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26+ Years of Experience
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لا تنسى الاشتراك في قناتنا على اليوتيوب ومشاركة القناة مع اصدقائك
لتعم الفائدة للجميع وانقاذ الاف الناس من التشتت وجزاكم الله خيرا
لا تنسونا من دعائكم وادعو لوالدي بالرحمة
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مهم جداً

هذا الملف للمراجعة السريعة واخذ الملاحظات عليه فقط ،لانه يحتوي على اقل من 20٪ مما يتم شرحه في الفيديوهات

الاستعجال والاعتماد عليه فقط سوف يجعلك تخسر كميه معلومات وخبرات كثيره

يجب عليك مشاهدة فيديو الدرس كاملا

لاتنسى عمل لايك ومشاركة القناة لتعم الفائدة للجميع

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اساسيات مهمه لكل مبرمج
تمثيل البيانات في الكمبيوتر
النظام الثنائي
Binary System
0101
1010
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Computer Foundations

How to represent data in computer?

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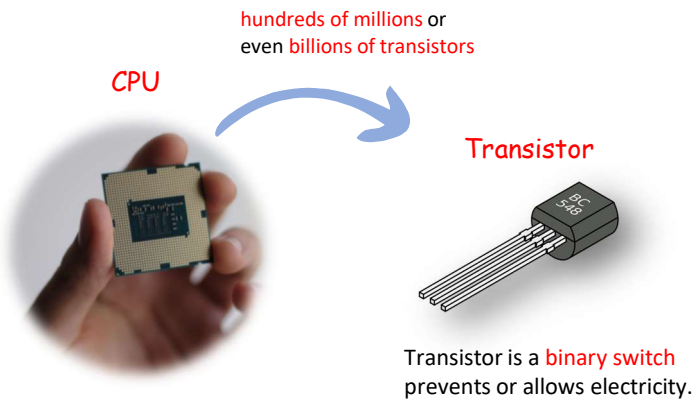
How Computer Works?



- Computer is an electronic device.
- It deals with electricity On/Off
- It only understands 0's (Off) and 1's (On).
- Everything you see, hear and read on the screen reaches you as the result of "on" or "off" billions of times.
- Computer uses Binary System to represent numbers, letters, commands, images and sounds.

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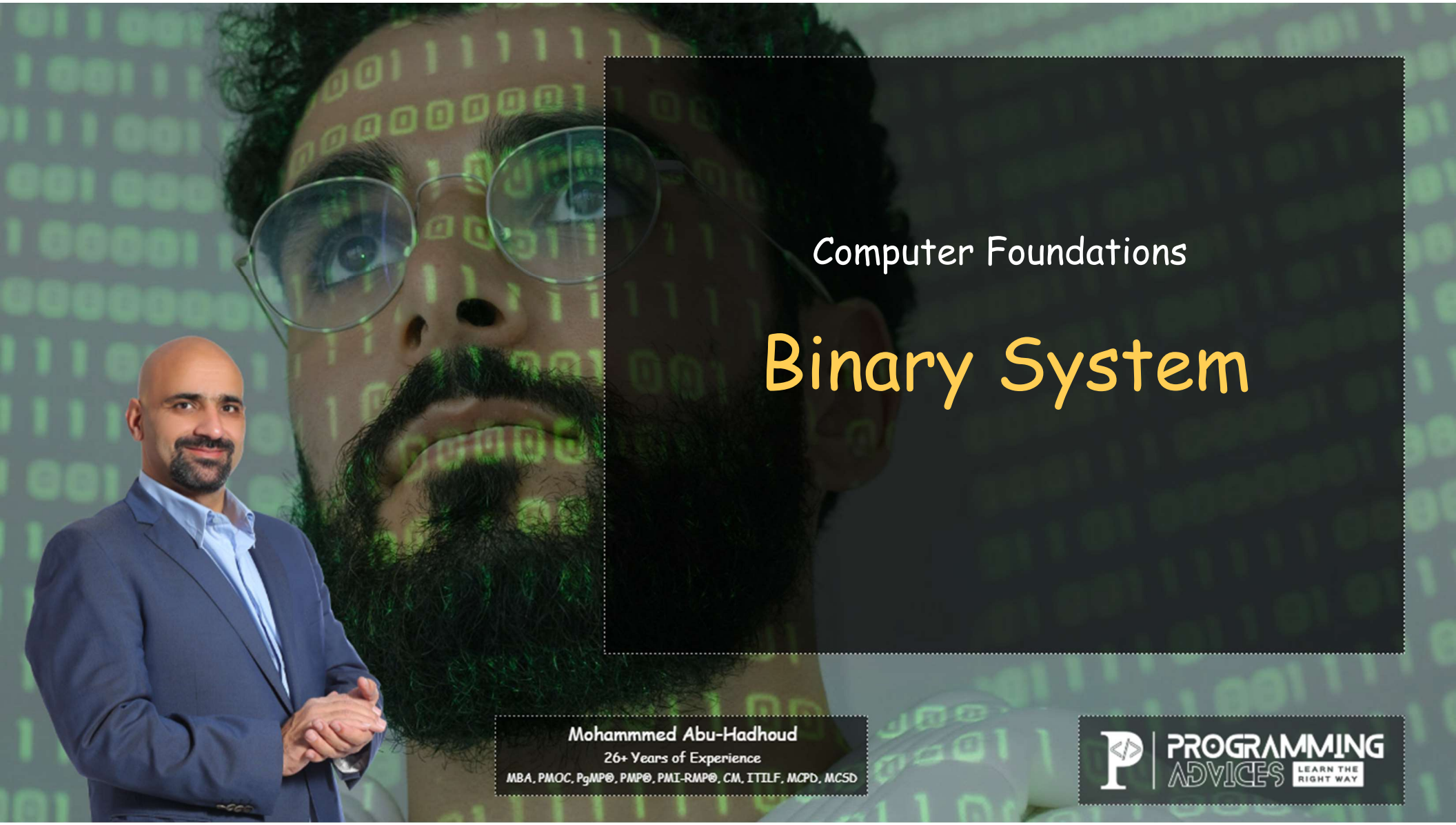

