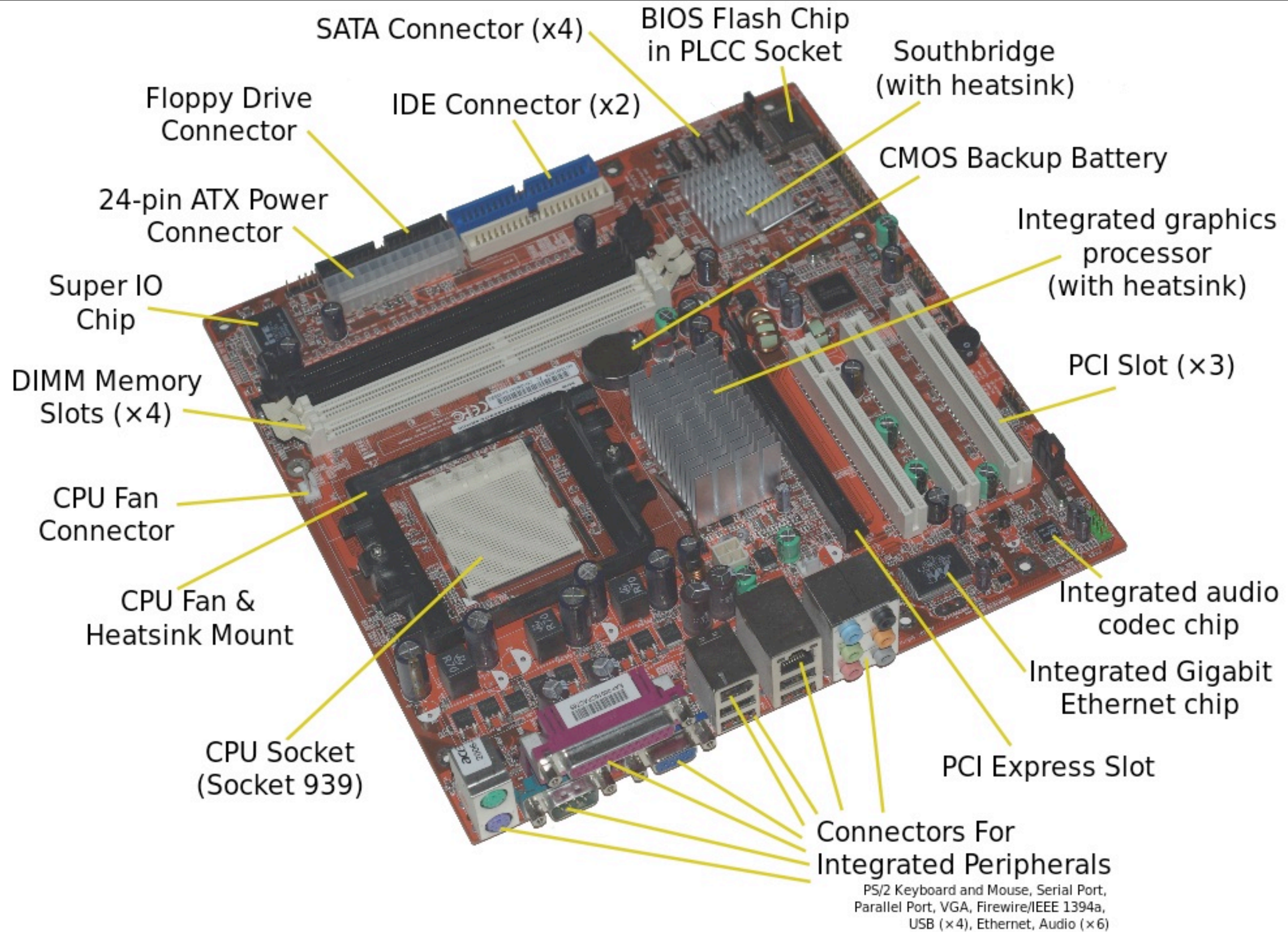


Computer Science E-I

Lecture I: Hardware

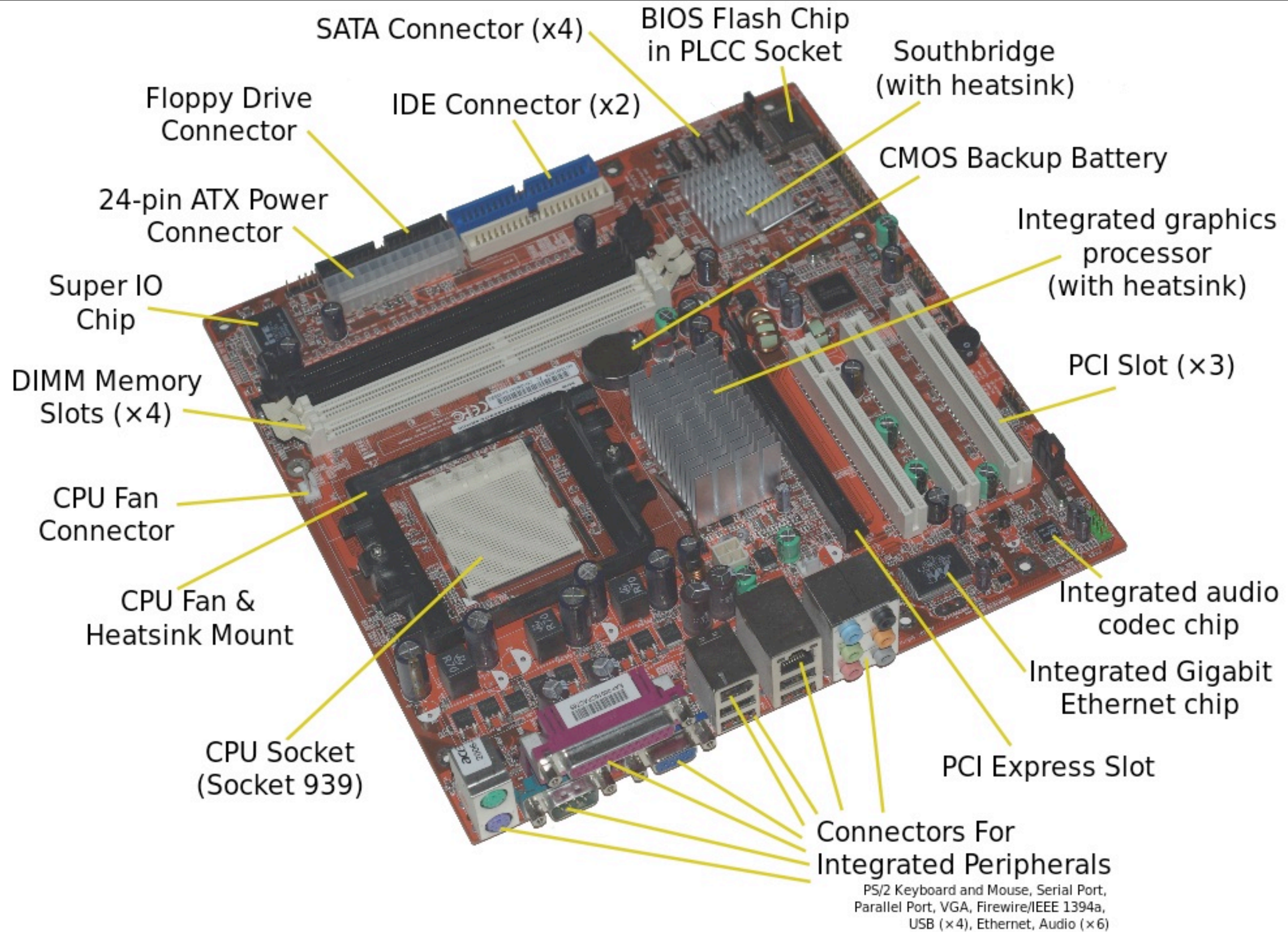


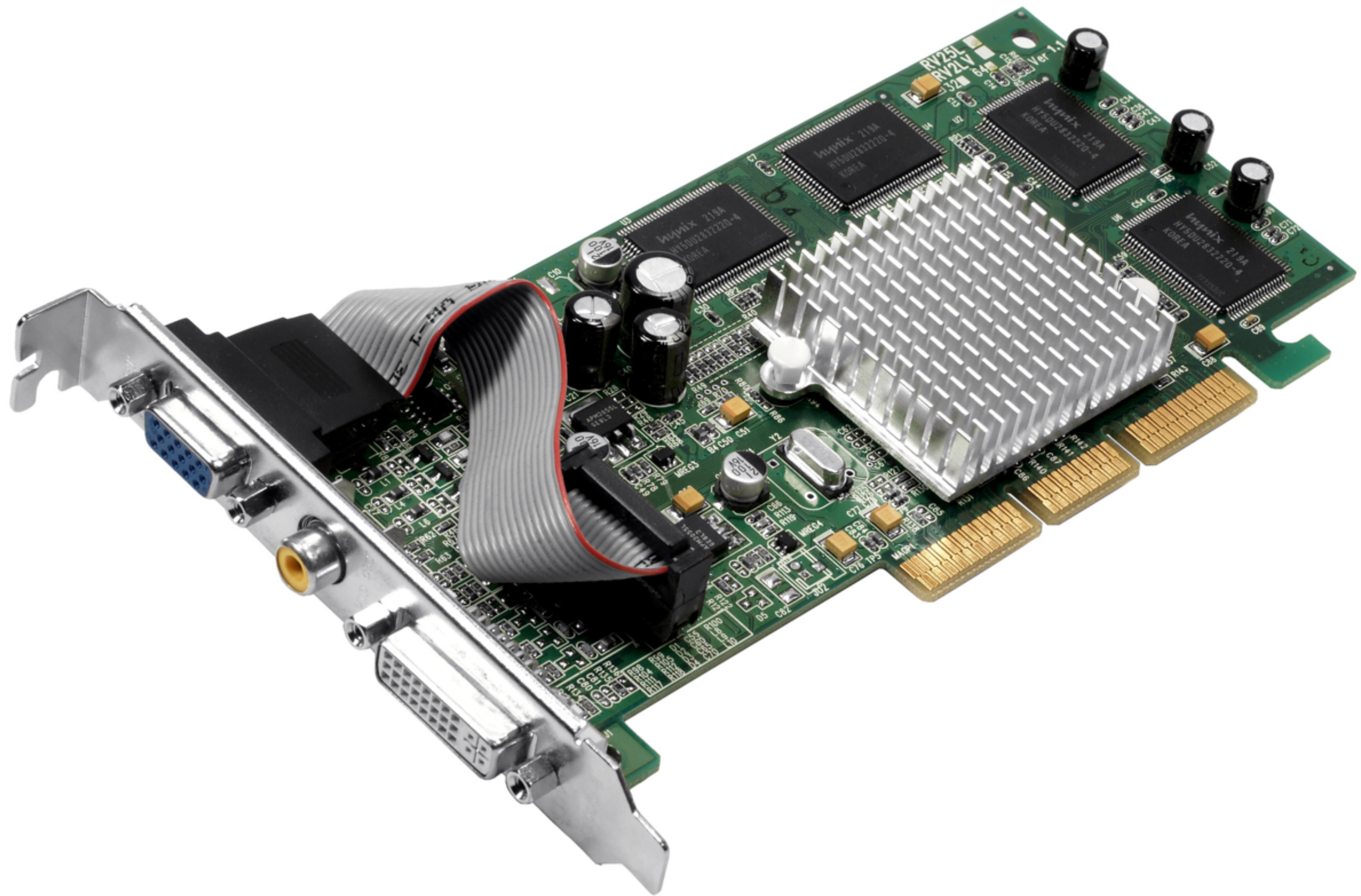


Power Supply

BIOS

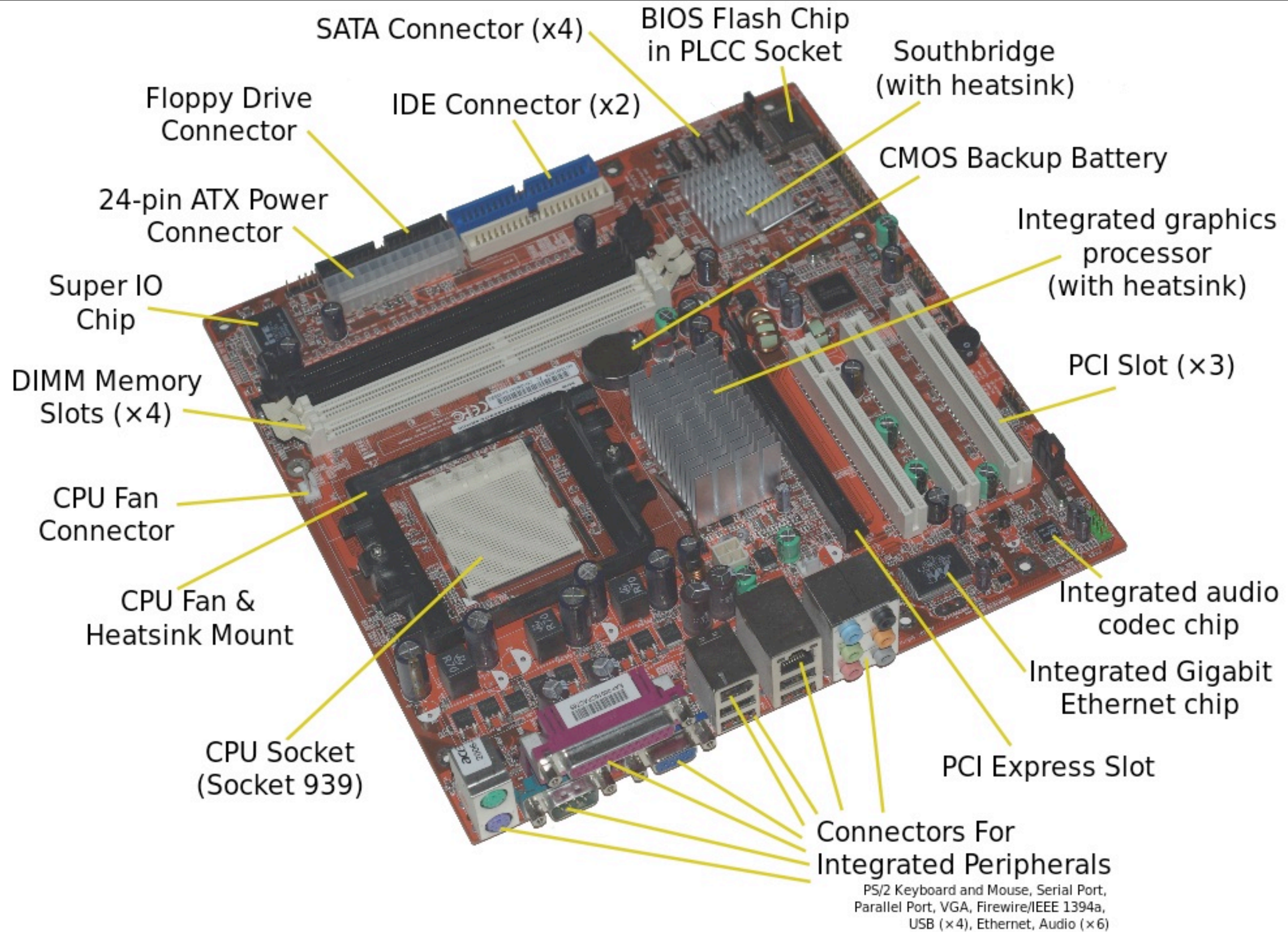
CMOS

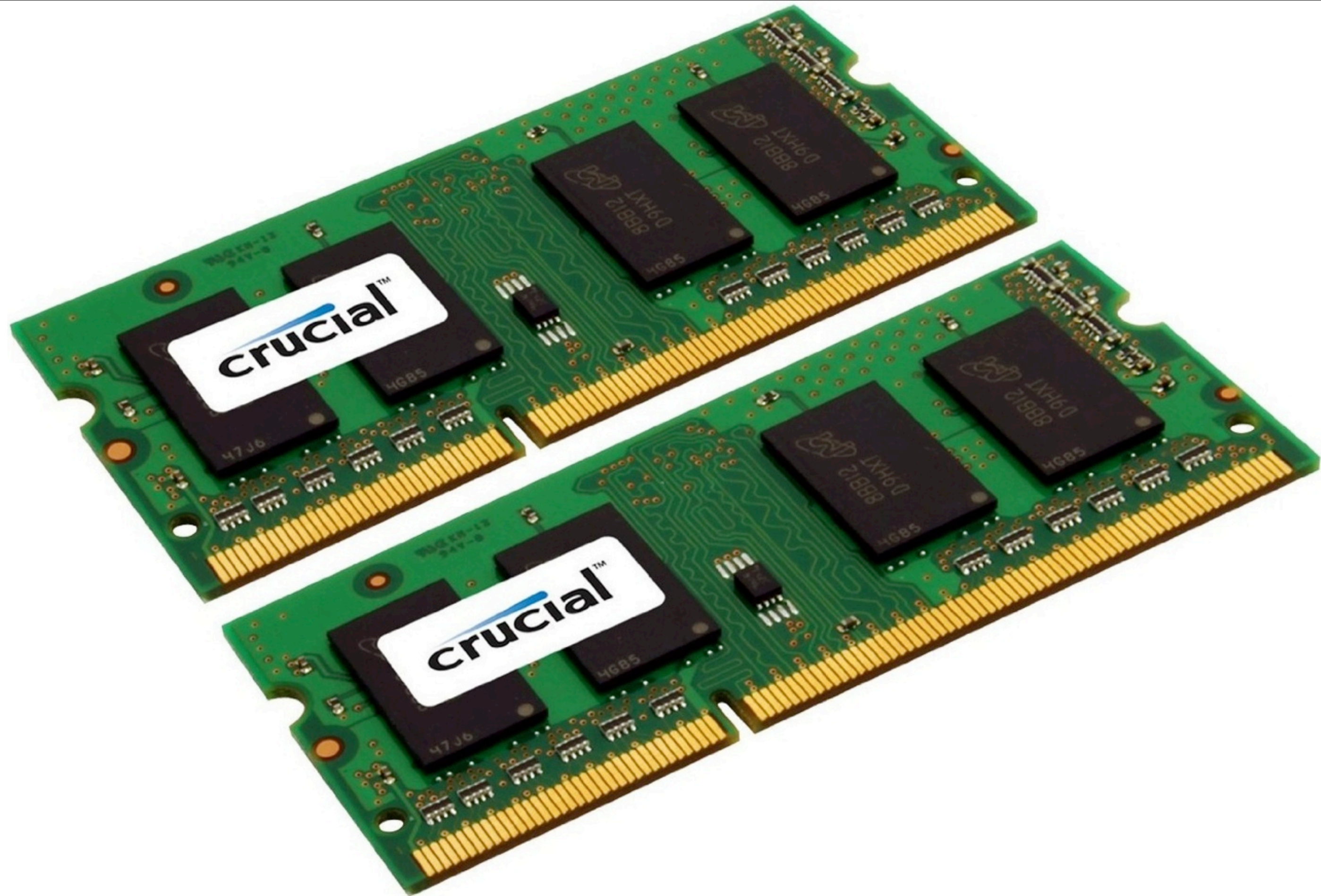




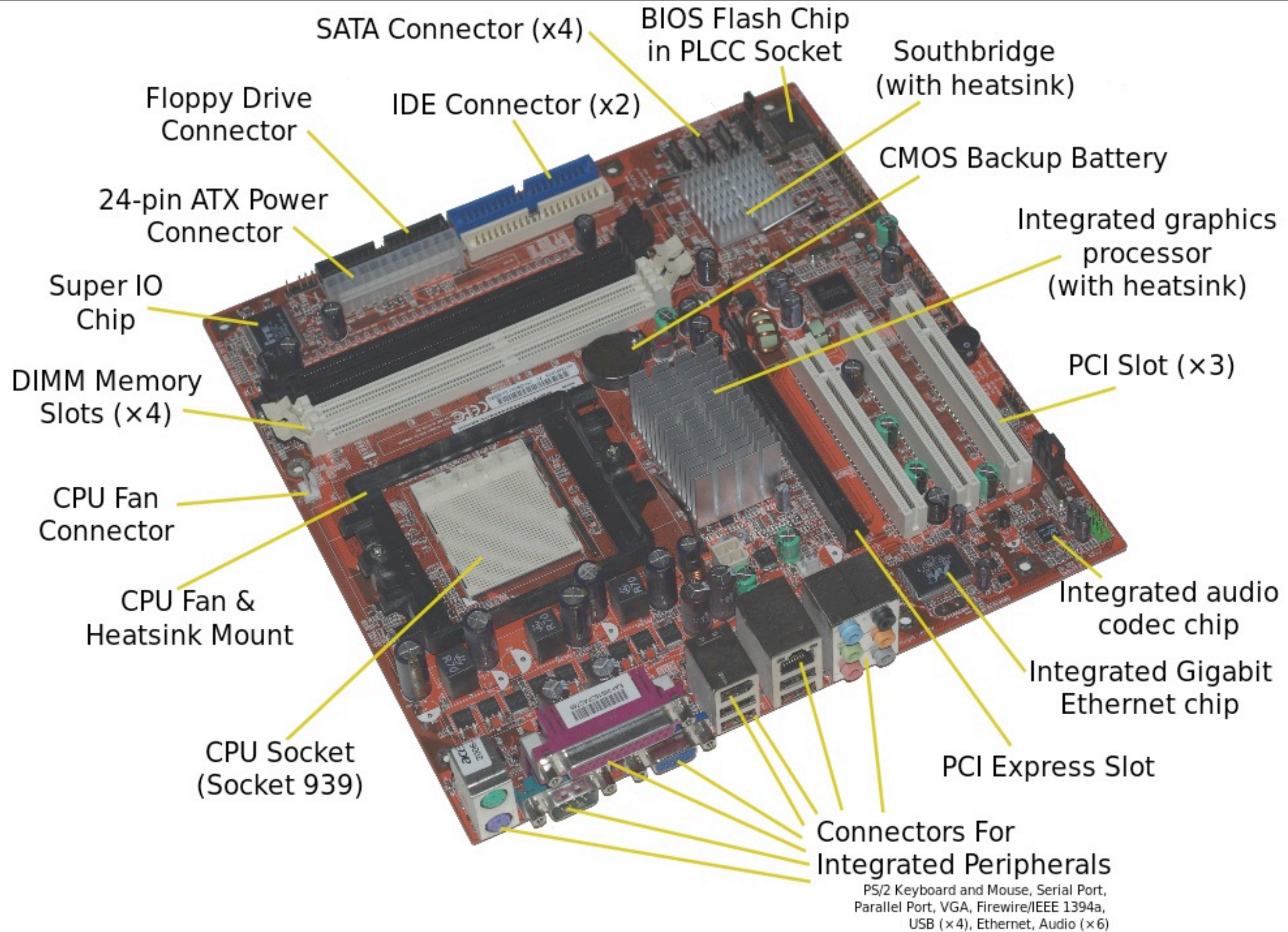
POST

Memory



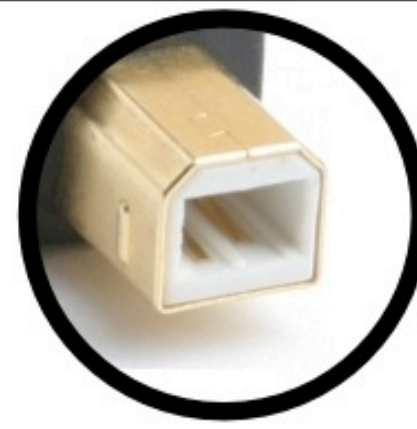


Peripherals





USB-A



USB-B



USB-MINI4A



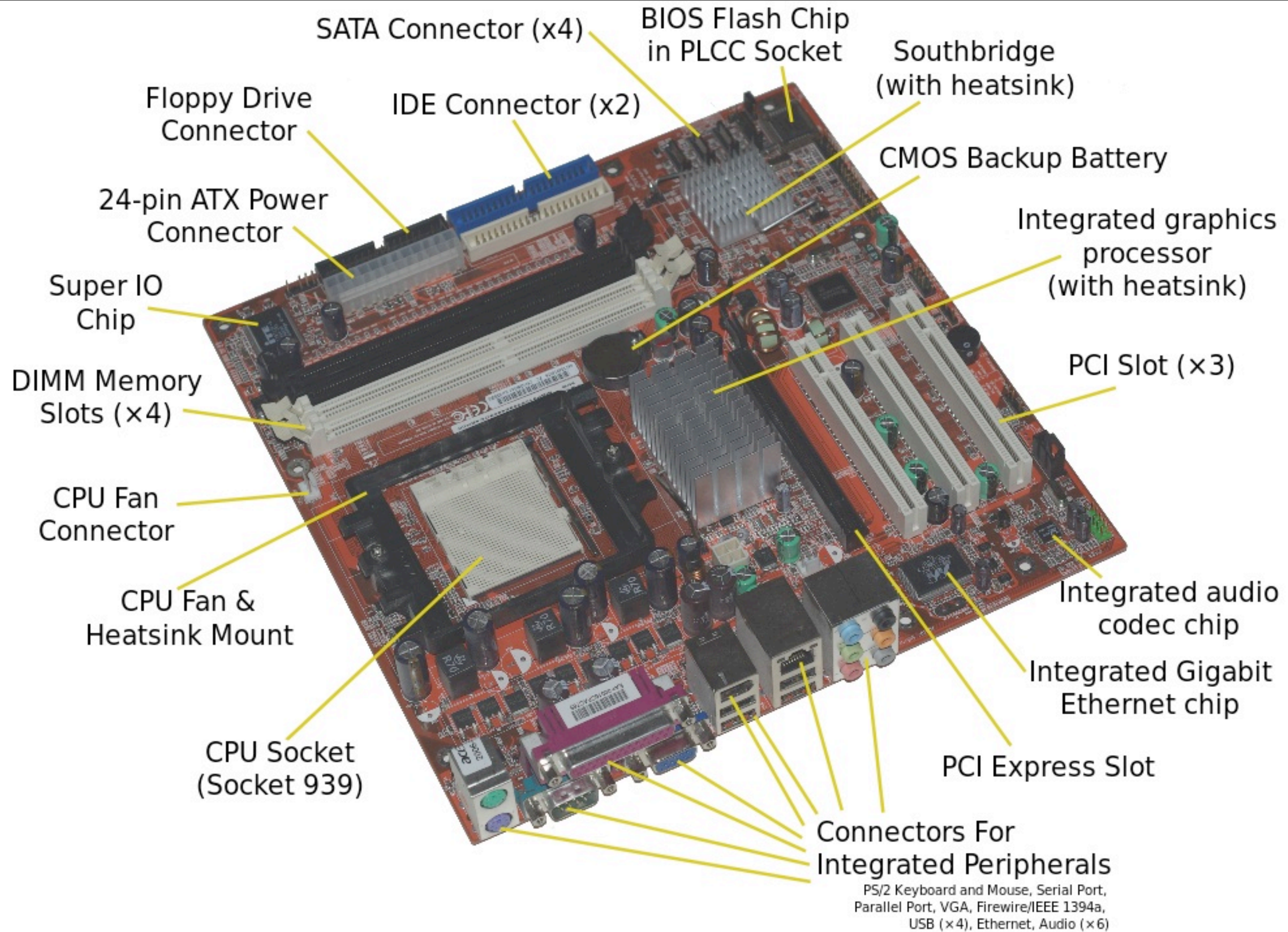
USB-MINI4B



USB-MINI5A



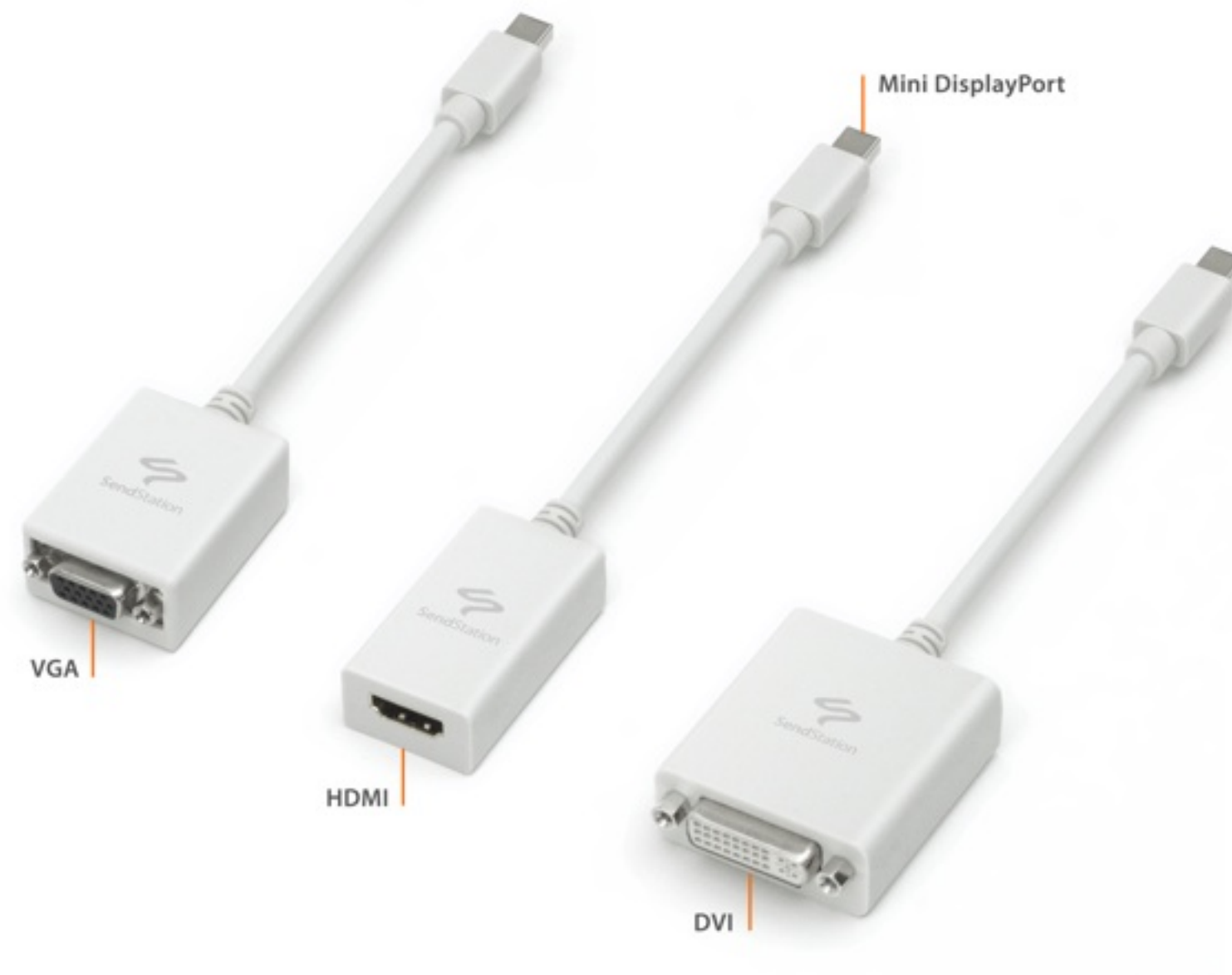
