

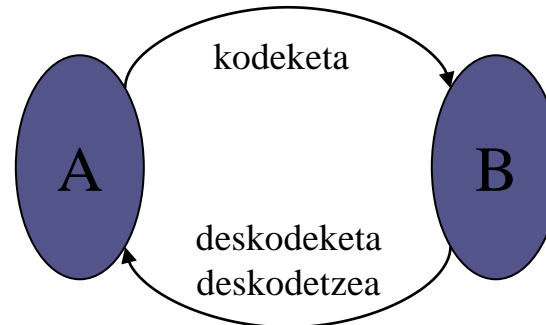
## 2. Informazioaren kodifikazioa

A decorative graphic element consisting of several horizontal lines of varying lengths and colors (teal, white, and light blue) extending from the right side of the slide.

## KODEKETA:

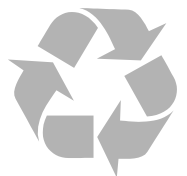
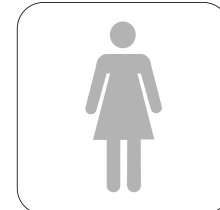
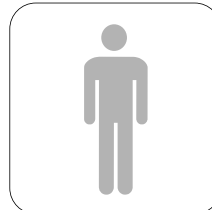
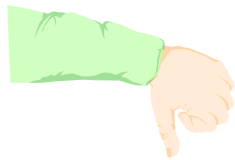
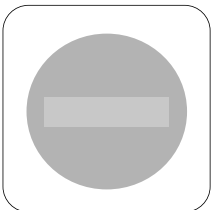
Informazio-multzo bat kode baten bitartez adierazteko eragiketa

Transformazio  
Itzulgarria (?) :

