

Amiibo NFC password (PWD) worksheet!

Find your Amiibo's unique ID number (UID). It's a 14-character hexadecimal string, like 0452D752014981 or 04:52:D7:52:01:49:81.

Drop the 04, and in the first row, write the last 12 characters, one in each box.

Use the conversion chart to write the binary numbers for each character.

Copy the numbers from the colored fields into the same color fields on the next row.

Follow the XOR rules to calculate each **column** of binary numbers. Convert the final row back into hexadecimal. That's your Amiibo's PWD!

Hexadecimal numbers are a **base 16** number system, counting from 0 to 9 and then continuing on with A, B, C, D, E, and F, for sixteen single digits. Then it's 10 to 1F, then 20 to 2F, and so on.

Binary is a **base 2** number system, with only 0 and 1, then 10 and 11, then 100, 101, 110, 111, etc.

Use this chart to convert between each hexadecimal digit and its binary equivalent.

0	1	2	3	4	5	6	7
0 0 0 0	0 0 0 1	0 0 1 0	0 0 1 1	0 1 0 0	0 1 0 1	0 1 1 0	0 1 1 1
8	9	A	B	C	D	E	F
1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1

5	2	D	7	5	2	0	1	4	9	8	1
0 1 0 1 0 0 1 0	1 1 0 1 0 1 1 1	0 1 0 1 0 0 1 0	0 0 0 0 0 0 0 1	0 1 0 0 1 0 0 1	1 0 0 0 0 0 0 1	0 1 0 0 1 0 0 1	1 0 0 0 0 0 0 1				
⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕				
0 1 0 1 0 0 1 0	0 0 0 0 0 0 0 1	0 1 0 0 1 0 0 1	1 0 0 0 0 0 0 1	0 0 0 0 0 0 0 0	1 1 0 1 0 1 1 0	0 0 0 1 1 0 1 1	1 0 0 0 0 0 0 0				
= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =				
0 0 0 0 0 0 0 0	1 1 0 1 0 1 1 0	0 0 0 1 1 0 1 1	1 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 1 0 1 0 1 0 1	1 0 1 0 1 0 1 0	0 1 0 1 0 1 0 1				
⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕				
1 0 1 0 1 0 1 0	0 1 0 1 0 1 0 1	1 0 1 0 1 0 1 0	0 1 0 1 0 1 0 1	1 0 1 0 1 0 1 0	1 0 1 0 1 0 1 0	1 0 1 0 1 0 1 0	0 1 0 1 0 1 0 1				
= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =				
1 0 1 0 1 0 1 0	1 0 0 0 0 0 1 1	1 0 1 1 0 0 0 1	1 1 0 1 0 1 0 1	1 0 1 0 1 0 1 0	1 0 1 0 1 0 1 0	1 0 1 0 1 0 1 0	1 0 1 0 1 0 1 0				
A	A	8	3	B	1	D	5				

XOR (exclusive OR, written as \oplus or $\underline{\vee}$) is like a truth table. If exactly **one** of the two values is 1 (or true), then the result is 1, like in the two middle columns below.

Any other combination is 0 (or false).

0	0	1	1
⊕	⊕	⊕	⊕
0	1	0	1
=	=	=	=
0	1	1	0

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8	9	A	B	C	D	E	F
1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1

⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕				
⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕				
1 0 1 0 1 0 1 0	0 1 0 1 0 1 0 1	1 0 1 0 1 0 1 0	0 1 0 1 0 1 0 1				
= = = = = = = =	= = = = = = = =	= = = = = = = =	= = = = = = = =				

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⊕	⊕	⊕	⊕
0	1	0	1
=	=	=	=
0	1	1	0