Code

The mapping of events to messages is called encoding. Messages are recorded in information storage units. The recorded message itself is an event system. Encoding is a transformation, based on the mutual and unambiguous correspondence between two event systems.

The tool of encoding is the code. A code consists of a finite set of symbols (an alphabet), along with coding rules (groups of symbols).

A codeword is an elementary message, which consists of a finite number of symbols. The set of code symbols and the rules for forming codewords together constitute the syntax of the code.

Encoding changes the form of the information, but other characteristics of the information remain unchanged. There are fixed-length and variable-length codes.

Basic Types of Codes:

Fixed-length code	**Variable-length code**
Technical codes	Morse code
Communication Codes	Human languages
Computer codes	Technical languages

For a fixed (n) length binary code, the number of possible codewords is:

$$ N = 2^n $$

If we form codes from m different symbols, then the number of possible n-length codewords is:

$$ N = m^n $$

The fundamental problem of coding theory is the *preservation*, *security*, and *maximization* of the information content of transmitted messages.