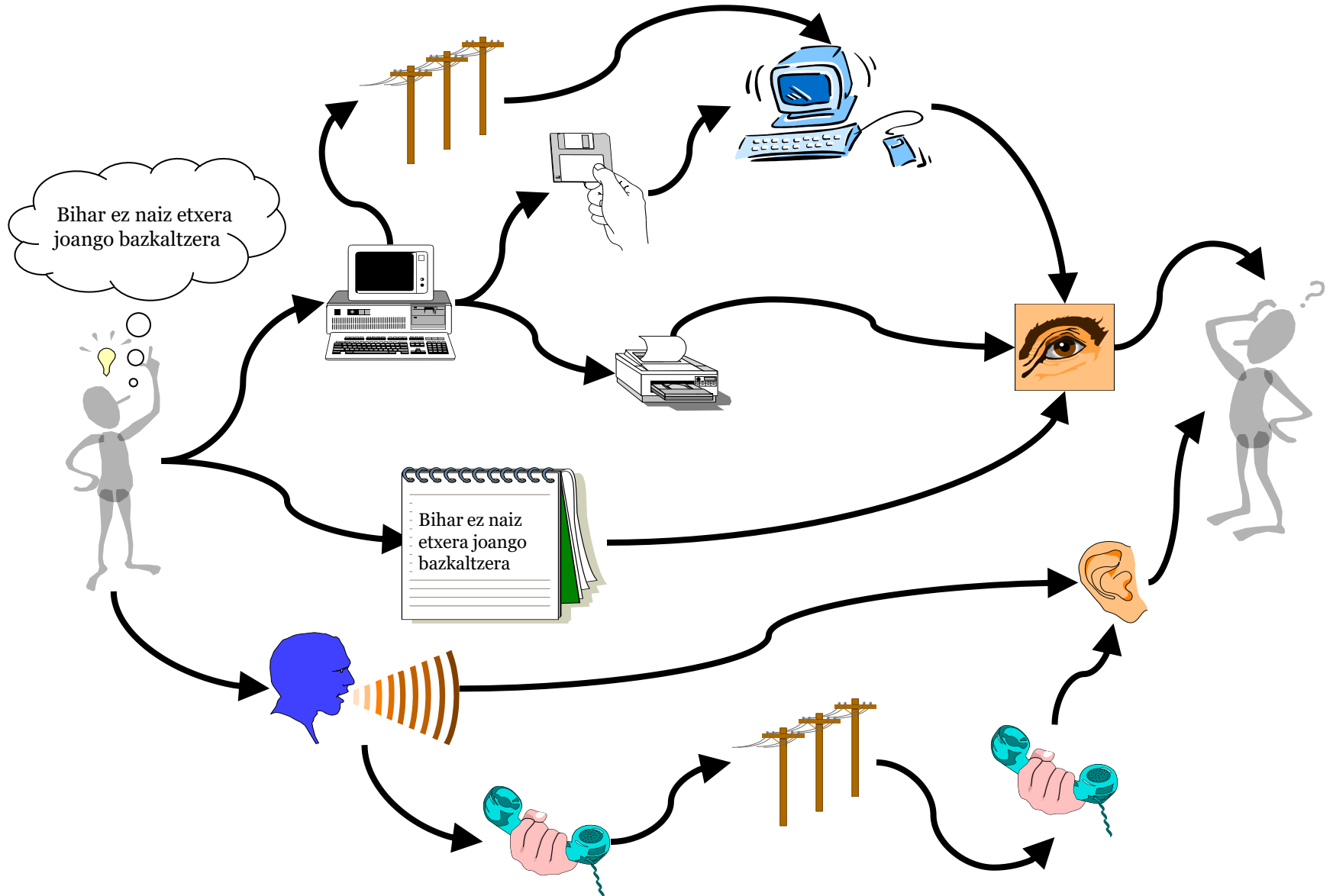


# Kodeketa ezagun batzuk

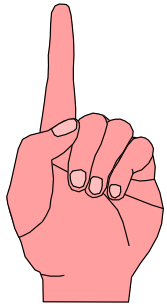
- Ⓢ Trafiko zeinuak → gida-informazioa
- Ⓢ Gorputz zeinuak → ideiak, sentimenduak, ...
- Ⓢ Hizkuntza → ideiak, sentimenduak, ...
- Ⓢ Idazkera → hizkuntza
- Ⓢ Morsea → idazkera



# Kodeketa aniztasuna



# Deskodetze aniztasuna



O

- “bat”
- “gora”
- “ni (txanda)”
  
- “o zenbakia”
- “O letra”
- “zirkulua”



# Morse kodea

| Letter | Morse | Letter | Morse | Digit | Morse  |
|--------|-------|--------|-------|-------|--------|
| A      | .-    | N      | -.    | 0     | -----  |
| B      | -...  | O      | ---   | 1     | .----  |
| C      | -.-.  | P      | .-..  | 2     | ..---  |
| D      | -..   | Q      | --.-  | 3     | ...--  |
| E      | .     | R      | .-.   | 4     | ....-  |
| F      | ..-.  | S      | ...   | 5     | .....  |
| G      | --.   | T      | -     | 6     | -..... |
| H      | ....  | U      | ..-   | 7     | ---... |
| I      | ..    | V      | ...-  | 8     | ----.. |
| J      | .---- | W      | .-.-  | 9     | -----. |
| K      | -.-   | X      | -.-.- |       |        |
| L      | .-... | Y      | -.--  |       |        |
| M      | --    | Z      | --..  |       |        |

## Biblia Ingeleseaz

|       |       |
|-------|-------|
| 61842 | the   |
| 38470 | and   |
| 34327 | of    |
| 13338 | to    |
| 12432 | that  |
| 12151 | in    |
| 9759  | shall |
| 9487  | he    |
| 8924  | unto  |
| 8705  | I     |
| 8360  | his   |
| 7935  | a     |
| 7136  | for   |
| 6886  | they  |
| 6716  | be    |
| 6692  | is    |
| 5946  | with  |
| 5840  | not   |
| 5235  | all   |
| 4628  | thou  |
| 4452  | thy   |
| 4448  | it    |
| 4420  | was   |
| 4260  | which |
| 4135  | my    |
| 3882  | LORD  |
| 3866  | their |
| 3827  | have  |
| 3751  | will  |

|        |   |
|--------|---|
| 414176 | e |
| 310018 | t |
| 281788 | h |
| 264333 | a |
| 239052 | o |
| 223765 | n |
| 188715 | s |
| 181335 | i |
| 164532 | r |
| 149205 | d |
| 120385 | l |
| 86592  | u |
| 80608  | f |
| 78578  | m |
| 62657  | w |
| 57659  | y |
| 54411  | c |
| 48702  | g |
| 45229  | b |
| 41118  | p |
| 31389  | v |