USB-MINI5B











VGA

Mini DisplayPort

HDMI

DVI



☐ Compare

AudioQuest - Coffee 3.3' HDMI Cable - Brown/Black

Model: 65-081-02 SKU: 1267719

From our expanded online assortment; compatible with most HDMI-enabled devices; silver-plated long-grain copper conductors; dielectric-bias system; audio return channel enabled

Customer Reviews: ★★★★★ Be the first to write a review.

[Check Shipping & Availability >](#)

\$495.99

- Free Shipping
- 18-Month Financing
- Get 4% Back in Rewards: [See How](#)

Add to Cart



☐ Compare

AudioQuest - Carbon 16.4' HDMI Cable - Platinum White

Model: 65-078-27 SKU: 9892812

From our expanded online assortment; connects 2 HDMI-enabled devices; long-grain copper design; high-speed audio return channel

Customer Reviews: ★★★★★ Be the first to write a review.

[Check Shipping & Availability >](#)

\$479.99

- Free Shipping
- 18-Month Financing
- Get 4% Back in Rewards: [See How](#)

Add to Cart



☐ Compare

AudioQuest - Vodka 9.8' HDMI Cable - Blue/Black

Model: 65-079-04 SKU: 1267873

From our expanded online assortment; compatible with most HDMI-enabled devices; silver-plated long-grain copper conductors; audio return channel enabled

Customer Reviews: ★★★★★ Be the first to write a review.

[Check Shipping & Availability >](#)

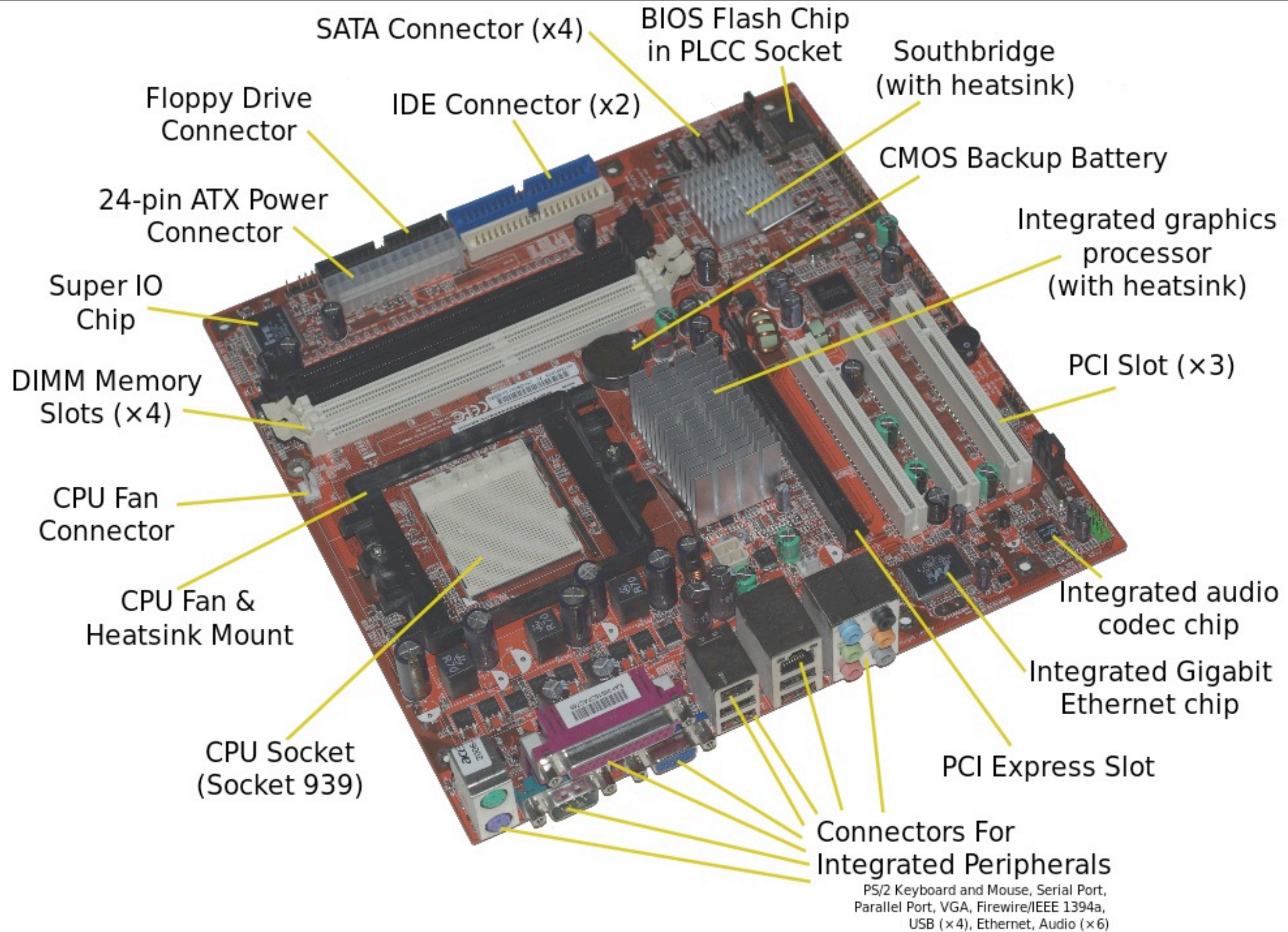
\$459.99

- Free Shipping
- 18-Month Financing
- Get 4% Back in Rewards: [See How](#)

Add to Cart

[http://www.youtube.com/watch?](http://www.youtube.com/watch?v=rdlWKytq_q4)
[v=rdlWKytq_q4](http://www.youtube.com/watch?v=rdlWKytq_q4)

