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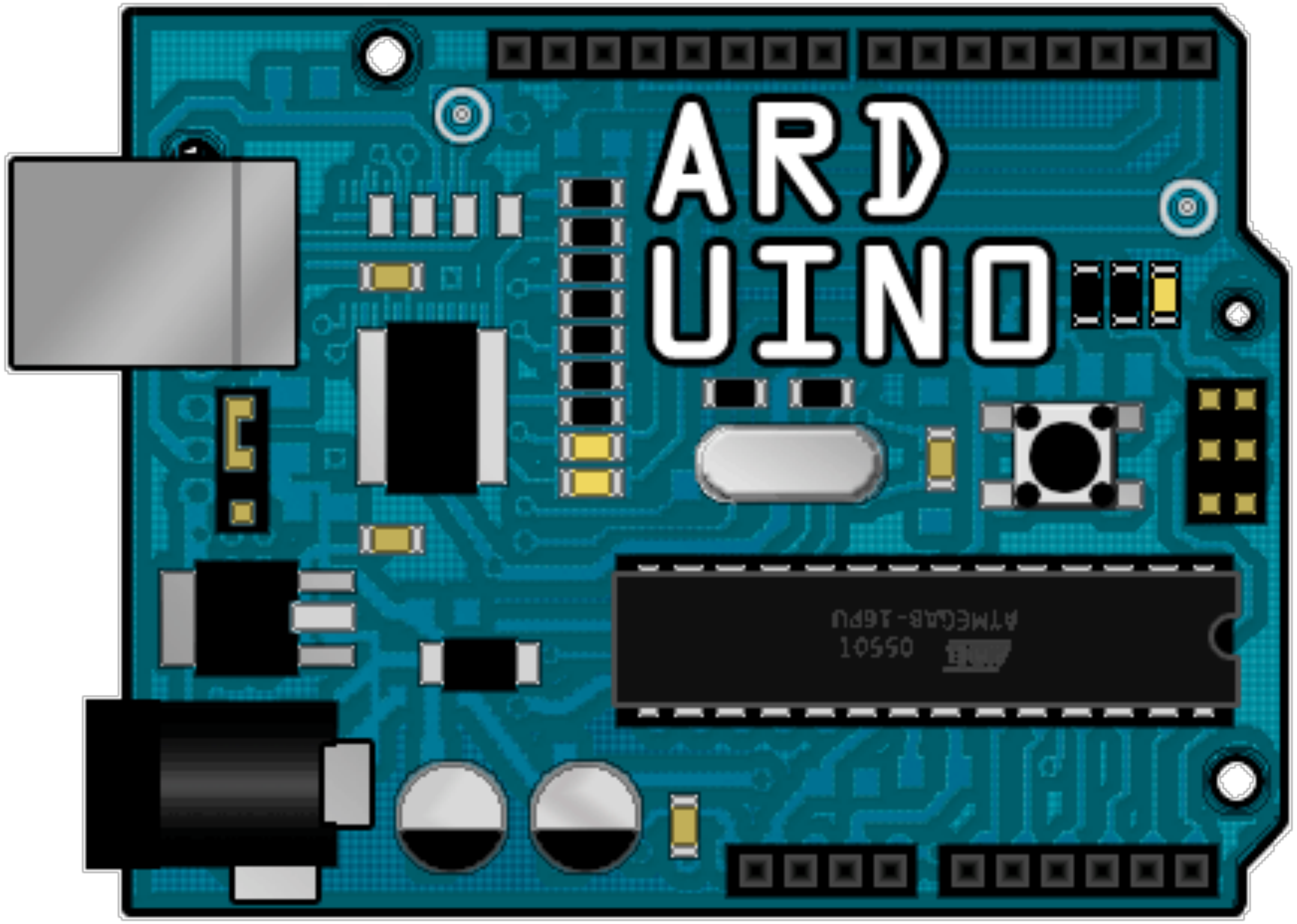
