

## Data Structure:

The Values that are stored inside a computer as a series of 0's and 1's.

A single 0 or 1 is called a binary digit or bit. Any Group of 0's and 1's can be used to represent a specific character.

The number of bits used to store one character is called a byte.

The complete set of characters that the computer is uses is known as its character set.

Each of the character set should must have its own binary value, which the code by which the computer

The screenshot shows a web browser window with the URL 'upload.wikimedia.org/wikipedia/commons/2/26/Ascii-codes-table.png'. The page title is 'The ASCII code' and the subtitle is 'American Standard Code for Information Interchange'. The table is organized into three main columns:

- ASCII control characters:** Contains 32 entries from 00 to 17, including NULL, SOH, STX, ETX, EOT, ENQ, ACK, BEL, BS, HT, LF, VT, FF, CR, SO, SI, DLE, DC1, DC2, DC3, DC4, NAK, SYN, ETB, CAN, EM, SUB, ESC, FS, GS, RS, US, and DEL.
- ASCII printable characters:** Contains 96 entries from 32 to 127, including space, digits (0-9), punctuation, and lowercase/uppercase letters (a-z).
- Extended ASCII characters:** Contains 128 entries from 128 to 255, including various accented characters, symbols, and special characters.

recognizes.

2) Unicode: Is more recent ,16 bit code that uses two bytes.

Using 16-bits makes it possible to represent over 65,000 characters. This mean that all the characters used by the world's languages can be represented in Unicode.

char	decimal unicode	iso8859	char	decimal unicode	iso8859	char	decimal unicode	iso8859
€	8364	128	\$	36	36	©	169	169

**for the following characters, the digits for decimal unicode and iso 8859-1 are identical.**

char	code	char	code	char	code	char	code	char	code	char	code	char	code	char	code
	160	¡	161	¢	162	³	163	¤	164	¹	165	¦	166	§	167
¨	168	©	169	°	170	«	171	¬	172		173	®	174	¸	175
º	176	±	177	²	178	³	179	´	180	µ	181	¶	182	·	183
¸	184	¹	185	º	186	»	187	¼	188	½	189	¾	190	¸	191
à	192	-	193	â	194	ã	195	ä	196	å	197	æ	198	ç	199
è	200	é	201	ê	202	ë	203	ì	204	í	205	î	206	ï	207
ð	208	ñ	209	ò	210	ó	211	ô	212	õ	213	ö	214	×	215
ø	216	ù	217	ú	218	û	219	ü	220	ý	221	þ	222	ß	223
à	224	á	225	â	226	ã	227	ä	228	å	229	æ	230	ç	231
è	232	é	233	ê	234	ë	235	ì	236	í	237	î	238	ï	239
ð	240	ñ	241	ò	242	ó	243	ô	244	õ	245	ö	246	÷	247
ø	248	ù	249	ú	250	û	251	ü	252	ý	253	þ	254	ÿ	255

## Representation of Data

### DATA REPRESENTATION

Data representation refers to the form in which data is stored, processed and transmitted. Digital devices store data using the binary number system.

### BITS AND BYTES

You can combine several bits (0s and 1s). If you combine 8 bits together, it is called a "byte". A byte can represent any number between 0 (represented in bits as 00000000) and 255 (represented in bits as 11111111).

1 B	8 b	b = bit
1 KB	1024 B	B = byte
1 MB	1024 KB	KB = Kilobyte
1 GB	1024 MB	MB = Megabyte
1 TB	1024 GB	GB = Gigabyte
1 PB	1024 TB	TB = Terabyte
		PB = Petabyte

A computer needs to store and use different types of data in the operation of the system. All of these different types of data look the same in the primary memory as they are all stored in a binary representation.

- 1) Numeric data: real number & integer number
- 2) Boolean data: Binary data (1 and 0)
- 3) Character Data: can be anything like 4, & , A
- 4) String Data: A sequence of characters stored together. (Female, Male..etc)
- 5) Other Data types: date & time , Currency.