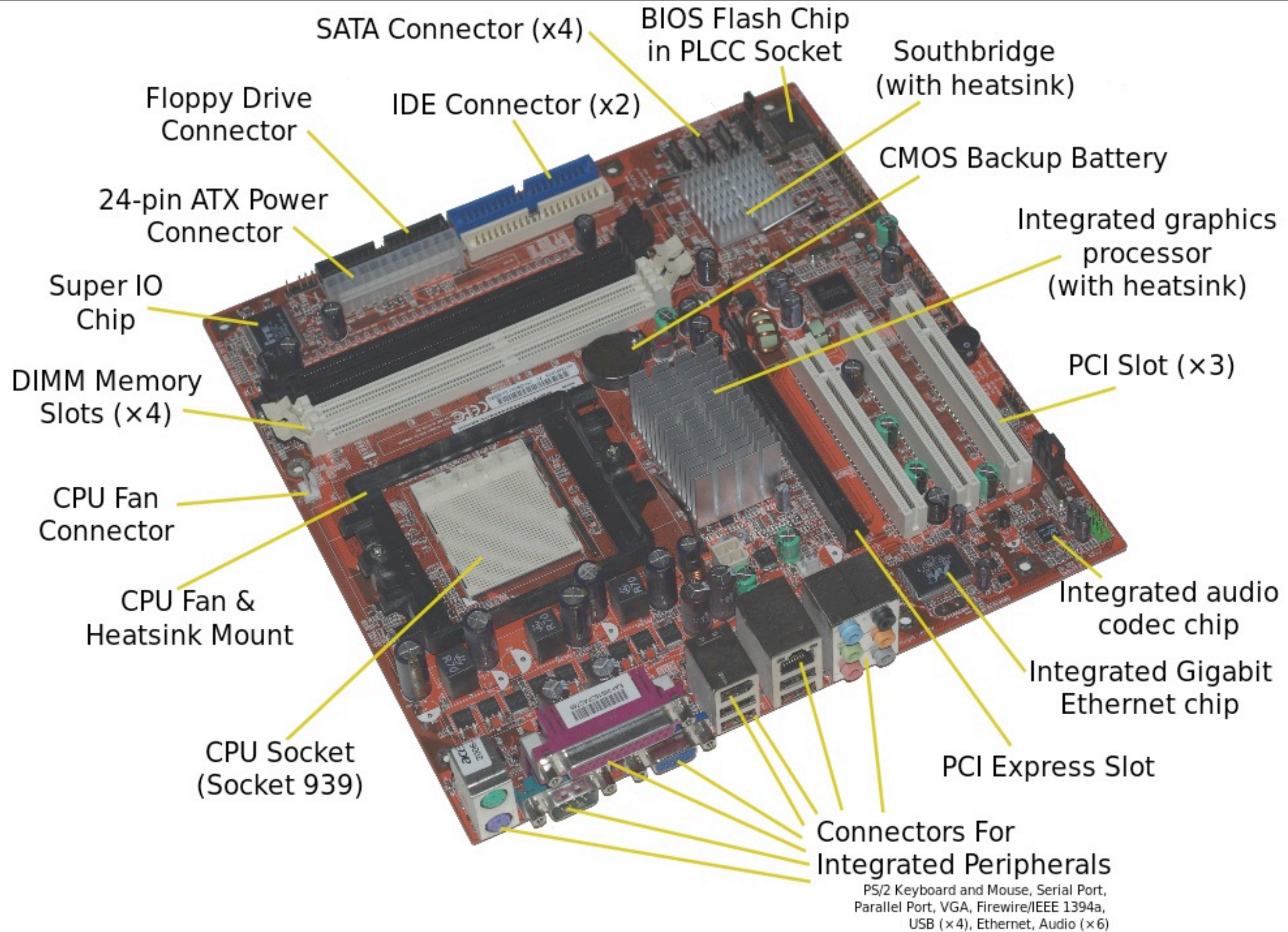
Hard drive

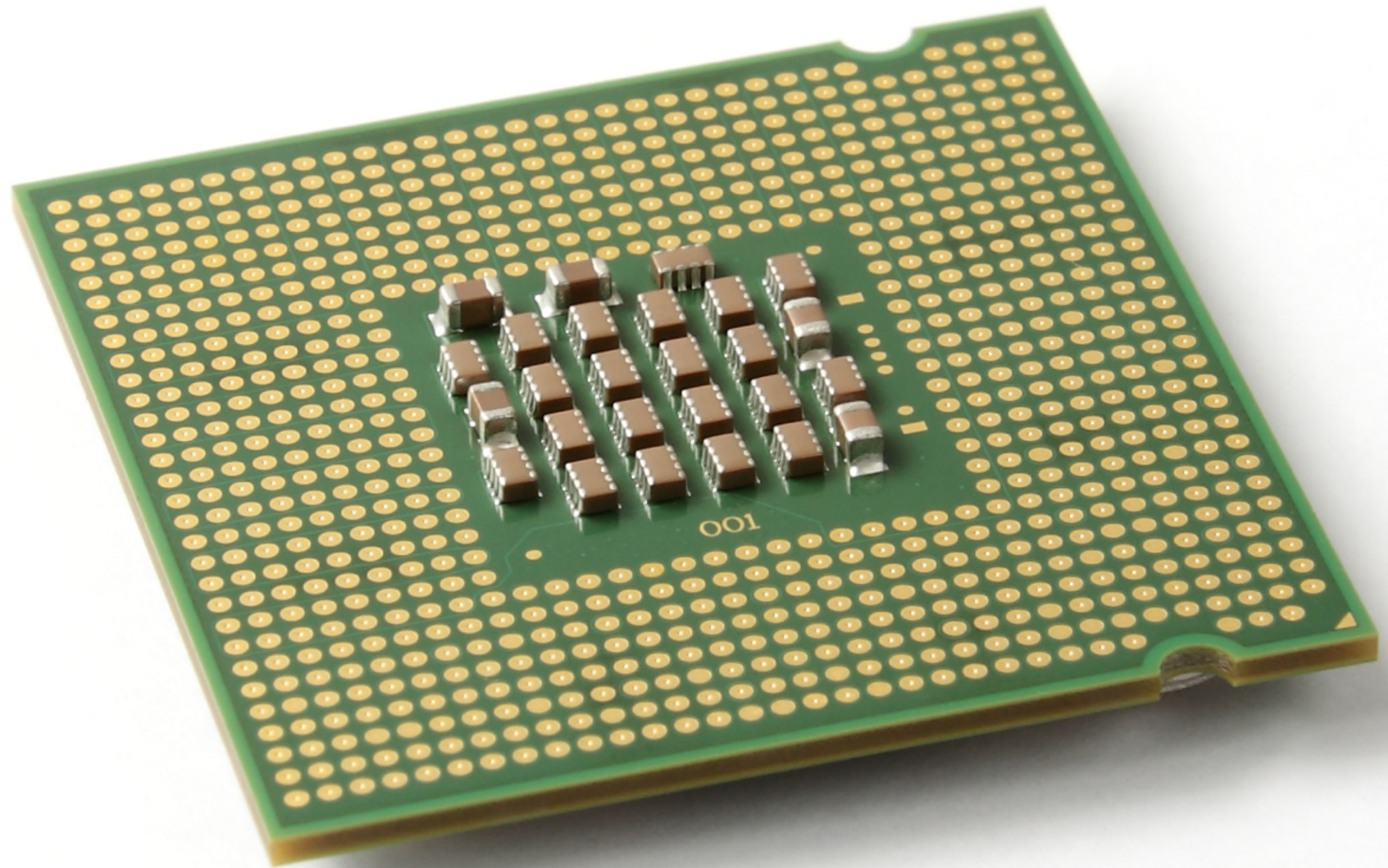


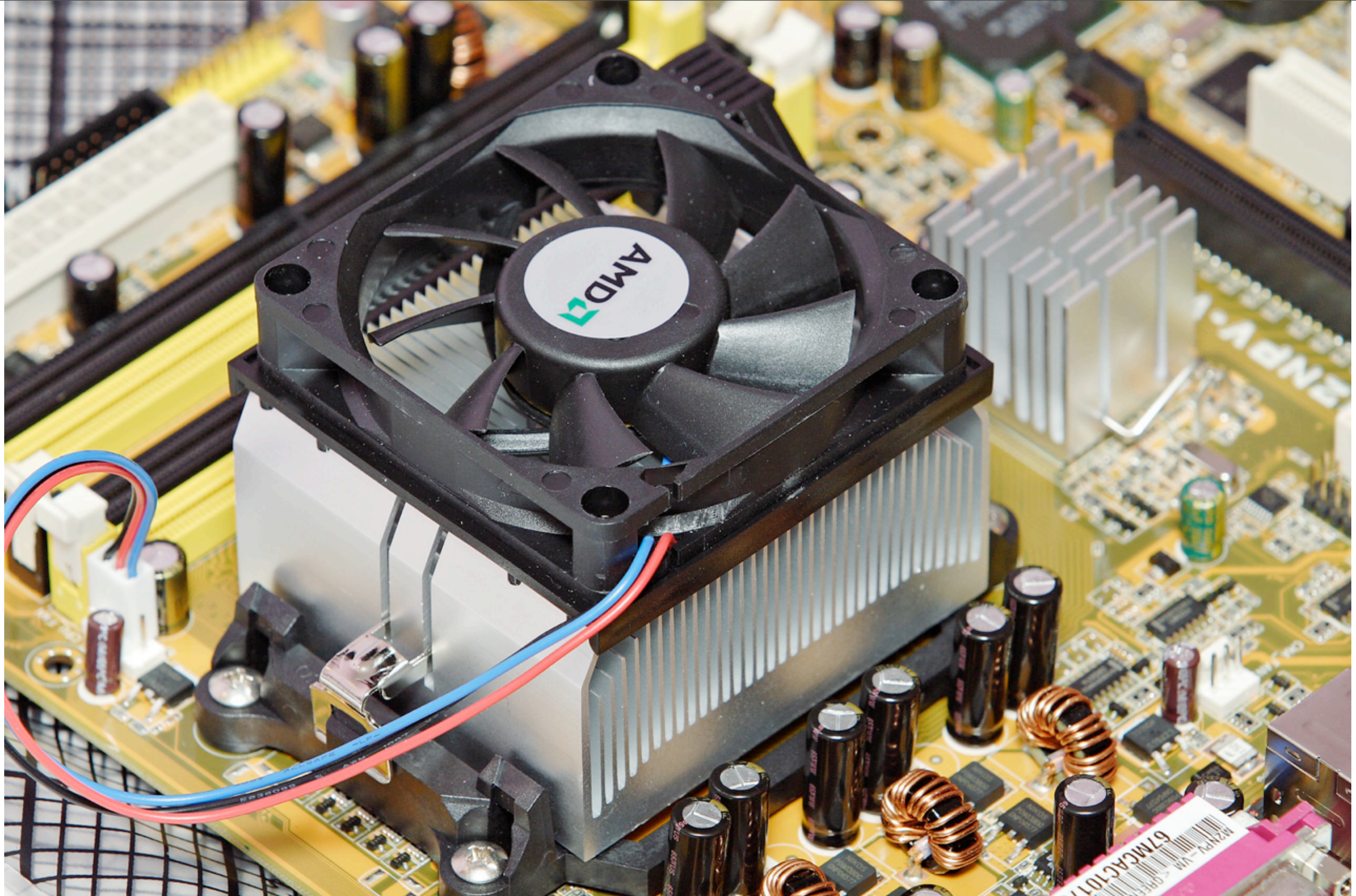


Kernel

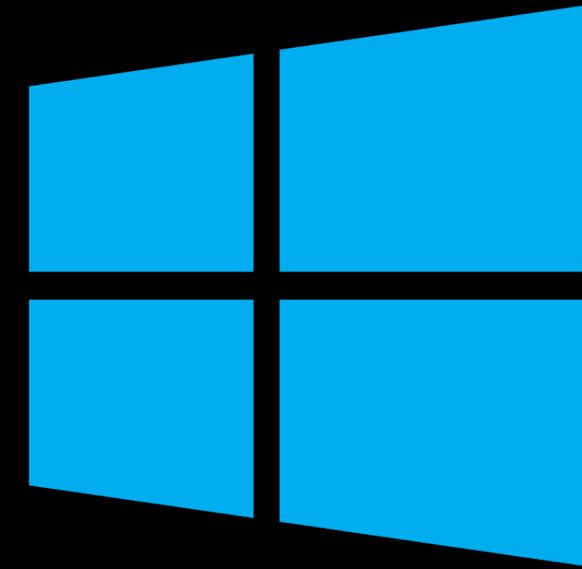
CPU