## Biblia Gazteleraz

|       |        |
|-------|--------|
| 43239 | de     |
| 32747 | y      |
| 19753 | a      |
| 19171 | que    |
| 18161 | la     |
| 16372 | el     |
| 16245 | los    |
| 14775 | en     |
| 7570  | su     |
| 6507  | no     |
| 6290  | se     |
| 6086  | del    |
| 5683  | por    |
| 5679  | para   |
| 5582  | las    |
| 5423  | con    |
| 5054  | sus    |
| 4222  | al     |
| 4148  | lo     |
| 3947  | Jehová |
| 3475  | tu     |
| 3136  | le     |
| 3129  | mi     |
| 3073  | es     |
| 2925  | como   |
| 2862  | sobre  |
| 2495  | hijos  |
| 2401  | porque |
| 2278  | me     |

|        |   |
|--------|---|
| 386734 | e |
| 336644 | a |
| 290673 | o |
| 247686 | s |
| 198289 | r |
| 176162 | n |
| 162770 | l |
| 155209 | i |
| 153536 | d |
| 122380 | u |
| 118244 | t |
| 98668  | c |
| 75768  | m |
| 58764  | p |
| 47013  | h |
| 46622  | b |
| 44340  | y |
| 38375  | v |
| 32389  | q |
| 25075  | g |
| 20824  | j |

## Biblia vs. “El Señor de los Anillos”

|       |        |       |       |        |   |        |   |
|-------|--------|-------|-------|--------|---|--------|---|
| 43239 | de     | 22024 | de    | 386734 | e | 263492 | a |
| 32747 | y      | 18301 | y     | 336644 | a | 259933 | e |
| 19753 | a      | 13794 | la    | 290673 | o | 207765 | o |
| 19171 | que    | 12680 | que   | 247686 | s | 157190 | s |
| 18161 | la     | 10616 | el    | 198289 | r | 148349 | r |
| 16372 | el     | 10222 | en    | 176162 | n | 145738 | n |
| 16245 | los    | 10133 | a     | 162770 | l | 122697 | l |
| 14775 | en     | 8689  | los   | 155209 | i | 105690 | d |
| 7570  | su     | 6652  | se    | 153536 | d | 101391 | i |
| 6507  | no     | 5947  | un    | 122380 | u | 82732  | u |
| 6290  | se     | 5489  | las   | 118244 | t | 81460  | t |
| 6086  | del    | 5115  | no    | 98668  | c | 67446  | c |
| 5683  | por    | 4491  | del   | 75768  | m | 58916  | m |
| 5679  | para   | 4386  | una   | 58764  | p | 47176  | p |
| 5582  | las    | 3637  | lo    | 47013  | h | 38281  | b |
| 5423  | con    | 3268  | por   | 46622  | b | 25864  | y |
| 5054  | sus    | 3047  | con   | 44340  | y | 25784  | h |
| 4222  | al     | 2760  | al    | 38375  | v | 24897  | g |
| 4148  | lo     | 2520  | más   | 32389  | q | 23091  | v |
| 3947  | Jehová | 2421  | como  | 25075  | g | 20418  | q |
| 3475  | tu     | 2136  | pero  | 20824  | j | 13342  | j |
| 3136  | le     | 1909  | dijo  |        |   |        |   |
| 3129  | mi     | 1771  | había |        |   |        |   |
| 3073  | es     | 1735  | para  |        |   |        |   |
| 2925  | como   | 1615  | Pero  |        |   |        |   |
| 2862  | sobre  | 1614  | es    |        |   |        |   |
| 2495  | hijos  | 1545  | si    |        |   |        |   |
| 2401  | porque | 1513  | le    |        |   |        |   |
| 2278  | me     | 1493  | me    |        |   |        |   |



# ASCII kodea

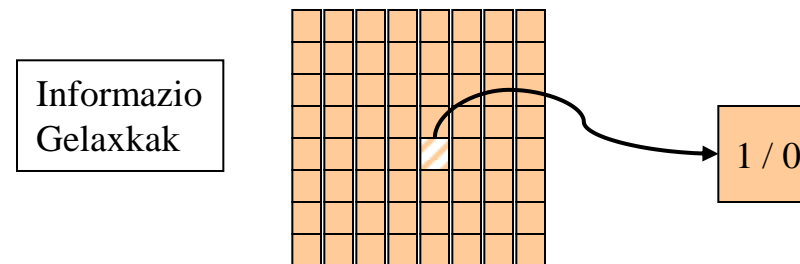
(American Standard Code for Information Interchange)

