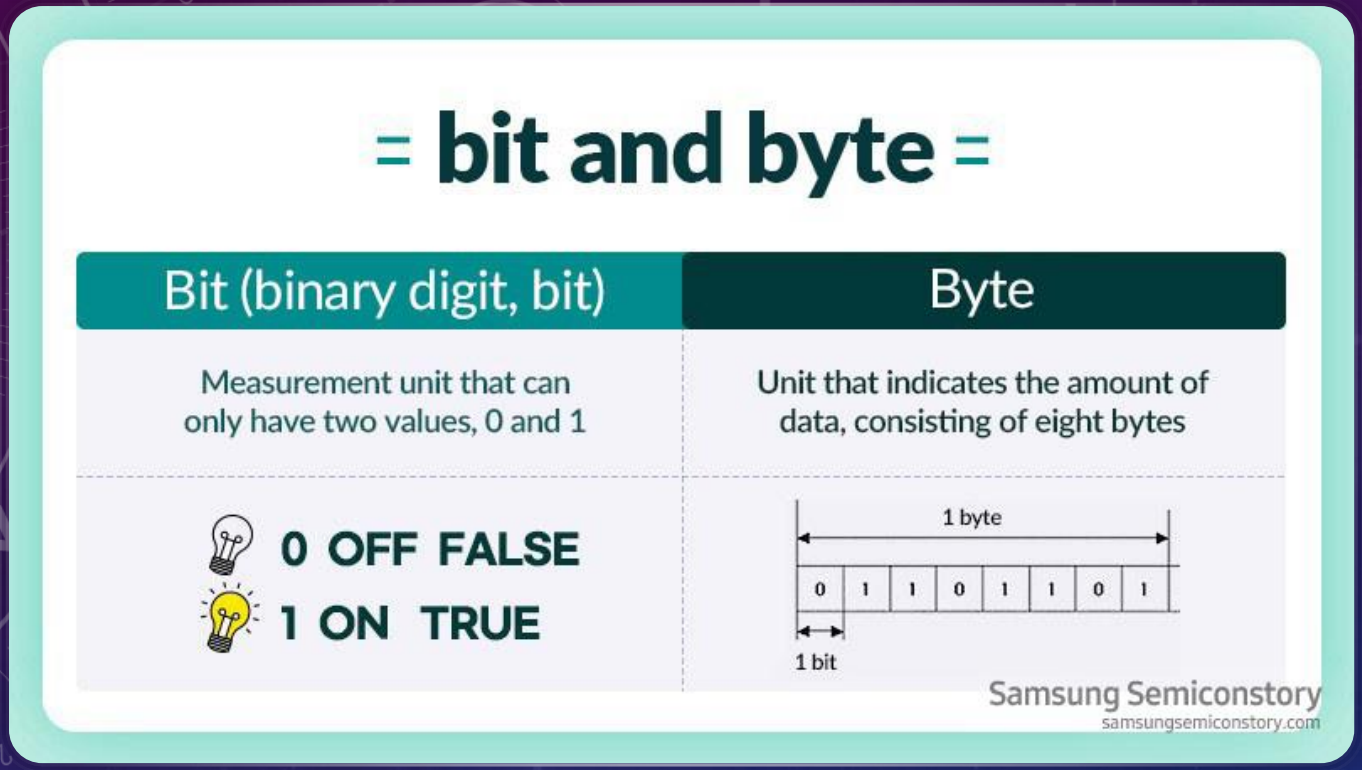
10 MINUTE BREAK

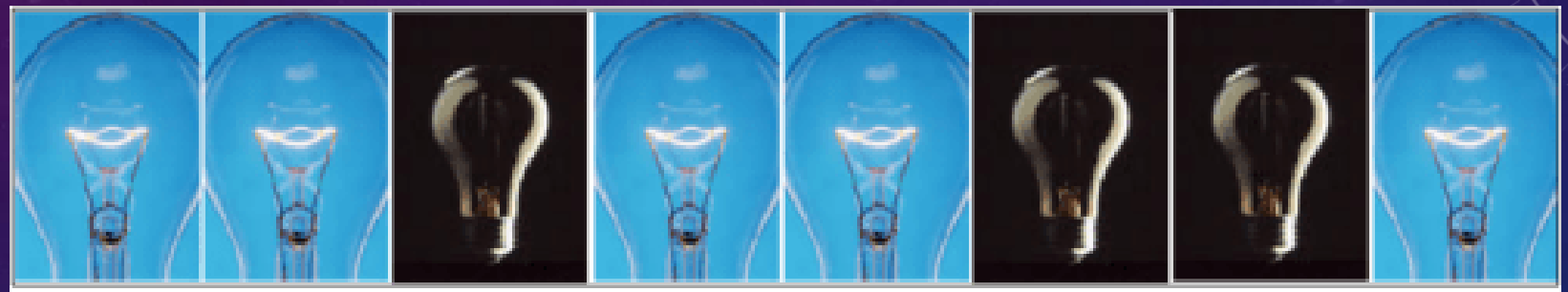

BINARY


A ●—
B —●●●
C —●—●
D —●●
E ●
F ●●—●
G ——●
H ●●●●
J ●———
K —●—
L ●—●●
M ——
N —●
O ———
P ●——●
Q ——●—
S ●●●
T —
U ●●—
V ●●●—
W ●——
X —●●—
Y —●——
Z ——●●


BINARY
COMMUNICATION
SOFTWARE
DEVELOPERS
TELEGRAPH
OPERATORS
imgflip.com

BITS & BYTES


= bit and byte =
Bit (binary digit, bit)
Byte
Measurement unit that can only have two values, 0 and 1
Unit that indicates the amount of data, consisting of eight bytes
0 OFF FALSE
1 ON TRUE
1 byte
0 1 1 0 1 1 0 1
1 bit
Samsung Semiconstory
samsungsemiconstory.com