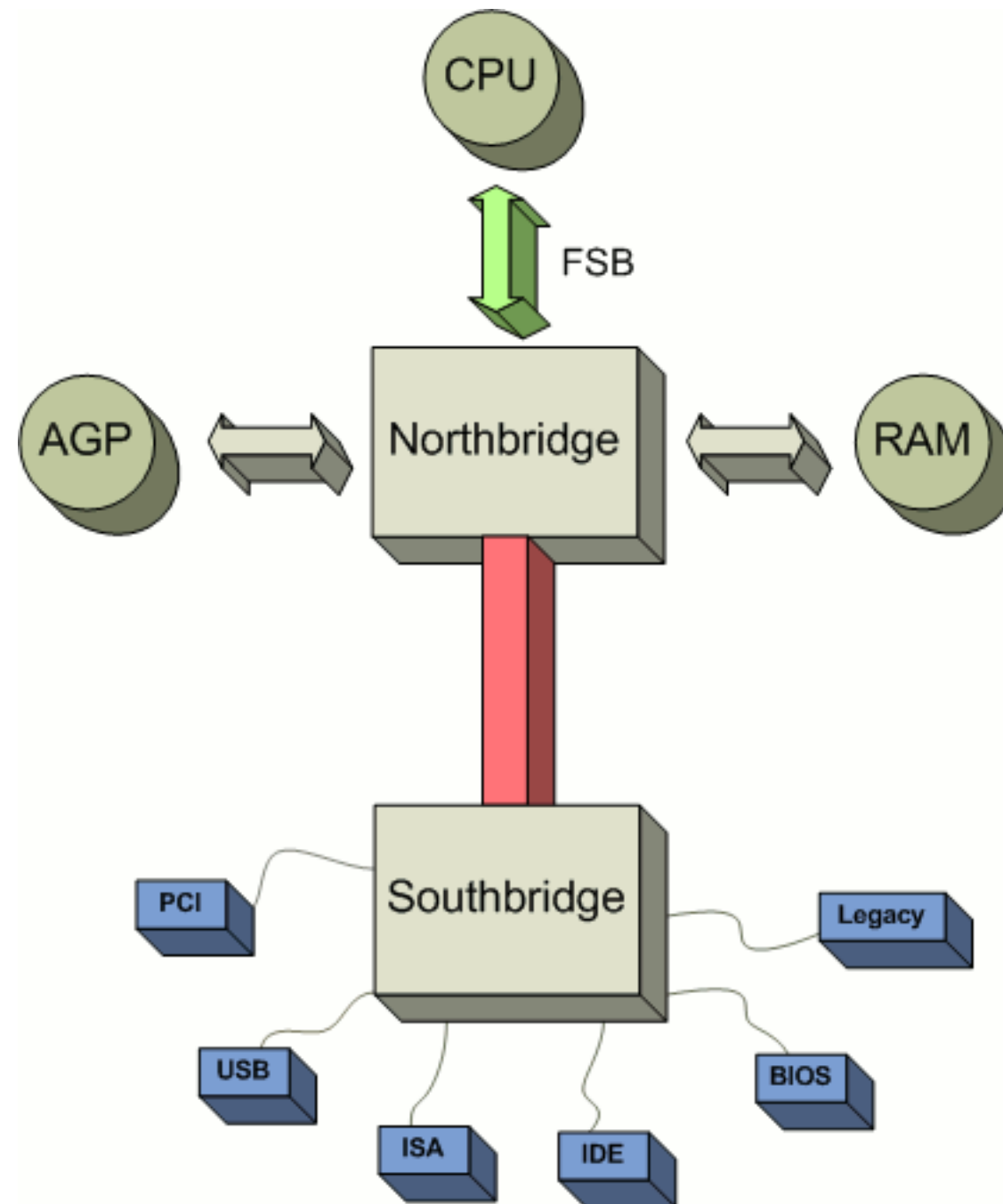




Operating Systems

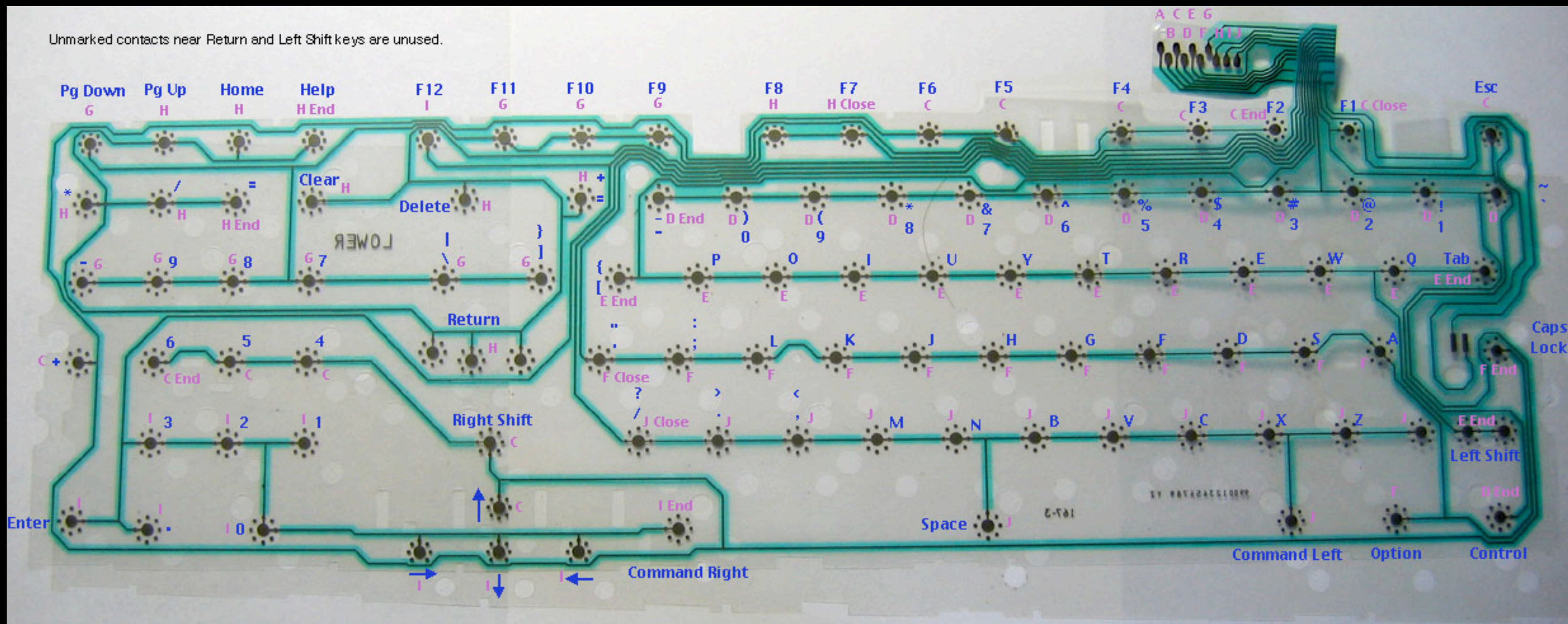


Windows® 8



Keyboard

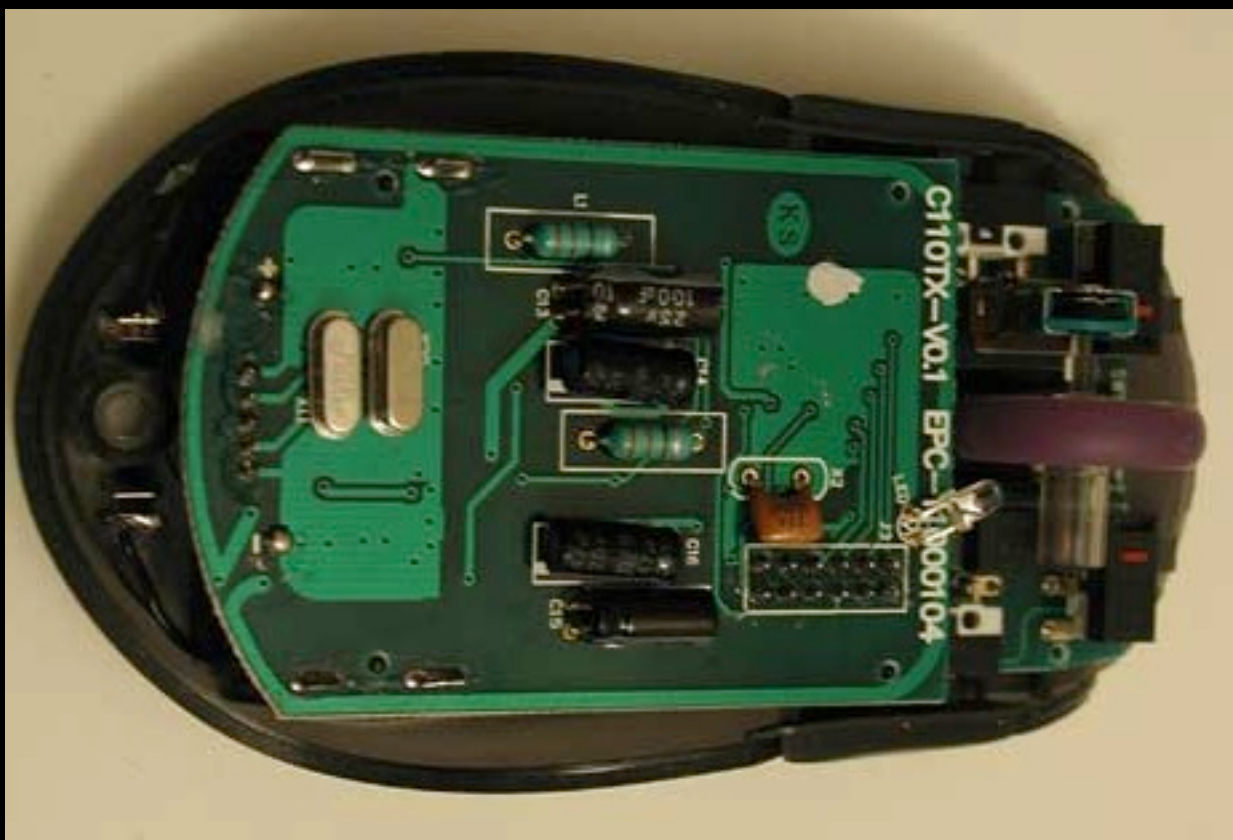
Unmarked contacts near Return and Left Shift keys are unused.