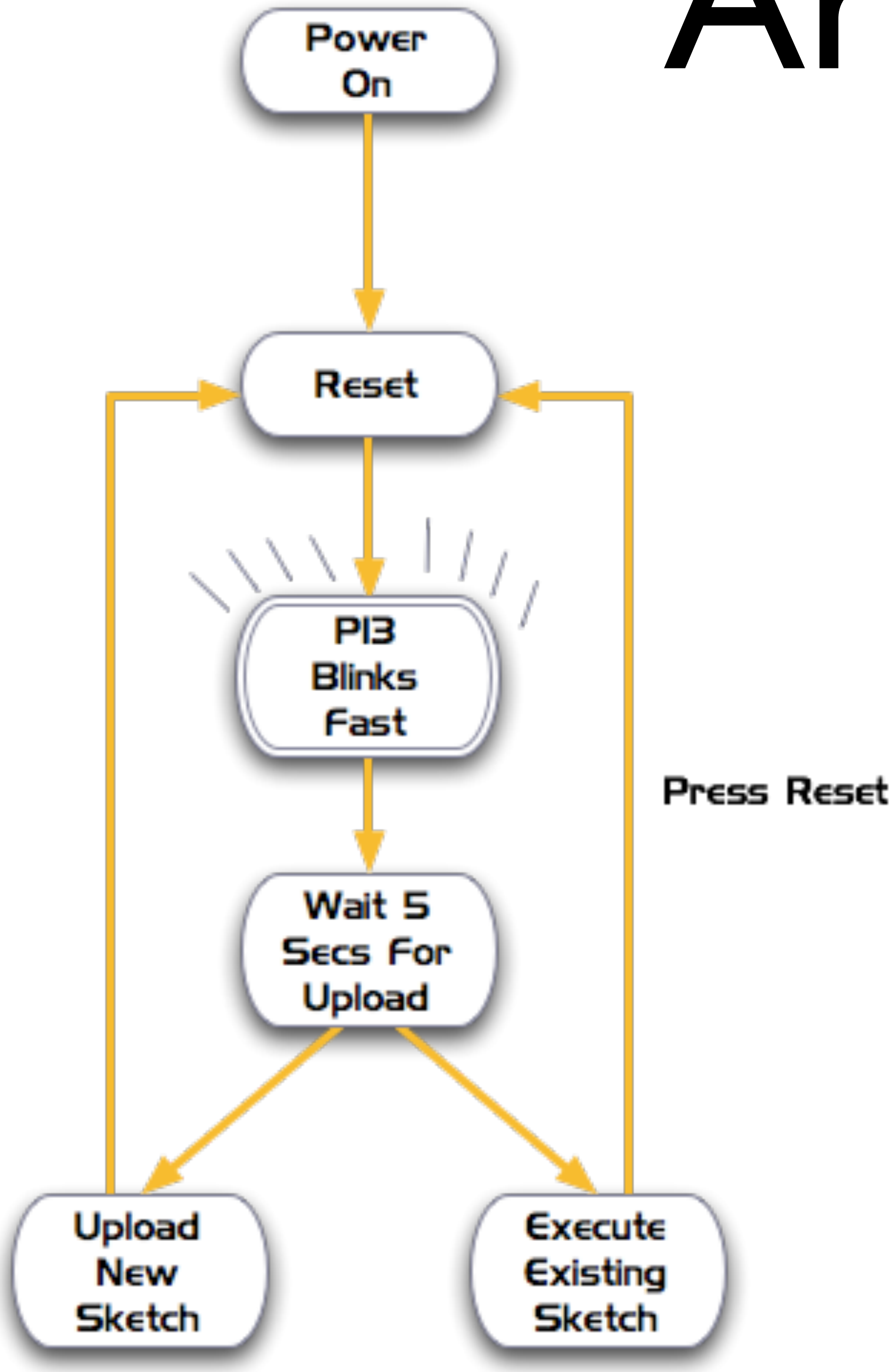
Programming the Arduino