| kar   | zenb | kar   | zenb | kar | zenb | kar | zenb | kar | zenb | kar | zenb | kar   | zenb |
|-------|------|-------|------|-----|------|-----|------|-----|------|-----|------|-------|------|
| (nul) | 0    | (dc4) | 20   | ( ) | 40   | (<) | 60   | (P) | 80   | (d) | 100  | (x)   | 120  |
| (soh) | 1    | (nak) | 21   | ( ) | 41   | (=) | 61   | (Q) | 81   | (e) | 101  | (y)   | 121  |
| (stx) | 2    | (syn) | 22   | (*) | 42   | (>) | 62   | (R) | 82   | (f) | 102  | (z)   | 122  |
| (etx) | 3    | (etb) | 23   | (+) | 43   | (?) | 63   | (S) | 83   | (g) | 103  | ({)   | 123  |
| (eot) | 4    | (can) | 24   | (,) | 44   | (@) | 64   | (T) | 84   | (h) | 104  | ( )   | 124  |
| (enq) | 5    | (em)  | 25   | (-) | 45   | (A) | 65   | (U) | 85   | (i) | 105  | (})   | 125  |
| (ack) | 6    | (sub) | 26   | (.) | 46   | (B) | 66   | (V) | 86   | (j) | 106  | (~)   | 126  |
| (bel) | 7    | (esc) | 27   | (/) | 47   | (C) | 67   | (W) | 87   | (k) | 107  | (del) | 127  |
| (bs)  | 8    | (fs)  | 28   | (0) | 48   | (D) | 68   | (X) | 88   | (l) | 108  |       |      |
| (ht)  | 9    | (gs)  | 29   | (1) | 49   | (E) | 69   | (Y) | 89   | (m) | 109  |       |      |
| (lf)  | 10   | (rs)  | 30   | (2) | 50   | (F) | 70   | (Z) | 90   | (n) | 110  |       |      |
| (vt)  | 11   | (us)  | 31   | (3) | 51   | (G) | 71   | ([  | 91   | (o) | 111  |       |      |
| (np)  | 12   | (sp)  | 32   | (4) | 52   | (H) | 72   | (\  | 92   | (p) | 112  |       |      |
| (cr)  | 13   | (!)   | 33   | (5) | 53   | (I) | 73   | (]  | 93   | (q) | 113  |       |      |
| (so)  | 14   | (")   | 34   | (6) | 54   | (J) | 74   | (^  | 94   | (r) | 114  |       |      |
| (si)  | 15   | (#)   | 35   | (7) | 55   | (K) | 75   | (_  | 95   | (s) | 115  |       |      |
| (dle) | 16   | (\$)  | 36   | (8) | 56   | (L) | 76   | (`  | 96   | (t) | 116  |       |      |
| (dc1) | 17   | (%)   | 37   | (9) | 57   | (M) | 77   | (a) | 97   | (u) | 117  |       |      |
| (dc2) | 18   | (&)   | 38   | (:) | 58   | (N) | 78   | (b) | 98   | (v) | 118  |       |      |
| (dc3) | 19   | (')   | 39   | (;) | 59   | (O) | 79   | (c) | 99   | (w) | 119  |       |      |

nul → Nul  
 bel → Bell  
 lf → Line Feed  
 cr → Carriage Return

# Kode bitarra

( *BIT* : *BI*nary uni*T* )



**Sexua:** Gizonezkoa/Emakumezkoa --> 2 balio posible

1 bit

**Urtaroa:** Udaberria/Udara/Udazkena/negua --> 4 balio posible

2 bit

**Hilabetea:** Urtarrila/Otsaila/.../Abendua --> 12 balio posible

4 bit

**Zenbakiak ... Koloreak ...**

????