Mouse



[http://www.youtube.com/watch?](http://www.youtube.com/watch?v=74W-QNudReo)
[v=74W-QNudReo](http://www.youtube.com/watch?v=74W-QNudReo)



Lectures

Recaps

Sections

Problem Sets

Discuss

Exams

Final Project

Part I: Hardware

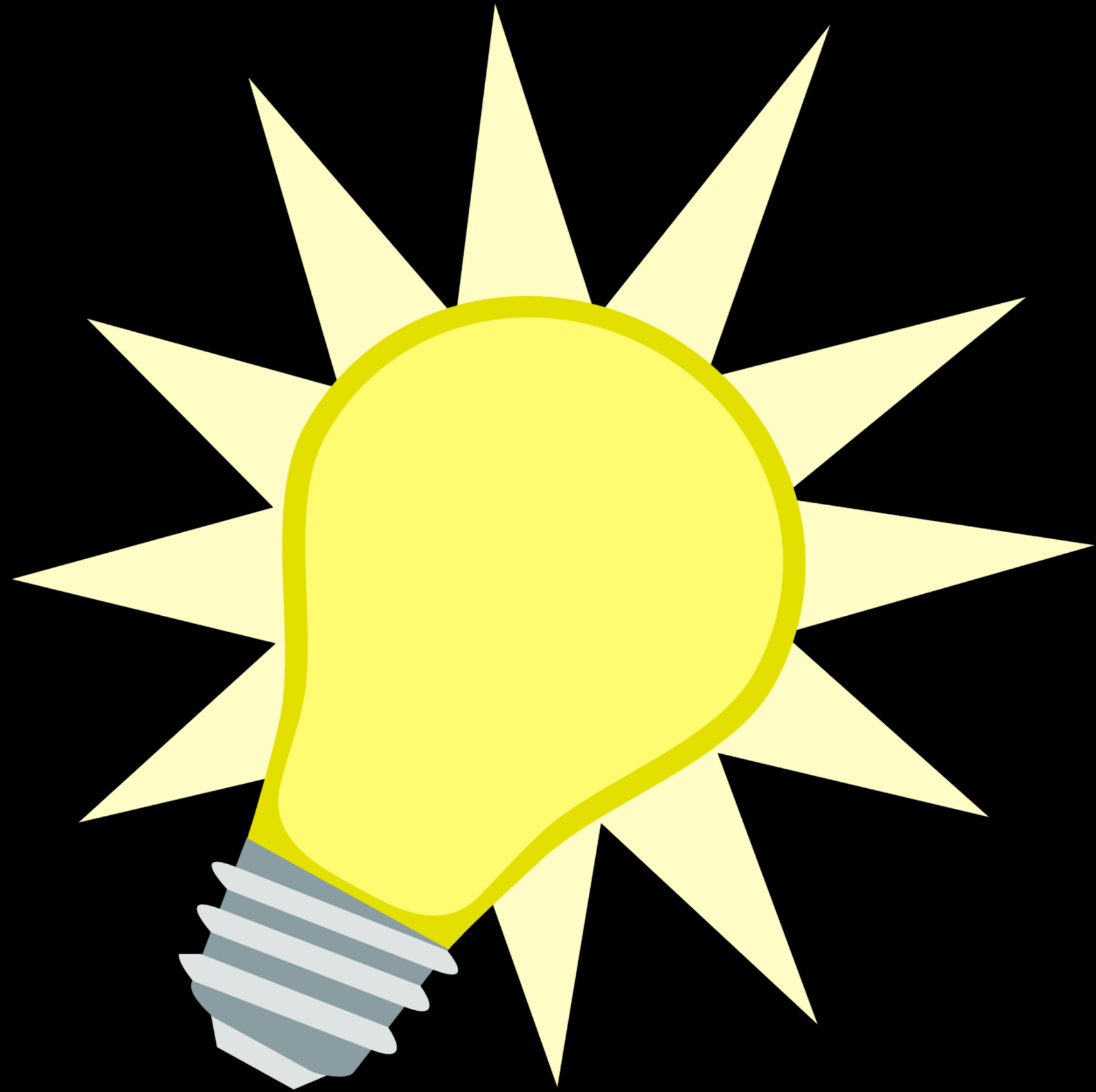
Part II: Internet

Part III: Security

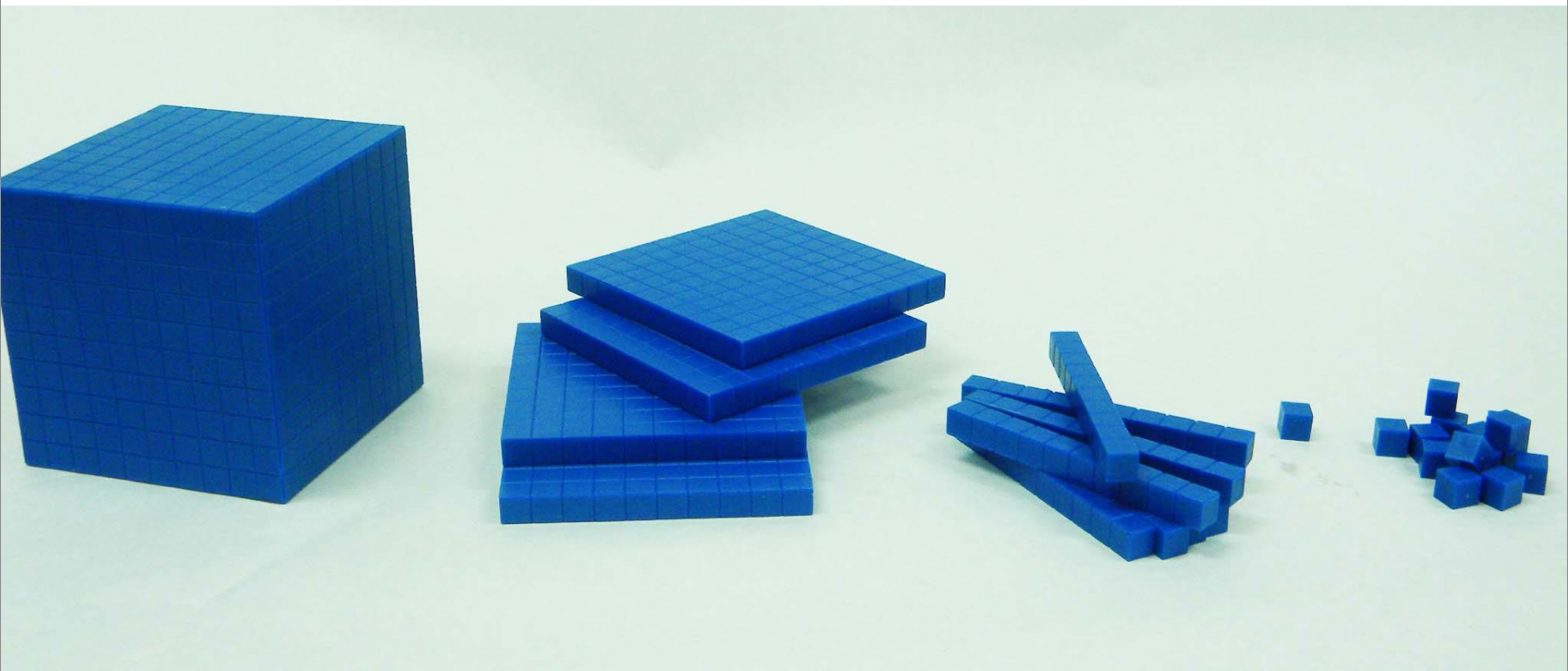
Part IV: Software Development

01010100101010010101000010101010
01010101001010101011101011010101
00010101010110100101001001011110
10100111010100101001001010100100
0101010010101010101001010010010101
00100101010010101010010101010101
01010001010010110010010010010100

Do you like cats?



How much do you like cats?