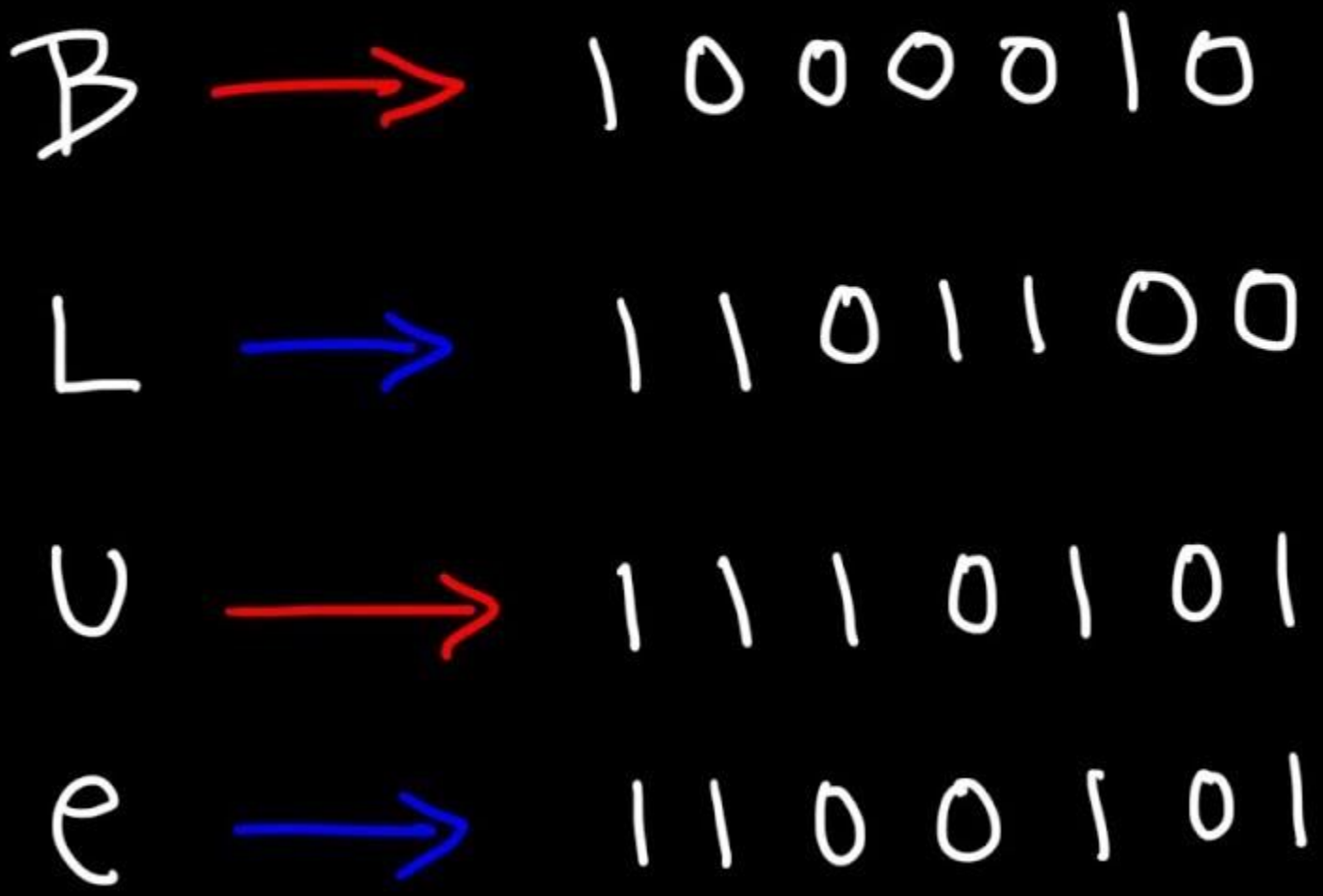


128	64	32	16	8	4	2	1
1	1	0	1	1	0	0	1

LETTER	ASCII VALUES	BINARY VALUES	LETTER	ASCII VALUES	BINARY VALUES
A	65	01000001	A	97	01100001
C	67	01000011	C	99	01100011
D	68	01000100	D	100	01100100
E	69	01000101	E	101	01100101
F	70	01000110	F	102	01100110
G	71	01000111	G	103	01100111
H	72	01001000	H	104	01101000
I	73	01001001	I	105	01101001
J	74	01001010	J	106	01101010
K	75	01001011	K	107	01101011
L	76	01001100	L	108	01101100
M	77	01001101	M	109	01101101
N	78	01001110	N	110	01101110
O	79	01001111	O	111	01101111
P	80	01010000	P	112	01110000
Q	81	01010001	Q	113	01110001
R	82	01010010	R	114	01110010
S	83	01010011	S	115	01110011
T	84	01010100	T	116	01110100
U	85	01010101	U	117	01110101
V	86	01010110	V	118	01110110
W	87	01010111	W	119	01110111
X	88	01011000	X	120	01111000
Y	89	01011001	Y	121	01111001
Z	90	01011010	Z	122	01111010

ASCII Code

Char.	ASCII	Char.	ASCII	Char.	ASCII
@	64	U	85	j	106
A	65	V	86	k	107
B	66	W	87	l	108
C	67	X	88	m	109
D	68	Y	89	n	110
E	69	Z	90	o	111
F	70	[	91	p	112
G	71	\	92	q	113
H	72	]	93	r	114
I	73	^	94	s	115
J	74	_	95	t	116
K	75	`	96	u	117
L	76	a	97	v	118
M	77	b	98	w	119
N	78	c	99	x	120
O	79	d	100	y	121
P	80	e	101	z	122
Q	81	f	102	{	123
R	82	g	103	|	124
S	83	h	104	}	125
T	84	i	105	~	126

