

Binary

Exercise



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Binary is an important tool in the modern world. Most computers store information in binary form.

Binary is a way to represent information using just two options, this is often thought of as OFF and ON, this is how computers use binary.

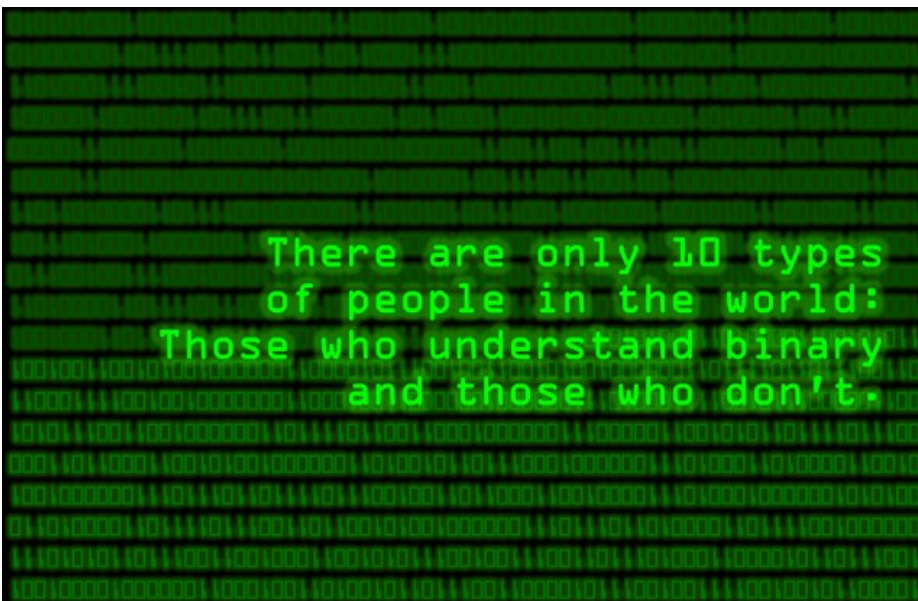
Hard drives store information using magnetic POSITIVE and NEGATIVE.

DVDS store information using reflective and non-reflective.

All of this is BINARY.

Below is a popular binary joke. Can you use the binary system to understand what it means?

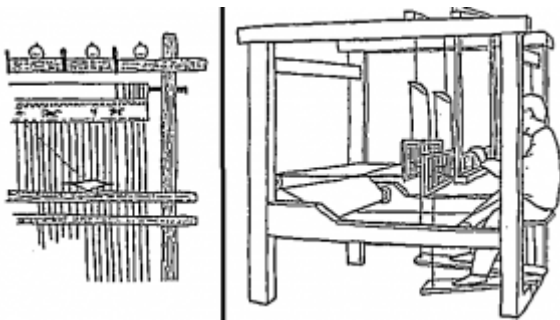
Use the code to decipher what the number stands for:



| Decimal | Binary |
|---------|--------|
| 0 | 000 |
| 1 | 001 |
| 2 | 010 |
| 3 | 011 |
| 4 | 100 |
| 5 | 101 |
| 6 | 110 |
| 7 | 111 |

Binary History

How Hand Looms became the first computers



In the earliest looms threads were stretched parallel on a frame (the WARP) and darned crossways over and under (the WEFT) to create cloth.

This created PLAIN WEAVING. Horizontal looms built to weave in this way were introduced to Europe in the thirteenth century. At this stage looms were operated by a weaver lifting the WARP threads by using a foot treadle.

On plain handlooms skilled weavers could produce geometric pattern repeats such as zig zags and small diamonds, this type of cloth was known as DIAPER.

To weave scenes, family crests or floral designs required a complex DRAW LOOM. Patterned cloth was known as DAMASK, after the patterned silk woven in China and exported along the silk road to Damascus.

Draw looms were operated by a weaver and up to 12 DRAW BOYS who would have to learn a pattern sequence and lift the WARP threads in order to create a design. This technique works like BINARY, a simple system of ON and OFF which is still used today in our complex computers!

Draw looms were slow, but in 1804 Joseph Marie Jacquard of Lyon, France developed a mechanism to lift the WARP threads by use of punch cards.

Punch cards translate a drawn pattern into a series of holes in long cards. WARP threads that need lifted for the pattern have a hole punched out, while threads that are needed to stay flat have a blank space.

This is known today as the first computer

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The binary alphabet works like the punch cards in a damask loom, it uses a series of eight blank and filled boxes to code the letters.

Each spot where you have a binary option is called a BINARY DIGIT or Bit.

A grouping of eight BITS make a BYTE!

A byte is a familiar term for us today in technology,

Use binary decoder key for the alphabet in the binary challenges!

| | | | | | |
|---|-------|-------|---|-------|-------|
| A | ■□■■■ | ■■■■□ | N | ■□■■■ | □□□■ |
| B | ■□■■■ | ■■■□■ | O | ■□■■■ | □□□□ |
| C | ■□■■■ | ■■■□□ | P | ■□□□ | ■■■■■ |
| D | ■□■■■ | ■□■■■ | Q | ■□□□ | ■■■■□ |
| E | ■□■■■ | ■□■■□ | R | ■□□□ | ■■■□■ |
| F | ■□■■■ | ■□□■ | S | ■□□□ | ■■■□□ |
| G | ■□■■■ | ■□□□ | T | ■□□□ | ■□■■■ |
| H | ■□■■■ | □■■■■ | U | ■□□□ | ■□□□ |
| I | ■□■■■ | □■■■□ | V | ■□□□ | ■□□■ |
| J | ■□■■■ | □■□■ | W | ■□□□ | ■□□□ |
| K | ■□■■■ | □■□□ | X | ■□□□ | □■■■■ |
| L | ■□■■■ | □□■■■ | Y | ■□□□ | □■■■□ |
| M | ■□■■■ | □□■■□ | Z | ■□□□ | □■□■ |

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Can you decode the word on this punch card?

Each line is a letter and the word will read from top to bottom

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Exercise

Now try and decode the message.

First use the punch card to find each letter,
then fill them in to the spaces on the message.

| | | |
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