CS4062 - Eoin Brazil - Semester 2 - 2009



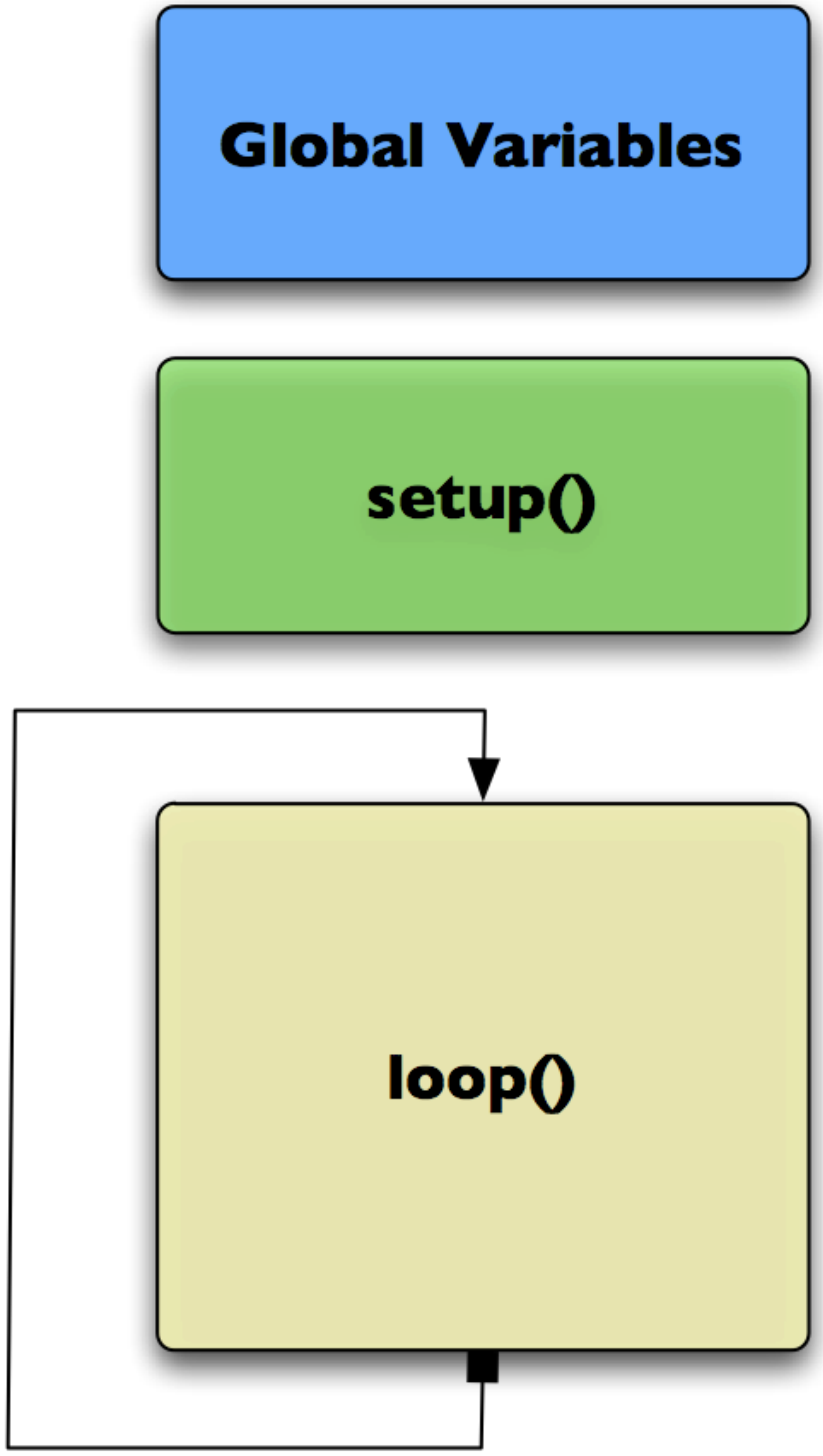
http://www.flickr.com/photos/collinmel/2317520331/

Programming an Arduino



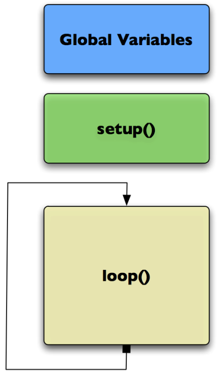
- ☆ Write program
- ☆ Compile (check for errors)
- ☆ Reset board
- ☆ Upload to board

An Arduino "Sketch"



- Declare variables at top
- Initialize
  - setup() – run once at beginning, set pins
- Running
  - loop() – run repeatedly, after setup()

An Arduino “Sketch”



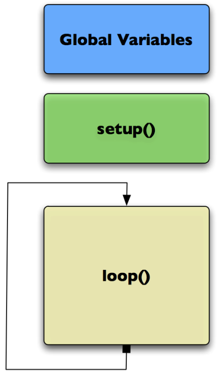
Global Variables

int ledPin = 13; – led connected to control pin 13

int aSensor = 0; – setup sensor 'aSensor' on analog pin 0

int statePin = LOW; – use this to hold the state of a pin

An Arduino "Sketch"

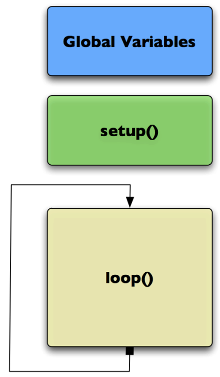


setup()

pinMode() – set a pin as input or output

serial.Begin() – setup to `talk' to the computer

An Arduino "Sketch"