Computer Foundations

Binary System

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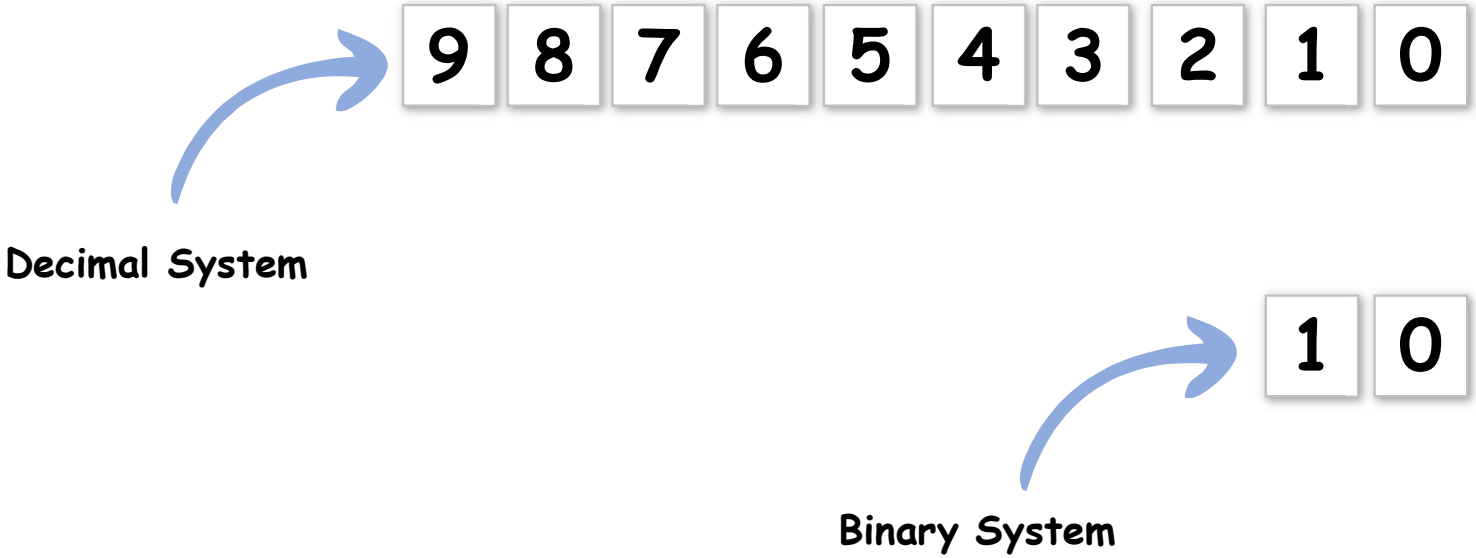
Decimal vs Binary?



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Computer Foundations

What is Bit?

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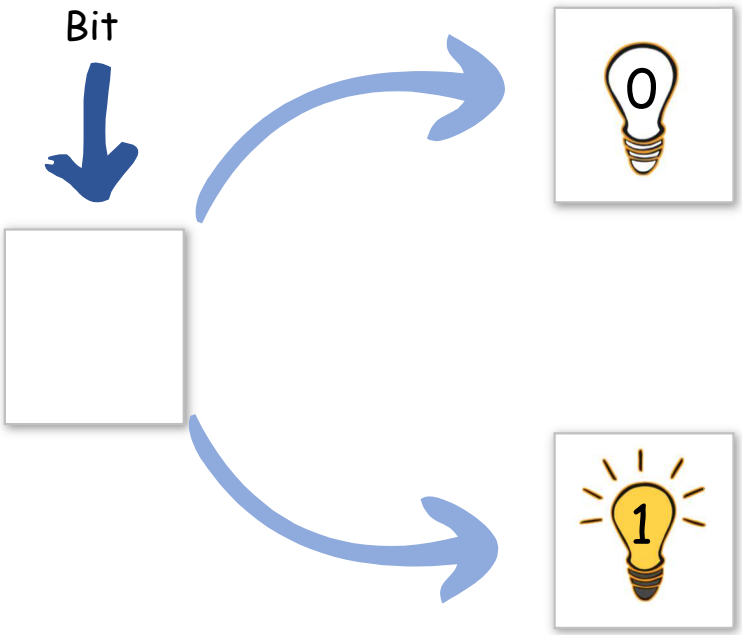
What is "Bit"?

Remember! .. Computer is an electronic device…it deals with electricity only.



A bit is a **binary digit**, the smallest increment of data on a computer

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What is Byte?

