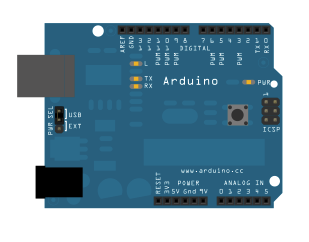
ASCII Table

This example demonstrates the advanced serial printing functions by generating on the serial monitor of the Arduino Software (IDE) a table of characters and their ASCII values in decimal, hexadecimal, octal, and binary. For more on ASCII, see asciitable.com

Hardware Required

* Arduino or Genuino Board

Circuit



None, but the board has to be connected to the computer through the serial port or the USB port.

Code

The sketch waits for a serial connection in the setup() then prints line by line the ASCII table up to the last printable character. When this is accomplished, it enters an endless loop in a while structure and nothing else happens. Closing and opening the serial monitor window of the Arduino Software (IDE) should reset the board and restart the sketch.

*/\*  
  ASCII table  
  
  Prints out byte values in all possible formats:  
  - as raw binary values  
  - as ASCII-encoded decimal, hex, octal, and binary values  
  
  For more on ASCII, see http://www.asciitable.com  
\*/*  
  
void **setup**() {  
  *//Initialize serial and wait for port to open:*  
  Serial.begin(9600);  
  while (!Serial) {  
    ; *// wait for serial port to connect. Needed for native USB port only*  
  }  
  
  *// prints title with ending line break*  
  Serial.println("ASCII Table ~ Character Map");  
}  
  
*// first visible ASCIIcharacter '!' is number 33:*  
int thisByte = 33;  
*// you can also write ASCII characters in single quotes.*  
*// for example, '!' is the same as 33, so you could also use this:*  
*// int thisByte = '!';*  
  
void **loop**() {  
  *// prints value unaltered, i.e. the raw binary version of the byte.*  
  *// The Serial Monitor interprets all bytes as ASCII, so 33, the first number,*  
  *// will show up as '!'*  
  Serial.write(thisByte);  
  
  Serial.print(", dec: ");  
  *// prints value as string as an ASCII-encoded decimal (base 10).*  
  *// Decimal is the default format for Serial.print() and Serial.println(),*  
  *// so no modifier is needed:*  
  Serial.print(thisByte);  
  *// But you can declare the modifier for decimal if you want to.*  
  *// this also works if you uncomment it:*  
  
  *// Serial.print(thisByte, DEC);*  
  
  
  Serial.print(", hex: ");  
  *// prints value as string in hexadecimal (base 16):*  
  Serial.print(thisByte, HEX);  
  
  Serial.print(", oct: ");  
  *// prints value as string in octal (base 8);*  
  Serial.print(thisByte, OCT);  
  
  Serial.print(", bin: ");  
  *// prints value as string in binary (base 2) also prints ending line break:*  
  Serial.println(thisByte, BIN);  
  
  *// if printed last visible character '~' or 126, stop:*  
  if (thisByte == 126) {    *// you could also use if (thisByte == '~') {*  
    *// This loop loops forever and does nothing*  
    while (true) {  
      continue;  
    }  
  }  
  *// go on to the next character*  
  thisByte++;  
}

Output

ASCII Table ~ Character Map

!, dec: 33, hex: 21, oct: 41, bin: 100001

", dec: 34, hex: 22, oct: 42, bin: 100010

#, dec: 35, hex: 23, oct: 43, bin: 100011

$, dec: 36, hex: 24, oct: 44, bin: 100100

%, dec: 37, hex: 25, oct: 45, bin: 100101

&, dec: 38, hex: 26, oct: 46, bin: 100110

', dec: 39, hex: 27, oct: 47, bin: 100111

(, dec: 40, hex: 28, oct: 50, bin: 101000

), dec: 41, hex: 29, oct: 51, bin: 101001

\*, dec: 42, hex: 2A, oct: 52, bin: 101010

+, dec: 43, hex: 2B, oct: 53, bin: 101011

,, dec: 44, hex: 2C, oct: 54, bin: 101100

-, dec: 45, hex: 2D, oct: 55, bin: 101101

., dec: 46, hex: 2E, oct: 56, bin: 101110

/, dec: 47, hex: 2F, oct: 57, bin: 101111

0, dec: 48, hex: 30, oct: 60, bin: 110000

1, dec: 49, hex: 31, oct: 61, bin: 110001

2, dec: 50, hex: 32, oct: 62, bin: 110010

3, dec: 51, hex: 33, oct: 63, bin: 110011

4, dec: 52, hex: 34, oct: 64, bin: 110100

5, dec: 53, hex: 35, oct: 65, bin: 110101

6, dec: 54, hex: 36, oct: 66, bin: 110110

7, dec: 55, hex: 37, oct: 67, bin: 110111

8, dec: 56, hex: 38, oct: 70, bin: 111000

9, dec: 57, hex: 39, oct: 71, bin: 111001

:, dec: 58, hex: 3A, oct: 72, bin: 111010

;, dec: 59, hex: 3B, oct: 73, bin: 111011

<, dec: 60, hex: 3C, oct: 74, bin: 111100

=, dec: 61, hex: 3D, oct: 75, bin: 111101

>, dec: 62, hex: 3E, oct: 76, bin: 111110

?, dec: 63, hex: 3F, oct: 77, bin: 111111

@, dec: 64, hex: 40, oct: 100, bin: 1000000

A, dec: 65, hex: 41, oct: 101, bin: 1000001

B, dec: 66, hex: 42, oct: 102, bin: 1000010

C, dec: 67, hex: 43, oct: 103, bin: 1000011

D, dec: 68, hex: 44, oct: 104, bin: 1000100

E, dec: 69, hex: 45, oct: 105, bin: 1000101

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| Screen shot: | | | | |
| How it works?  The sketch waits for a serial connection in the setup() then prints line by line the ASCII table up to the last printable character. When this is accomplished, it enters an endless loop in a while structure and nothing else happens. Closing and opening the serial monitor window of the Arduino Software (IDE) should reset the board and restart the sketch. | | | | |