spark - Cheat Sheet

docs.spark.io

Structure

`void setup(){ ... }`
Initialization function.

`void loop(){ ... }`
Main program loop.

Control Structures

`if(x<5){ ... } [else { ... }]`
Run a block of code only if a condition is true. If an else statement is present, run this block if condition is false.

`for(int i=0; i<255; i++){ ... }`
Loop for a set count.

`while(x<5){ ... }`
Loop while a condition is true.

`break`
Escape from a loop control structure,

`continue`
Escape from the current iteration of a control structure

General Operators

`=`
Assignment.

`+, -, *, /, %`
Plus, minus, multiply, divide, modulo.

`==, !=`
Equal to, not equal to.

`<, <=, >, >=`
Less than, less than or equal to, greater than, greater than or equal to.

Bitwise Operators

`&, |, ^, ~`
Bitwise AND, OR, XOR, NOT.

`<<, >>`
Bitwise left shift, bitwise right shift.

Compound Operators

`++, --, +=, -=, *=, /=, &=, !=`
Increment, decrement, compound addition, compound subtraction, compound multiplication, compound division, compound bitwise AND, compound bitwise OR.

Pointer Access

`&, *`
Reference operator, dereference operator.

Constants

`HIGH, LOW`
Pin value constants.

`OUTPUT, INPUT, INPUT_PULLUP, INPUT_PULLDOWN`
Pin mode constants.

`true, false`
Boolean constants.

Data Types

`void`
Function type declaration for functions that return no information.

`boolean`
eg, true or false

`char`
8-bit (1-byte) number from -128 to 127.

`byte`
8-bit (1-byte) unsigned number from 0 to 255.

`int`
32-bit (4-byte) value from -2,147,483,648 to 2,147,483,647.

`unsigned int`
32-bit (4-byte) value from 0 to 4,294,967,295.

`long`
32-bit (4-byte) value from -2,147,483,648 to 2,147,483,647.

`unsigned long`
32-bit (4-byte) value from 0 to 4,294,967,295.

`short`
16-bit (2-byte) value from 32,768 to 32,767.

`float`
32-bit (4-byte) floating point number.

`double`
64-bit (8-byte) floating point number.

Arrays

`int myArray[6];`
An unpopulated integer array with 6 slots.

`int myArray[] = {1,2,3,4,5,6};`
A populated integer array with 6 slots.

`int myArray[6] = {1,2,3,4};`
A partially populated integer array with explicitly 6 slots.

Strings

Basic strings are represented as char arrays, however the spark core also has a String class with many more helper methods.

```
char s1[15];
char s2[6] = {'s','p','a','r','k'};
char s3[6] = {'s','p','a','r','k','\0'};
char s4[] = "spark";
char s5[6] = "spark";
char s6[15] = "spark";
```

Math

`min(x, y);`
Calculates the minimum of two numbers.

`max(x, y);`
Calculates the maximum of two numbers.

`abs(x);`
Computes the absolute value of a number.

`constrain(x, min, max);`
Constrains a number to be within a range.

`map(x, fromMin, fromMmax, toMin, toMax);`
Re-maps a number from one range to another.

`pow(base, exponent);`
Calculates the value of a number raised to a power.

`sqrt(x);`
Calculates the square root of a number.

Time

The spark core comes with basic timing methods, but also has a Time class with many more helper methods.

`millis();`
Returns the number of milliseconds since the Spark Core began running the current program.

`micros();`
Returns the number of microseconds since the Spark Core began running the current program.

`delay(ms);`
Pauses the program for the amount of time (in miliseconds) specified.

`delayMicroseconds(ms);`
Pauses the program for the amount of time (in microseconds) specified.

I/O

`pinMode(pin, mode);`
Configures the specified pin to behave either as an input or output.

`digitalWrite(pin, value);`
Write a HIGH or a LOW value to a digital pin.

`digitalRead(pin);`
Reads the value from a specified digital pin, either HIGH or LOW.

`analogWrite(pin, value);`
Writes an analog value (PWM wave) to a pin.

`analogRead(pin);`
Reads the value from the specified analog pin. Values range between 0 and 4095.

Interrupts

```
attachInterrupt(pin, function, mode);
```
Specifies a function to call when an external interrupt occur

```
detachInterrupt(pin);
```
Turns off the given interrupt.

```
noInterrupts();
```
Disabled interrupts.

```
interrupts();
```
Re-enabled interrupts.

Tone

```
tone(pin, frequency, duration);
```
Generates a square tone on the given pin.

```
noTone(pin);
```
Stops the current tone playing on the given pin

RGB

```
RGB.control(bool);
```
Takes and gives back user control of the built in RGB LED.

```
RGB.color(red, green, blue);
```
Set the color of the RGB with three values, 0 to 255.

```
RGB.brightness(val);
```
Scale the brightness value of all three RGB colors with one value, 0 to 255.

Servo

```
servo.attach(pin);
```
Setup a servo on a particular pin.

```
servo.detach();
```
Detach the servo variable from its pin.

```
servo.write(angle);
```
Set the angle of the servo.

```
servo.read();
```
Reads the current angle of the servo.