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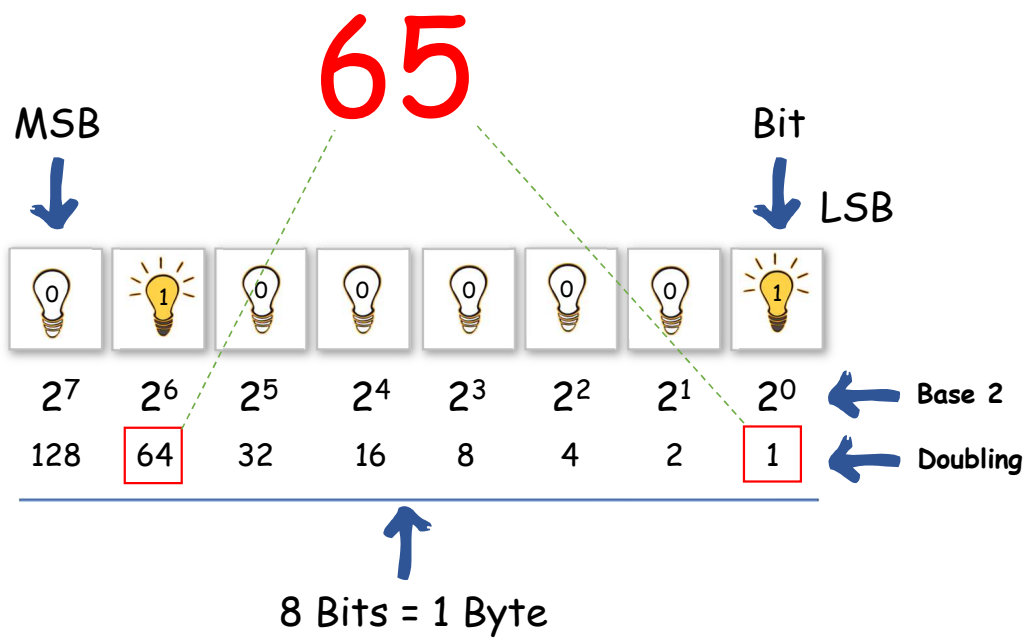
What is Byte?



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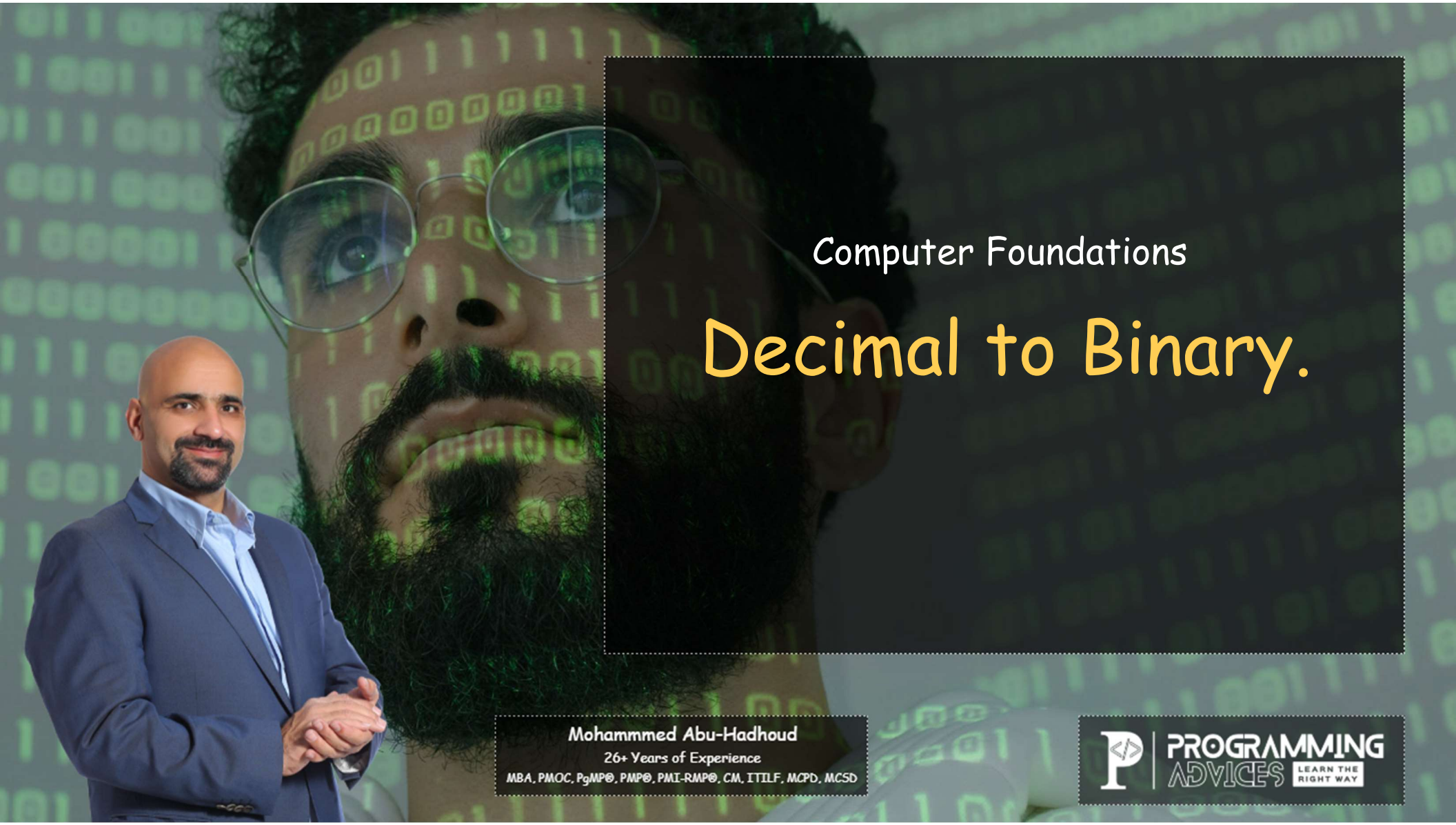
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Decimal to Binary.
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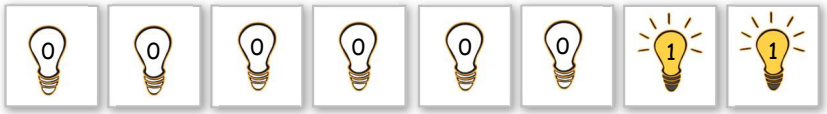
Represent this in binary…