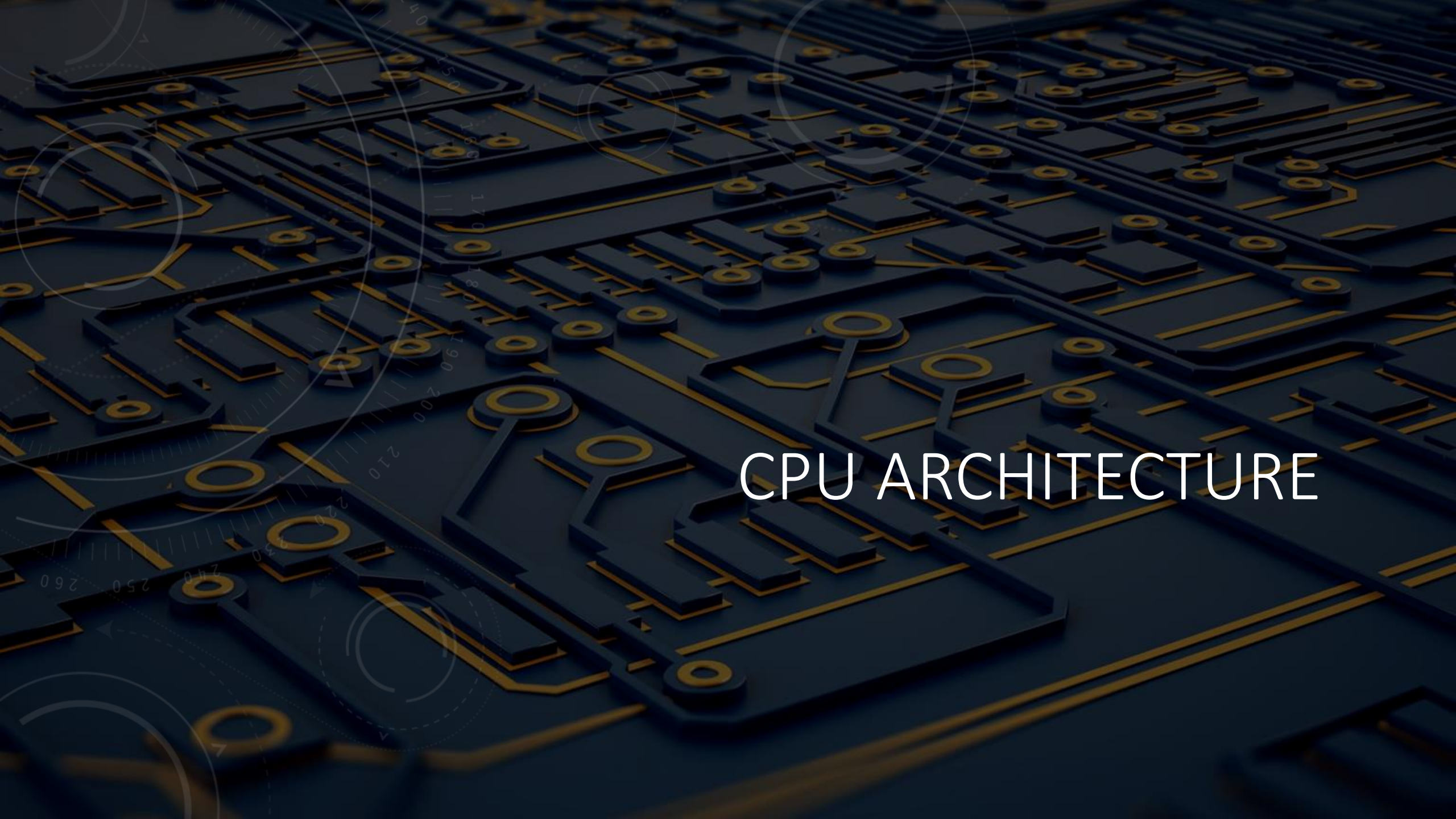


OTHER BASE FORMATS

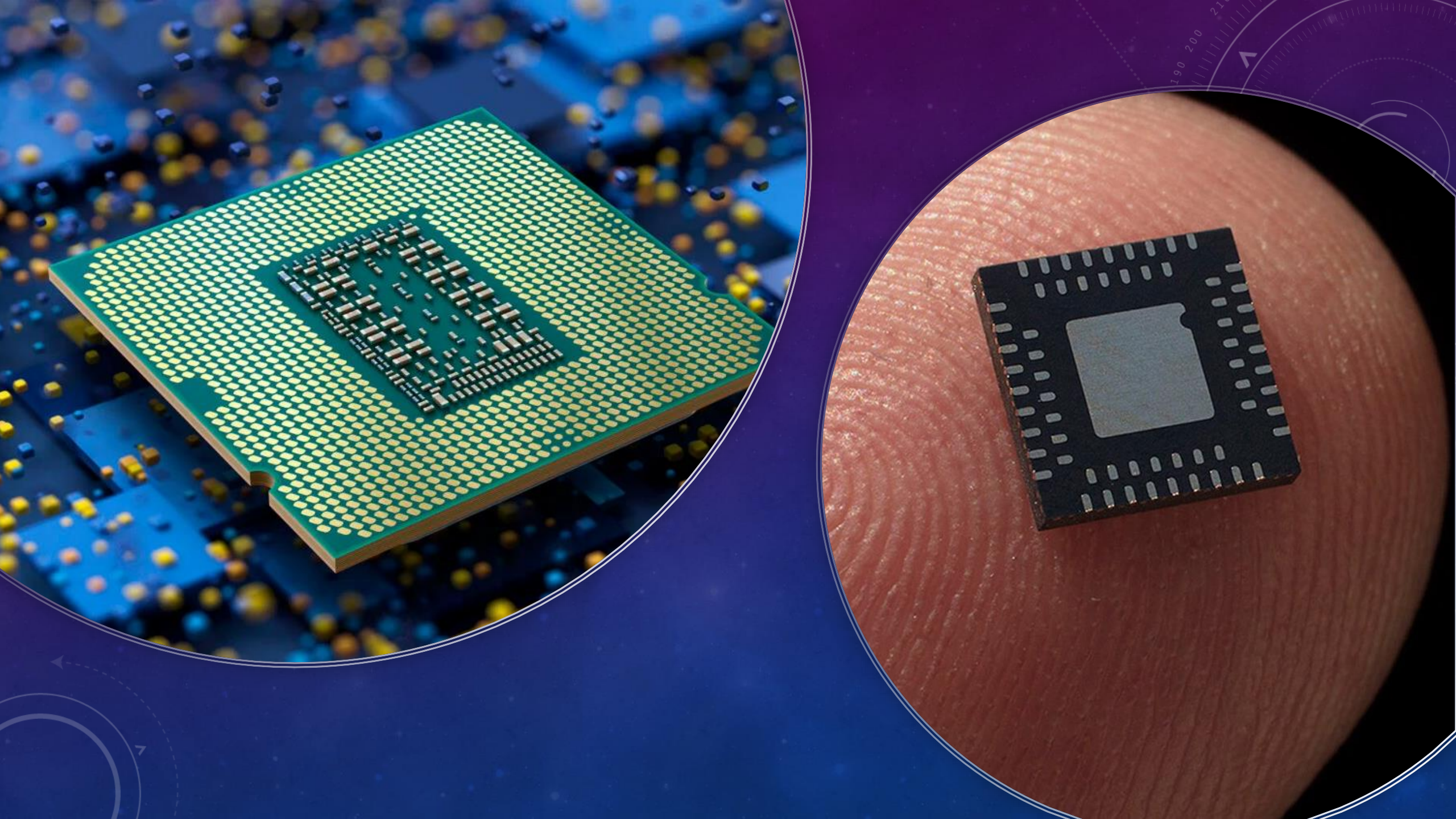
- Binary – Base 2 numbering (1, 0)
- Decimal – base 10 communication (0-9)
- Hexadecimal – base 16 (0-9, A-F)

FUN WITH TRANSLATIONS!

