Arduino Cheat Sheet

by Maker Learners

Structures

Basic Structure

```
void setup() {
   // Code here runs only once
when Arduino powers on or resets.
Used to initialize variables or
pin modes and call libraries.
}

void loop() {
   // Code here loops
continuously, allowing your
program to change and respond
}
```

Control Structure

```
break;  //exit loop or switch
continue;  //go to the next do/for/while loop
return;  //terminate function
return x;  //terminate function and return
the value x
if (x < 5) { ... } else { ... }
for (int i = 0 ; i < 10 ; i++) { ... }
while (x < 5) { ... } else { ... }
do { ... } while ( x < 5 ) ;
switch (var) {
    case 1:
        ...
        break;
    case 2:
        ...
        break;
}
```

Function Structure

<type> <name> <paramaters> { ... }
e.g. int double (int x) { return x * 2; }

Operators

Mathematical Operators

Many of the mathematical operators look the same, but some are different.

= Assignment
+ Add
- Subtract
*Multiply
/ Divide
% Modulo

Comparison Operators

== Equal to
!= Not Equal to
< Less than
> Greater than
<= Less than or Equal to
>= Greater than or Equal to

Compound Operators

++ Increment
-- Decrement
+= Compound addition
-= Compound subtraction
*= Compound multiplication
/= Compound division
&= Compound bitwise and
|= Compound bitwise or

Boolean Operators

&& And
|| Or
! Not

Bitwise Operators

& Bitwise and
^ Bitwise xor
<< Shift left
| Bitwise or
~ Bitwise not
>> Shift right

Functions

Pin Inputs and Outputs

Digital I / O

pinMode (pin, [INPUT / OUTPUT / INPUT_PULLUP])

int digitalread (pin)

digitalWrite (pin, [HIGH / LOW])

Analog In

int analogRead (pin)

analogReference ([DEFAULT / INTERNAL / EXTERNAL])

PWM Out

analogWrite (pin, value)

Time

delay (milisec)

delayMicroseconds (microsec)

Tones

Tone (pin, freqHz {, duration})

noTone (pin) //tone is limited to one pin at a time

Math

min (x, y) **max** (x, y) **abs** (x)
sin (rad) **cos** (rad) **tan** (rad)
sqrt (x) **pow** (base, exponent)
constrain (x, minVal, maxVal)
map (x, fromLow, fromHigh, toLow, toHigh)

Type Conversions

char (val) **byte** (val) **int** (val)
word (val) **long** (val) **float** (val)

Data

Data Types

boolean	true | false
char	Any symbol on ASCII chart
byte	Number from 0 to 255
int	Number from -32,768 to 32,767
unsigned int	Number from 0 to 65,535
long	Number from -2,147,483,648 to 2,147,483,647
unsigned long	Number from 0 to 4,294,967,295
float	Number from -3.4028235 x10^{38} to 3.4028235 x10^{38}
void	Declares a function has no return value

Strings

```
char  Str1[ 8 ] = { 'a', 'r', 'd', 'u', 'i', 'n', 'o' };
char  Str1[ 8 ] = { 'a', 'r', 'd', 'u', 'i', 'n', 'o' , '\0'};
/* strings made as character arrays above
need space for a null-terminator '\0'  */
char  Str1[ ] = "arduino";
char  Str1[ 10 ] = "arduino";
```

Arrays

```
int  myPins[ ]= { 2, 4, 8, 5 } ;
int  mInts[ 6 ] ;
int mySensVals[6] = {2, 4, -8, 3, 2} ;
char message[6] = "hello" ;
```