3



2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

00000011

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Represent this in binary…

8

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

00001000

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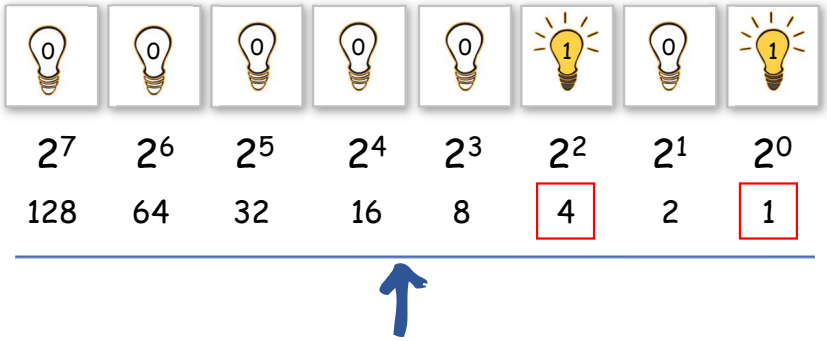
Represent this in binary…

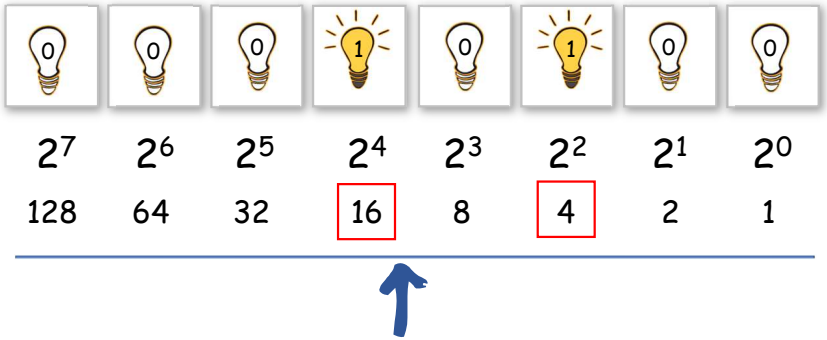
5



00000101

Represent this in binary…

20



00010100

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Represent this in binary…

21

Only one way
to represent Data

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

00010101

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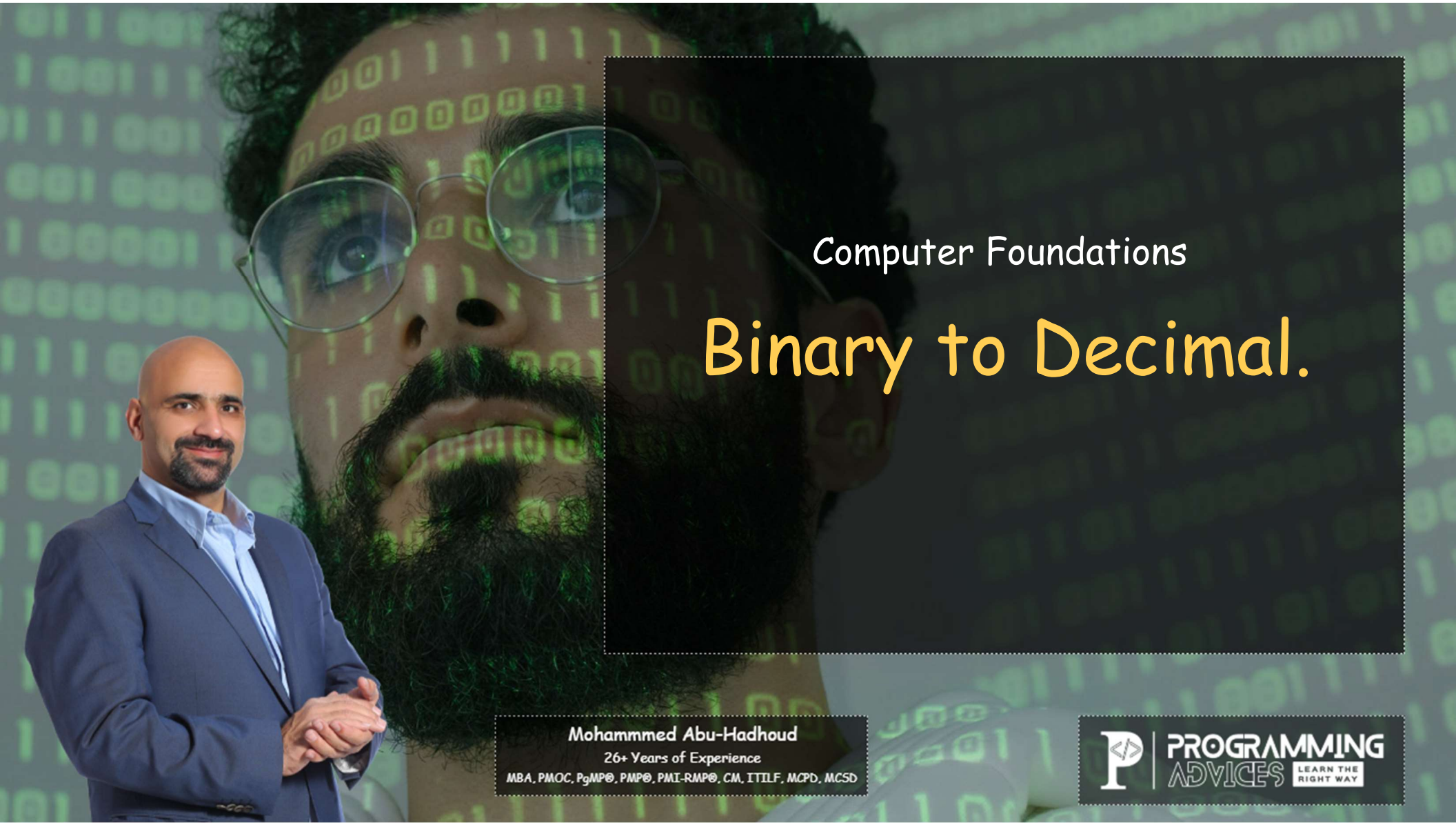
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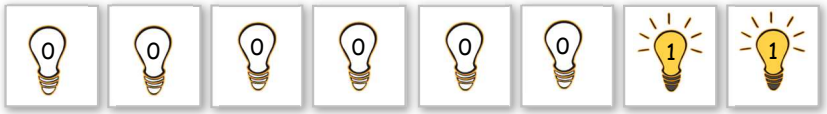
Represent this in decimal…