1000

100

10

1

—

8

—

4

—

2

—

1

0

0
I

00

01

10

$$(1 \times 2) + (0 \times 1) = 2 + 0 = 2$$

00

01

10

11

$$(1 \times 2) + (1 \times 1) = 2 + 1 = 3$$

000

001

011

100

$$(1 \times 4) + (0 \times 2) + (0 \times 1) = 4$$

000

001

011

100

101

$$(1 \times 4) + (0 \times 2) + (1 \times 1) = 5$$

10110

1

0

1

1

0

2^4

2^3

2^2

2^1

2^0

$$(1 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$$

$$(1 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$$

$$16 + 0 + 4 + 2 + 0$$

$$(1 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$$

$$16 + 0 + 4 + 2 + 0$$

$$22$$



14

2^4

2^3

2^2

2^1

2^0

<u>0</u>	<u></u>	<u></u>	<u></u>	<u></u>
2^4	2^3	2^2	2^1	2^0

<u>0</u>	<u>1</u>	<u> </u>	<u> </u>	<u> </u>
2^4	2^3	2^2	2^1	2^0

0

1

1

2^4

2^3

2^2

2^1

2^0

$$\frac{0}{2^4}$$

$$\frac{1}{2^3}$$

$$\frac{1}{2^2}$$

$$\frac{1}{2^1}$$

$$\frac{1}{2^0}$$

0

2^4

1

2^3

1

2^2

1

2^1

0

2^0

0011 + 0110

$$\begin{array}{r} 0011 \\ + 0110 \\ \hline \end{array}$$

$$\begin{array}{r}
 0011 \\
 + 0110 \\
 \hline
 1
 \end{array}$$

$$\begin{array}{r}
 \\
 \\
 + \\
 \hline

 \end{array}$$

$$\begin{array}{r}
 1 1 \\
 0 0 \\
 + 0 1 \\
 \hline
 0 1
 \end{array}$$

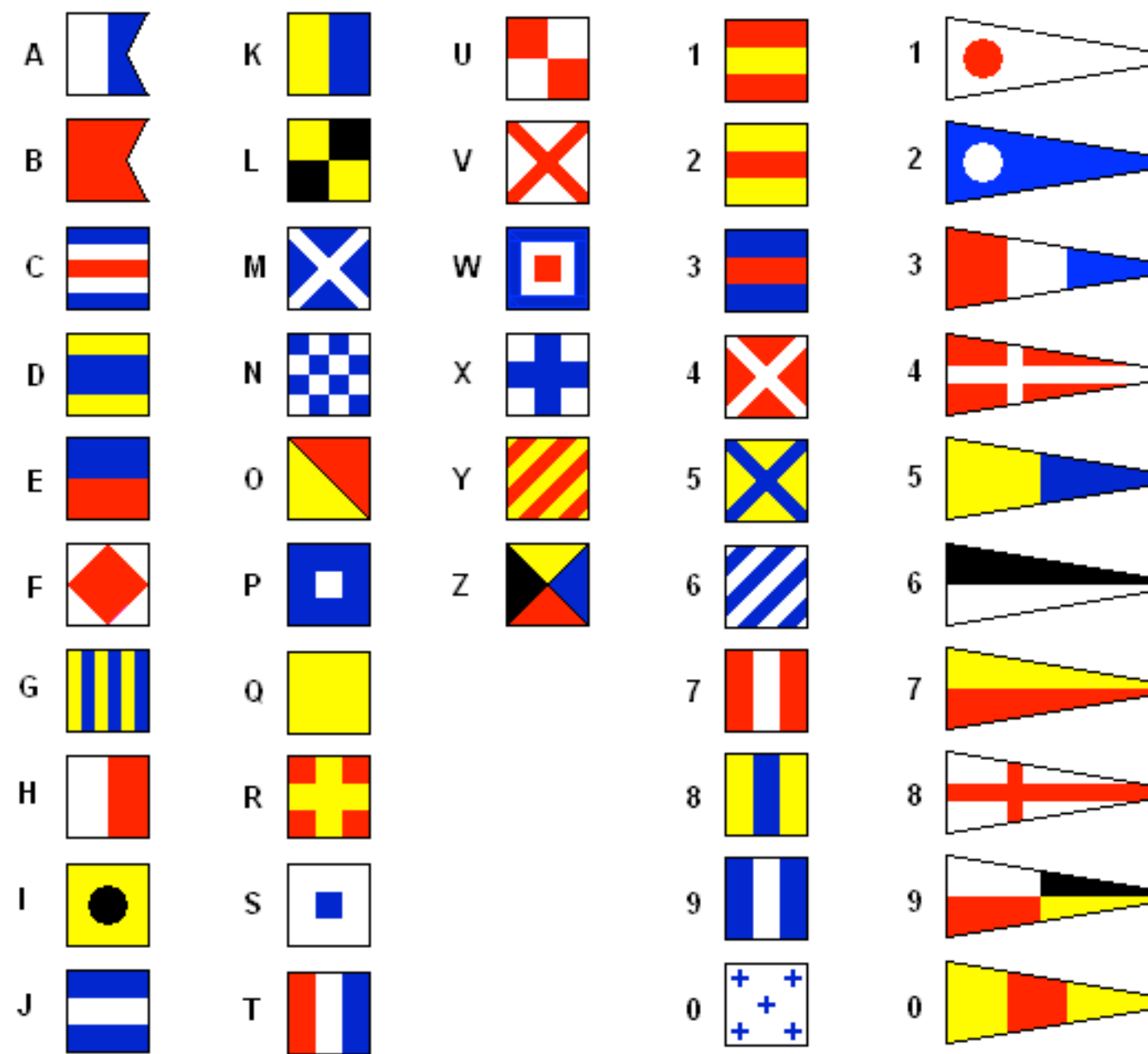
$$\begin{array}{r}
 1011 \\
 +00110 \\
 \hline
 1001
 \end{array}$$

There are 10 types of people in
the world: those who understand
binary and those who don't.



there are 10 types
of people in the
world: people who
understand binary,
and people who
have friends

Character encodings



Maritime Signal Flags

Penants

A ● —
B — ● ● ●
C — ● — ●
D — ● ●
E ●
F ● ● — ●
G — — ●
H ● ● ● ●
I ● ●

J ● — — —
K — ● —
L ● — ● ●
M — —
N — ●
O — — —
P ● — — ●
Q — — ● —
R ● — ●

S ● ● ●
T —
U ● ● —
V ● ● ● —
W ● — —
X — ● ● —
Y — ● — —
Z — — ● ●

ASCII

Dec	Hx	Oct	Char	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr
0	0	000	NUL (null)	32	20	040	 	Space	64	40	100	@	@	96	60	140	`	`
1	1	001	SOH (start of heading)	33	21	041	!	!	65	41	101	A	A	97	61	141	a	a
2	2	002	STX (start of text)	34	22	042	"	"	66	42	102	B	B	98	62	142	b	b
3	3	003	ETX (end of text)	35	23	043	#	#	67	43	103	C	C	99	63	143	c	c
4	4	004	EOT (end of transmission)	36	24	044	$	\$	68	44	104	D	D	100	64	144	d	d
5	5	005	ENQ (enquiry)	37	25	045	%	%	69	45	105	E	E	101	65	145	e	e
6	6	006	ACK (acknowledge)	38	26	046	&	&	70	46	106	F	F	102	66	146	f	f
7	7	007	BEL (bell)	39	27	047	'	'	71	47	107	G	G	103	67	147	g	g
8	8	010	BS (backspace)	40	28	050	((72	48	110	H	H	104	68	150	h	h
9	9	011	TAB (horizontal tab)	41	29	051))	73	49	111	I	I	105	69	151	i	i
10	A	012	LF (NL line feed, new line)	42	2A	052	*	*	74	4A	112	J	J	106	6A	152	j	j
11	B	013	VT (vertical tab)	43	2B	053	+	+	75	4B	113	K	K	107	6B	153	k	k
12	C	014	FF (NP form feed, new page)	44	2C	054	,	,	76	4C	114	L	L	108	6C	154	l	l
13	D	015	CR (carriage return)	45	2D	055	-	-	77	4D	115	M	M	109	6D	155	m	m
14	E	016	SO (shift out)	46	2E	056	.	.	78	4E	116	N	N	110	6E	156	n	n
15	F	017	SI (shift in)	47	2F	057	/	/	79	4F	117	O	O	111	6F	157	o	o
16	10	020	DLE (data link escape)	48	30	060	0	0	80	50	120	P	P	112	70	160	p	p
17	11	021	DC1 (device control 1)	49	31	061	1	1	81	51	121	Q	Q	113	71	161	q	q
18	12	022	DC2 (device control 2)	50	32	062	2	2	82	52	122	R	R	114	72	162	r	r
19	13	023	DC3 (device control 3)	51	33	063	3	3	83	53	123	S	S	115	73	163	s	s
20	14	024	DC4 (device control 4)	52	34	064	4	4	84	54	124	T	T	116	74	164	t	t
21	15	025	NAK (negative acknowledge)	53	35	065	5	5	85	55	125	U	U	117	75	165	u	u
22	16	026	SYN (synchronous idle)	54	36	066	6	6	86	56	126	V	V	118	76	166	v	v
23	17	027	ETB (end of trans. block)	55	37	067	7	7	87	57	127	W	W	119	77	167	w	w
24	18	030	CAN (cancel)	56	38	070	8	8	88	58	130	X	X	120	78	170	x	x
25	19	031	EM (end of medium)	57	39	071	9	9	89	59	131	Y	Y	121	79	171	y	y
26	1A	032	SUB (substitute)	58	3A	072	:	:	90	5A	132	Z	Z	122	7A	172	z	z
27	1B	033	ESC (escape)	59	3B	073	;	:	91	5B	133	[[123	7B	173	{	{
28	1C	034	FS (file separator)	60	3C	074	<	<	92	5C	134	\	\	124	7C	174	|	
29	1D	035	GS (group separator)	61	3D	075	=	=	93	5D	135]]	125	7D	175	}	}
30	1E	036	RS (record separator)	62	3E	076	>	>	94	5E	136	^	^	126	7E	176	~	~
31	1F	037	US (unit separator)	63	3F	077	?	?	95	5F	137	_	_	127	7F	177		DEL

Source: www.LookupTables.com

CS E-I

67 83 32 69 45 49

01000011 01010011 00100000
01000101 00101101 00110001





- byte
- kilobyte
- megabyte
- gigabyte
- terabyte
- ...

What chair is everyone sitting in?

1. Ask the person to your left where he/she is sitting
2. If there is no one to your left, say “one”
3. Add one to the answer of the person to your left, and say it out loud

Computer Science E-I

Lecture I: Hardware