Cloud Functions

```
Spark.variable(name, var, type);
```
Expose a variable through the Spark Cloud.

```
Spark.function(name, function);
```
Expose a function through the Spark Cloud.

```
Spark.publish(name, data);
```
Publish an event through the Spark Cloud.

```
Spark.subscribe(name, function);
```
Subscribe to events published by Cores.

Cloud API

```
HEADER Bearer {ACCESS_TOKEN},
?access_token={ACCESS_TOKEN}
```
Authenticates the request with the given access token.

```
GET /v1/devices/{DEVICE_ID}/{VARIABLE}
```
Read a variables exposed through the Spark Cloud from the given device.

```
POST /v1/devices/{DEVICE_ID}/{FUNCTION}
```
Call a method exposed through the Spark Cloud on the given device.

```
GET /v1/devices/{DEVICE_ID}/events/
[/{EVENT}]
```
Open an SSE connection to the given devices event stream. .

Misc

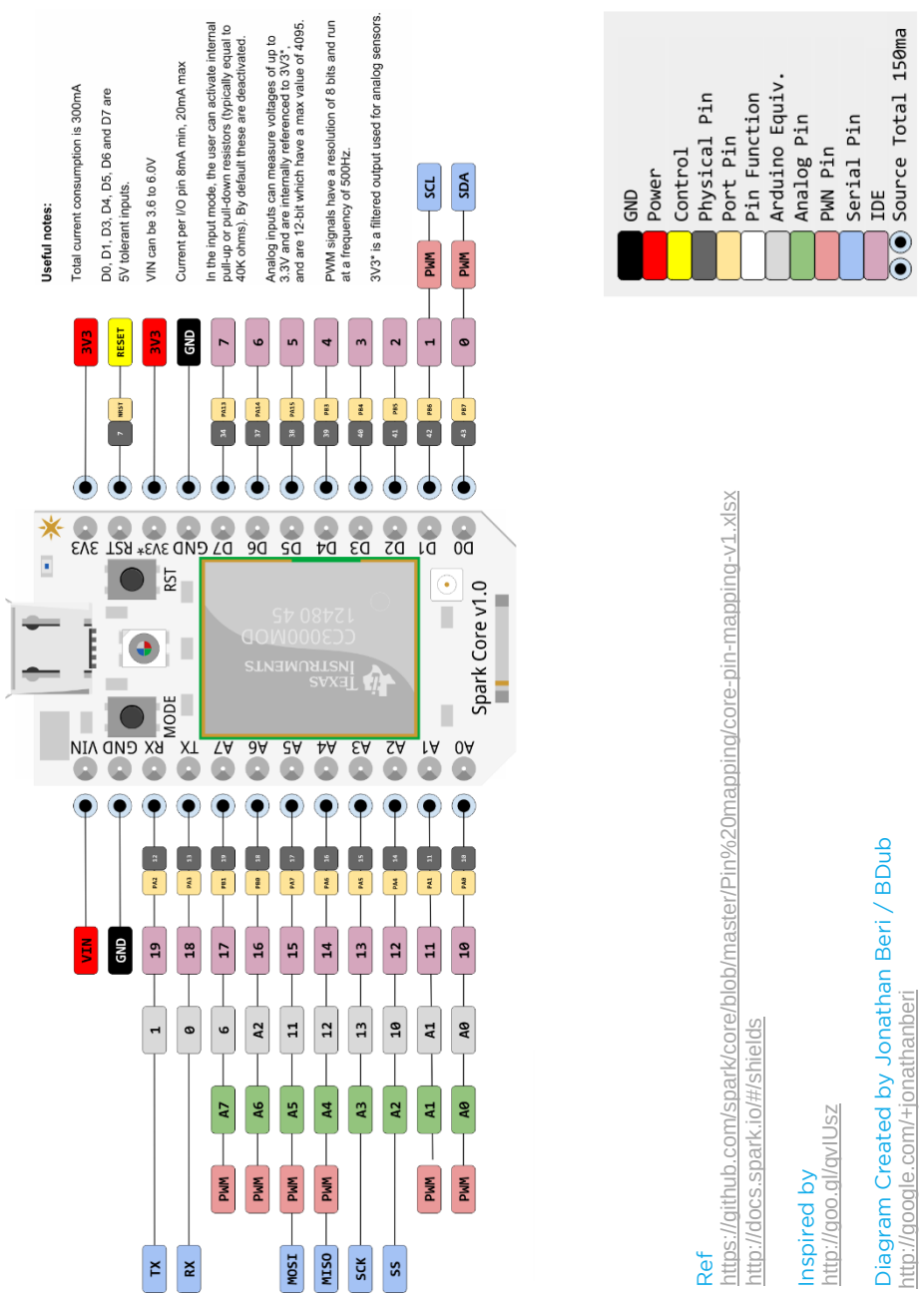
```
// ...
```
Single line comment.

```
/* ... */
```
Multi-line comment.

```
#define ANSWER 42
```
Constant variable declaration.

```
#include <myLib.h>
```
Includes a third party library.

Pinout Diagram



Ref
https://github.com/spark/core/blob/master/Pin%20mapping/core-pin-mapping-v1.xlsx
http://docs.spark.io/#/shields

Inspired by
http://goo.gl/qvlUsz

Diagram Created by Jonathan Beri / BDub
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