3



2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

00000011

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Represent this in decimal…

8

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

00001000

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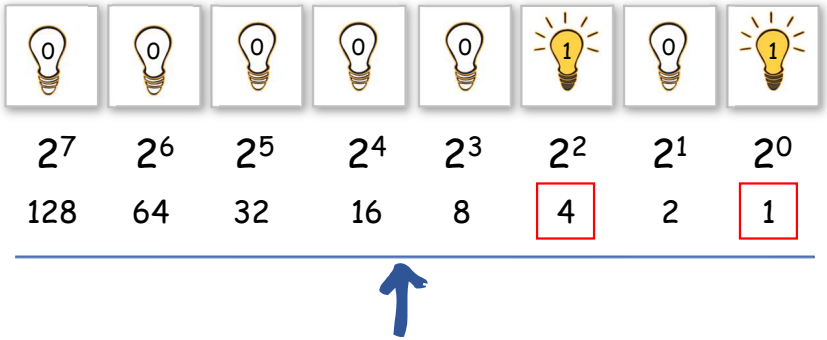
Represent this in decimal…

5



00000101

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Represent this in decimal…

20

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

00010100

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Represent this in binary…

21

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

00010101

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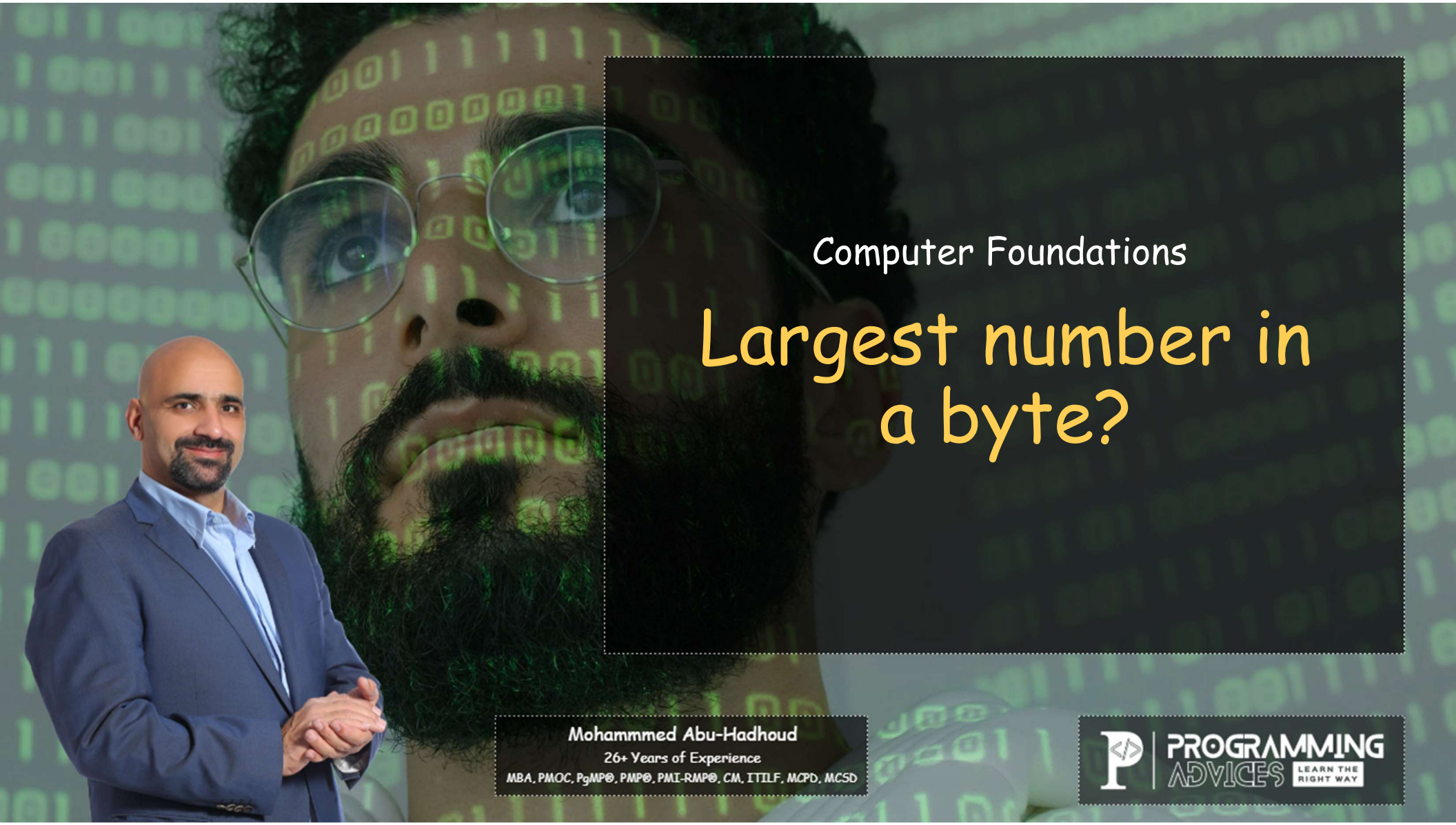
Computer Foundations
Largest number in a byte?
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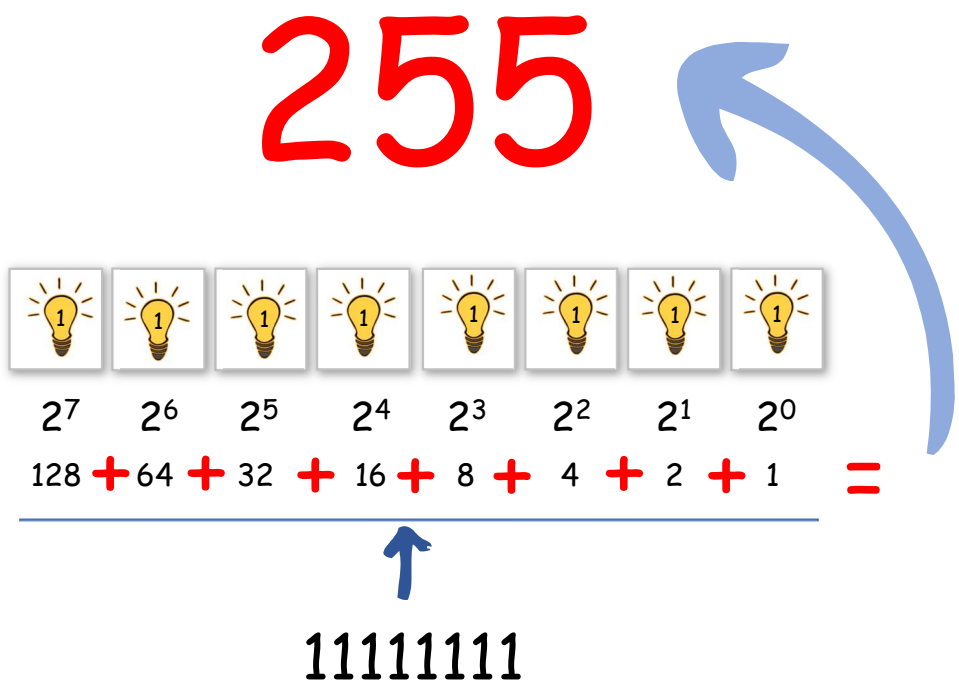
What is the largest number in byte?