Irudi originala



2 Kolore (txuribeltzean)



Irudi originala



256 Kolore



128 Kolore



64 Kolore

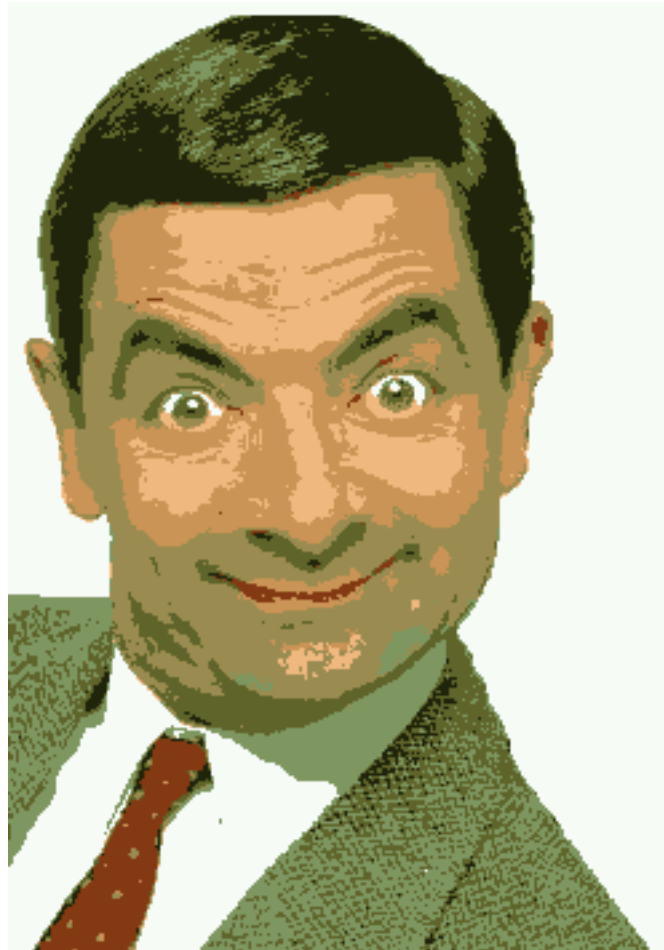




32 Kolore



16 Kolore



8 Kolore



4 Kolore



2 Kolore



2 Kolore (txuribeltzean)

$n$  bit  $\longrightarrow 2^n$  zeinu/simbolo

8 bit (Byte)  $\longrightarrow$  256 zeinu  $\longrightarrow$  *karakterek*

16 bit (“Word”)  $\longrightarrow$  65.536 zeinu  $\longrightarrow$  *zenb. osoak*

32 bit (“Long Word”)  $\rightarrow$  4.294.967.296 zeinu  $\longrightarrow$  *osoak/errealak*

$n^\circ$  bit/byte/...  $\sim$  informazio kantitatea

1 KByte (KB) =  $2^{10}$  (1024) byte

1 MegaByte (MB) =  $2^{20}$  byte = 1024 KB

1 GigaByte (GB) =  $2^{30}$  byte = 1024 MB

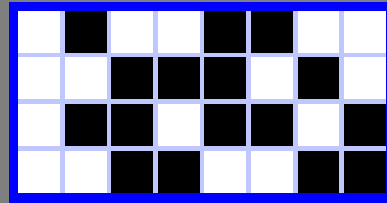
1 TeraByte (TB) =  $2^{40}$  byte = 1024 GB