- https://gchq.github.io/CyberChef/



CPU ARCHITECTURE



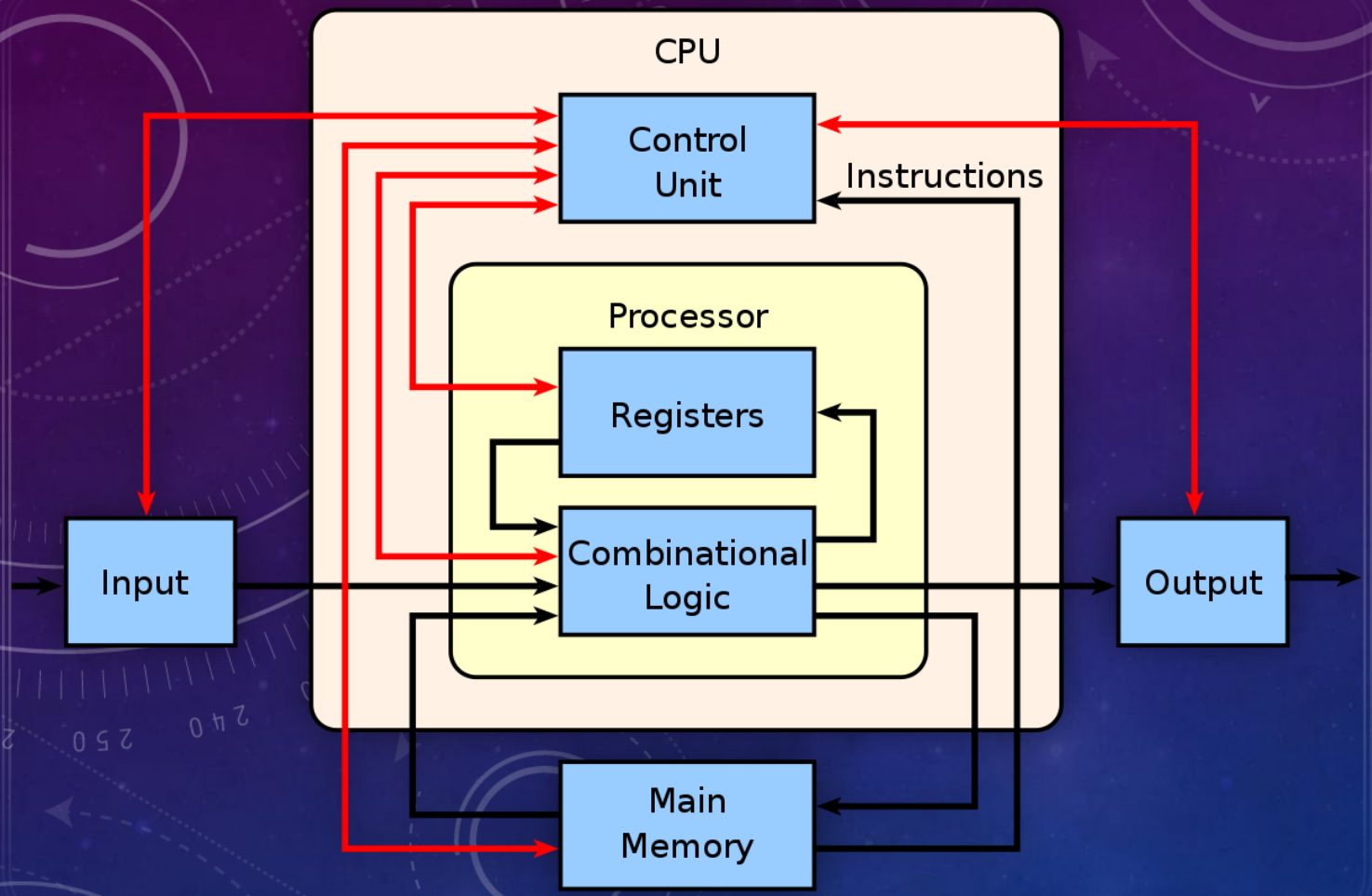
PROCESSOR CLASSIFICATIONS

- Architecture
- Processed bits
- Design
- Registers

COMMON CPU ARCHITECTURES

- X86
  - Desktop PCs
  - Most Intel chips are built on this
    - More cores
- Arm/A32
  - Small consumer electronic devices
- Arm/A64
  - New Macbook Pro M1 & M2
- RISC-V

HOW PROCESSING WORKS



REVIEW DAY 4

QUESTION OR CLARIFICATIONS?

PREVIEW WEEK 2

SEE YOU NEXT TIME!