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What if I have larger number such as 257?!!

255

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	
128 +	64 +	32 +	16 +	8 +	4 +	2 +	1	=

8 Bits = 1 Byte

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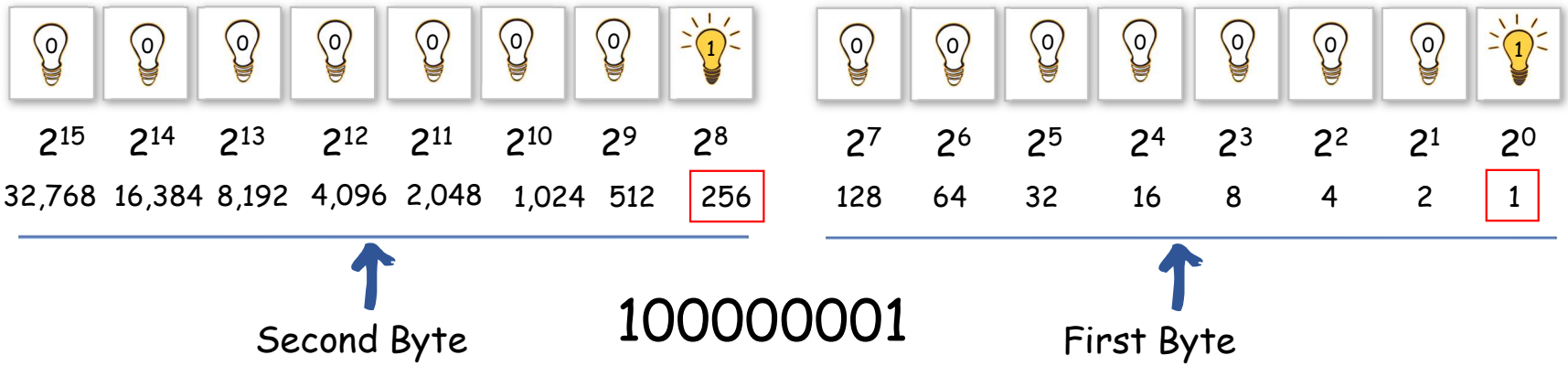
Represent this in binary…

257



100000001

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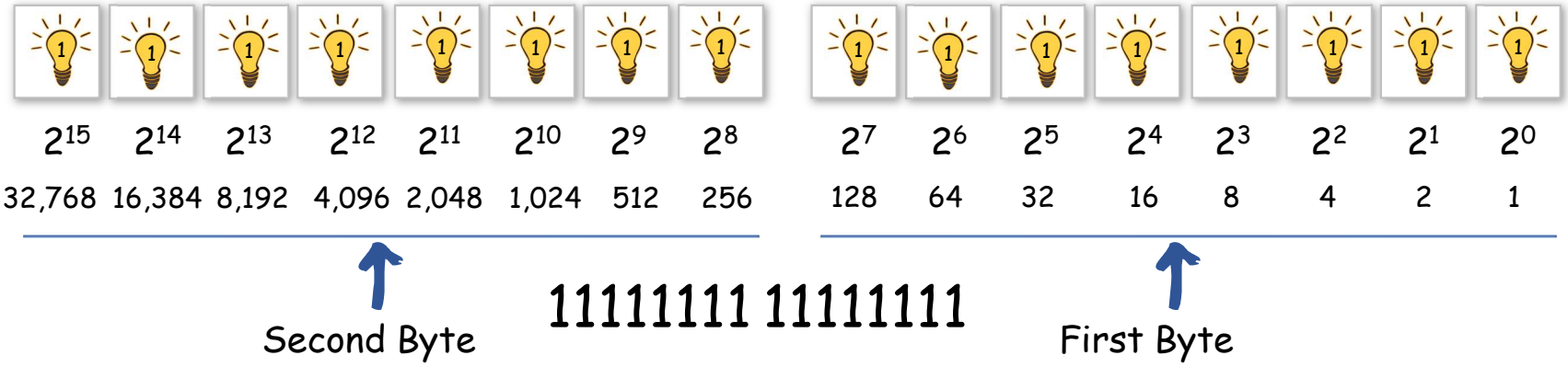
What is the largest number in 2 bytes?