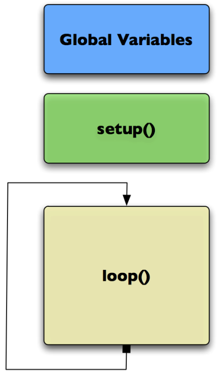


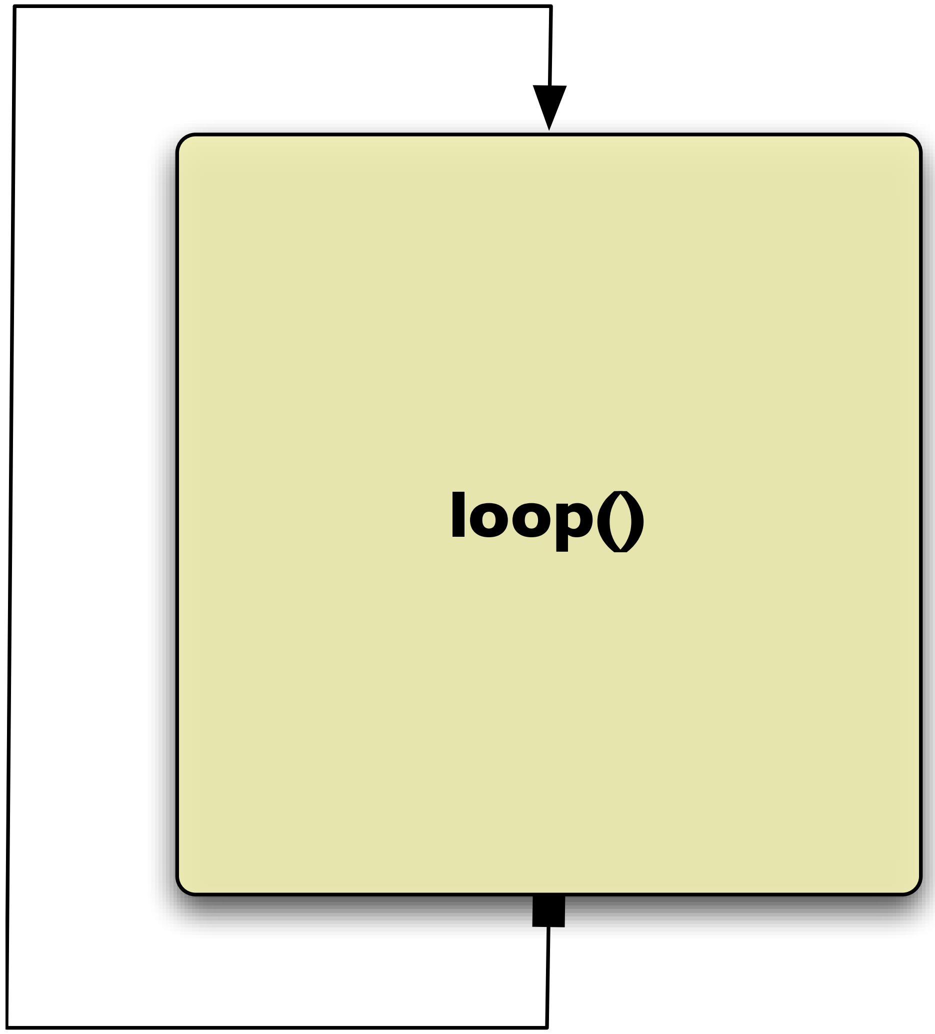
setup()

pinMode(ledPin, Output); – set the pin `ledPin' as an output

serial.Begin(9600); – talk to the computer at 9600 baud rate

An Arduino “Sketch”





digitalWrite() – set a digital pin high/low

digitalRead() – read a digital pin’s state

analogRead() – read an analog pin

analogWrite() – write an “analog” PWM value

delay() – wait an amount of time

millis() – get the current tim

`C’ language

- *char* - ascii character, 8 bits
- *short* - short integer, 16 bits, -32768 to 32767
- *int* - default integer, 16 or 32 bits
- *long* - large integer, at least 32 bits
- *float* - 32 bit floating point (e.g. 3.13)
- *double, long double* - 64 bit or greater

Character constants

- `*A*’- upper case A
- `\n’- newline character
- `\t’- tab character
- `\0’- null character (it is digit not char)
- `\012’ - character with octal value of 12 which is decimal 10

Commenting and Operators

- `//’ - single line comment
- `/* .... */’ - multiline comment
- + Addition - Subtraction * Multiplication
- / Division % Remander (mod)
- == != <= >= < >
- = is not ==

More Operators

- *Boolean operators* ! - not && - and || - or
- if (<statement>) { <statement/s> }
- if - else
- while (<statement>) { <statements/s> }
- Essential C - http://cslibrary.stanford.edu/101/