# ASCII kodea

| Char  | Dec | Oct  | Hex  | Char | Dec | Oct  | Hex  | Char | Dec | Oct  | Hex  | Char  | Dec | Oct  | Hex  |
|-------|-----|------|------|------|-----|------|------|------|-----|------|------|-------|-----|------|------|
| (nul) | 0   | 0000 | 0x00 | (sp) | 32  | 0040 | 0x20 | @    | 64  | 0100 | 0x40 | `     | 96  | 0140 | 0x60 |
| (soh) | 1   | 0001 | 0x01 | !    | 33  | 0041 | 0x21 | A    | 65  | 0101 | 0x41 | a     | 97  | 0141 | 0x61 |
| (stx) | 2   | 0002 | 0x02 | "    | 34  | 0042 | 0x22 | B    | 66  | 0102 | 0x42 | b     | 98  | 0142 | 0x62 |
| (etx) | 3   | 0003 | 0x03 | #    | 35  | 0043 | 0x23 | C    | 67  | 0103 | 0x43 | c     | 99  | 0143 | 0x63 |
| (eot) | 4   | 0004 | 0x04 | \$   | 36  | 0044 | 0x24 | D    | 68  | 0104 | 0x44 | d     | 100 | 0144 | 0x64 |
| (enq) | 5   | 0005 | 0x05 | %    | 37  | 0045 | 0x25 | E    | 69  | 0105 | 0x45 | e     | 101 | 0145 | 0x65 |
| (ack) | 6   | 0006 | 0x06 | &    | 38  | 0046 | 0x26 | F    | 70  | 0106 | 0x46 | f     | 102 | 0146 | 0x66 |
| (bel) | 7   | 0007 | 0x07 | '    | 39  | 0047 | 0x27 | G    | 71  | 0107 | 0x47 | g     | 103 | 0147 | 0x67 |
| (bs)  | 8   | 0010 | 0x08 | (    | 40  | 0050 | 0x28 | H    | 72  | 0110 | 0x48 | h     | 104 | 0150 | 0x68 |
| (ht)  | 9   | 0011 | 0x09 | )    | 41  | 0051 | 0x29 | I    | 73  | 0111 | 0x49 | i     | 105 | 0151 | 0x69 |
| (nl)  | 10  | 0012 | 0x0a | *    | 42  | 0052 | 0x2a | J    | 74  | 0112 | 0x4a | j     | 106 | 0152 | 0x6a |
| (vt)  | 11  | 0013 | 0x0b | +    | 43  | 0053 | 0x2b | K    | 75  | 0113 | 0x4b | k     | 107 | 0153 | 0x6b |
| (np)  | 12  | 0014 | 0x0c | ,    | 44  | 0054 | 0x2c | L    | 76  | 0114 | 0x4c | l     | 108 | 0154 | 0x6c |
| (cr)  | 13  | 0015 | 0x0d | -    | 45  | 0055 | 0x2d | M    | 77  | 0115 | 0x4d | m     | 109 | 0155 | 0x6d |
| (so)  | 14  | 0016 | 0x0e | .    | 46  | 0056 | 0x2e | N    | 78  | 0116 | 0x4e | n     | 110 | 0156 | 0x6e |
| (si)  | 15  | 0017 | 0x0f | /    | 47  | 0057 | 0x2f | O    | 79  | 0117 | 0x4f | o     | 111 | 0157 | 0x6f |
| (dle) | 16  | 0020 | 0x10 | 0    | 48  | 0060 | 0x30 | P    | 80  | 0120 | 0x50 | p     | 112 | 0160 | 0x70 |
| (dc1) | 17  | 0021 | 0x11 | 1    | 49  | 0061 | 0x31 | Q    | 81  | 0121 | 0x51 | q     | 113 | 0161 | 0x71 |
| (dc2) | 18  | 0022 | 0x12 | 2    | 50  | 0062 | 0x32 | R    | 82  | 0122 | 0x52 | r     | 114 | 0162 | 0x72 |
| (dc3) | 19  | 0023 | 0x13 | 3    | 51  | 0063 | 0x33 | S    | 83  | 0123 | 0x53 | s     | 115 | 0163 | 0x73 |
| (dc4) | 20  | 0024 | 0x14 | 4    | 52  | 0064 | 0x34 | T    | 84  | 0124 | 0x54 | t     | 116 | 0164 | 0x74 |
| (nak) | 21  | 0025 | 0x15 | 5    | 53  | 0065 | 0x35 | U    | 85  | 0125 | 0x55 | u     | 117 | 0165 | 0x75 |
| (syn) | 22  | 0026 | 0x16 | 6    | 54  | 0066 | 0x36 | V    | 86  | 0126 | 0x56 | v     | 118 | 0166 | 0x76 |
| (etb) | 23  | 0027 | 0x17 | 7    | 55  | 0067 | 0x37 | W    | 87  | 0127 | 0x57 | w     | 119 | 0167 | 0x77 |
| (can) | 24  | 0030 | 0x18 | 8    | 56  | 0070 | 0x38 | X    | 88  | 0130 | 0x58 | x     | 120 | 0170 | 0x78 |
| (em)  | 25  | 0031 | 0x19 | 9    | 57  | 0071 | 0x39 | Y    | 89  | 0131 | 0x59 | y     | 121 | 0171 | 0x79 |
| (sub) | 26  | 0032 | 0x1a | :    | 58  | 0072 | 0x3a | Z    | 90  | 0132 | 0x5a | z     | 122 | 0172 | 0x7a |
| (esc) | 27  | 0033 | 0x1b | ;    | 59  | 0073 | 0x3b | [    | 91  | 0133 | 0x5b | {     | 123 | 0173 | 0x7b |
| (fs)  | 28  | 0034 | 0x1c | <    | 60  | 0074 | 0x3c | \    | 92  | 0134 | 0x5c |       | 124 | 0174 | 0x7c |
| (gs)  | 29  | 0035 | 0x1d | =    | 61  | 0075 | 0x3d | ]    | 93  | 0135 | 0x5d | }     | 125 | 0175 | 0x7d |
| (rs)  | 30  | 0036 | 0x1e | >    | 62  | 0076 | 0x3e | ^    | 94  | 0136 | 0x5e | ~     | 126 | 0176 | 0x7e |
| (us)  | 31  | 0037 | 0x1f | ?    | 63  | 0077 | 0x3f | _    | 95  | 0137 | 0x5f | (del) | 127 | 0177 | 0x7f |



# Laburbilduz...



Binary: 01001100001110100110110100110011

Base-ten Integer: 1278897459

Hexadecimal: 4c3a6d33

Real Number: 4.8870604E7

ASCII Text: L:m3