65,535



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But!
How to represent letters?

Computer Foundations

ASCII & Unicode

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PROGRAMMING ADVICES LEARN THE RIGHT WAY

ASCII

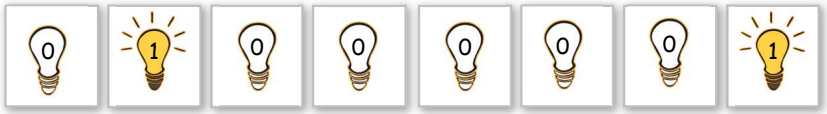
American Standard Code for Information Interchange

Letter	Binary	Decimal	Letter	Binary	Decimal
A	01000001	65	a	01100001	97
B	01000010	66	b	01100010	98
C	01000011	67	c	01100011	99
D	01000100	68	d	01100100	100
E	01000101	69	e	01100101	101
F	01000110	70	f	01100110	102
G	01000111	71	g	01100111	103
H	01001000	72	h	01101000	104
I	01001001	73	i	01101001	105
J	01001010	74	j	01101010	106
K	01001011	75	k	01101011	107
L	01001100	76	l	01101100	108
M	01001101	77	m	01101101	109
N	01001110	78	n	01101110	110
O	01001111	79	o	01101111	111
P	01010000	80	p	01110000	112
Q	01010001	81	q	01110001	113
R	01010010	82	r	01110010	114
S	01010011	83	s	01110011	115
T	01010100	84	t	01110100	116
U	01010101	85	u	01110101	117
V	01010110	86	v	01110110	118
W	01010111	87	w	01110111	119
X	01011000	88	x	01111000	120
Y	01011001	89	y	01111001	121
Z	01011010	90	z	01111010	122

How to represent letters?

65 Or A??

65 A



2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

8 Bits = 1 Byte

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This is my name in binary:

Mohammed Abu-Hadhoud

01001101 01101111 01101000 01100001 01101101 01101101
01100101 01100100 00100000 01000001 01100010 01110101
00101101 01001000 01100001 01100100 01101000 01101111
01110101 01100100

Machine Language

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What does this mean?

01001001 00100000 01001100 01101111 01110110 01100101
00100000 01011001 01101111 01110101 00100001

I Love You!

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But!

How to represent Arabic letters?

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Computer Foundations

Unicode

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ASCII

American Standard Code for Information Interchange

Letter	Binary	Decimal	Letter	Binary	Decimal
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E	01000101	69	e	01100101	101
F	01000110	70	f	01100110	102
G	01000111	71	g	01100111	103
H	01001000	72	h	01101000	104
I	01001001	73	i	01101001	105
J	01001010	74	j	01101010	106
K	01001011	75	k	01101011	107
L	01001100	76	l	01101100	108
M	01001101	77	m	01101101	109
N	01001110	78	n	01101110	110
O	01001111	79	o	01101111	111
P	01010000	80	p	01110000	112
Q	01010001	81	q	01110001	113
R	01010010	82	r	01110010	114
S	01010011	83	s	01110011	115
T	01010100	84	t	01110100	116
U	01010101	85	u	01110101	117
V	01010110	86	v	01110110	118
W	01010111	87	w	01110111	119
X	01011000	88	x	01111000	120
Y	01011001	89	y	01111001	121
Z	01011010	90	z	01111010	122

Problem:

محمد

□□□□ ؟؟؟؟

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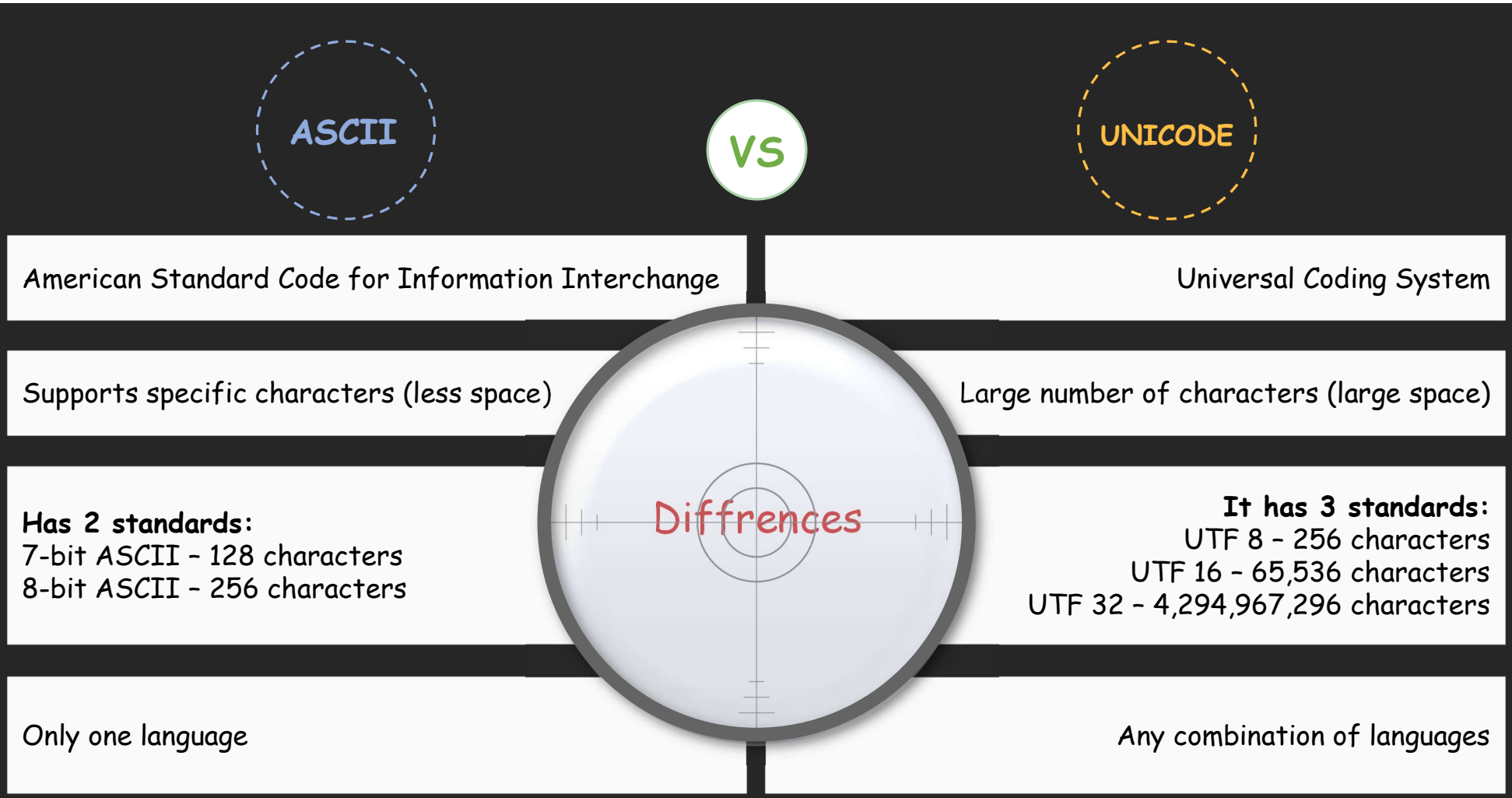
UNICODE

Unicode is an International character encoding standard

Unicode is a **universal character encoding standard** that assigns a code to every character and symbol in every language in the world.



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اساسيات مهمه لكل مبرمج
اكبر رقم في رقعة الشطرنج
Binary System
0101
1010
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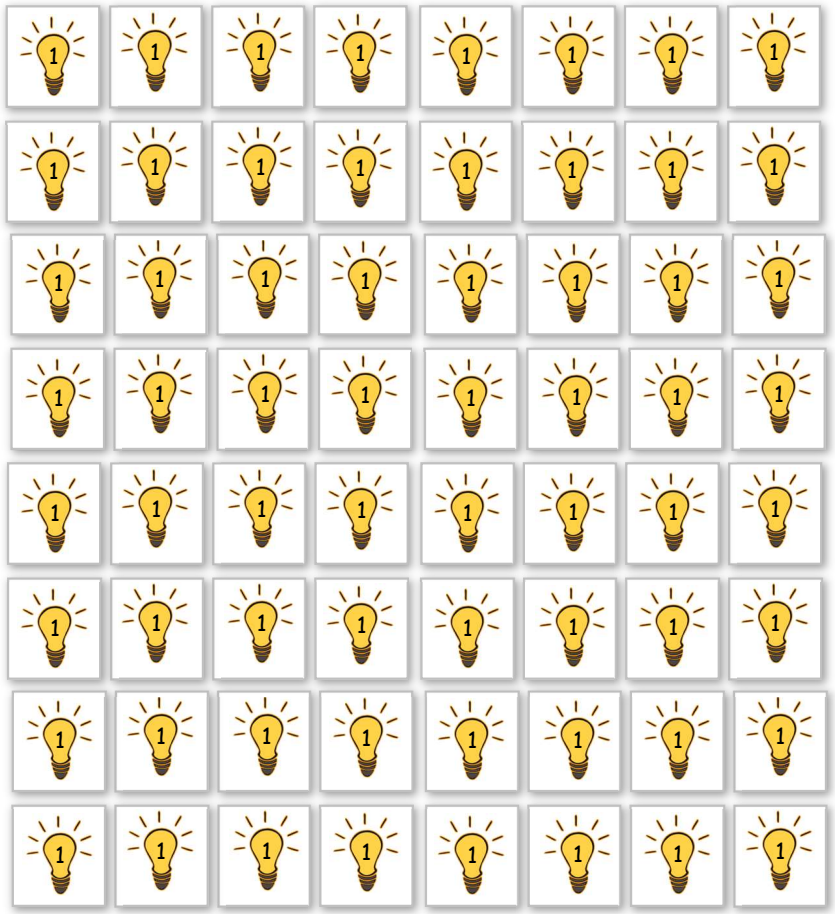
64 Bits = 8 Bytes



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128	64	32	16	8	4	2	1
32,768	16,384	8,192	4,096	2,048	1,024	512	256
8,388,608	4,194,304	2,097,152	1,048,576	524,288	262,144	131,072	65,536
2,147,483,648	1,073,741,824	536,870,912	268,435,456	134,217,728	67,108,864	33,554,432	16,777,216
5.49756E+11	2.74878E+11	1.37439E+11	68,719,476,736	34,359,738,368	17,179,869,184	8,589,934,592	4,294,967,296
??							

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9,223,372,036,854,780,000

128	64	32	16	8	4	2	1
32,768	16,384	8,192	4,096	2,048	1,024	512	256
8,388,608	4,194,304	2,097,152	1,048,576	524,288	262,144	131,072	65,536
2,147,483,648	1,073,741,824	536,870,912	268,435,456	134,217,728	67,108,864	33,554,432	16,777,216
5.49756E+11	2.74878E+11	1.37439E+11	68,719,476,736	34,359,738,368	17,179,869,184	8,589,934,592	4,294,967,296
??							

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18,446,744,073,709,600,000

Homework

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PROGRAMMING ADVICES LEARN THE RIGHT WAY

1- Represent those numbers in binary…

- 512
- 44
- 129
- 717
- 999

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2- Write your name in binary and put it in the comments.

Thank you ☺

01010100 01101000 01100001 01101110 01101011 00100000 01111001 01101111 01110101 00100000 00111010 00101001 00001010

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