ARDUINO CHEAT SHEET

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ARTESIS PLANTIJN
HOGESCHOOL ANTWERPEN

Structure

```
void setup()
void loop()
```

Control Structures

```
if(x<5){}
for(int i = 0; i < 255; i++ ){}
while((x < 6 ){}
```

Further Syntax

```
//          Single line comment
/*..*/      Multi line comment
#define ANSWER 42
#include <myLib.h>
```

General Operators

=	assignment
+, −	addition, substraction
∗, /	multiplication, division
%	modulo
==	equal to
!=	not equal to
<	less than
<=	less than or equal to

Pointer Access

&	reference operator
∗	dereference operator

Bitwise Operators

&	bitwise AND
|	bitwise OR
∧	bitwise XOR
∼	bitwise NOT

Compound Operators

++	Increment
−−	Decrement
+=	Compound addition
&=	Compound bitwise AND

Constants

```
HIGH, LOW
INPUT, OUTPUT
true, false
```

53 : Decimal
B11010101 : Binary
0x5BA4 : Hexadecimal

Data Types

void	
boolean	0, 1, false, true
char	e.g. 'a' -128 → 127
unsigned char	0 → 255
int	-32.768 → 32.767
unsigned int	0 → 65535
long	-2.147.483.648 → 2.147.483.647
float	-3,4028235E+38 → 3.402835E+38
sizeof (myint)	returns 2 bytes

Arrays

```
int myInts[6];
int myPins[]=2,4,8,5,6;
int myVals[6]=2,-4,9,3,5;
```

Strings

```
char S1[15];
char S2[8]='A','r','d','u','i','n','o';
char S3[8]='A','r','d','u','i','n','o','\0';
char S4[]="Arduino";
char S5[8] = "Arduino";
char S6[15] = "Arduino";
```

Conversion

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

Qualifiers

static	Persist between calls
volatile	Use RAM (nice for ISR)
const	Mark read-only
PROGMEM	Use flash memory

Interrupts

attachInterrupt(interrupt, function, type)
detachInterrupt(interrupt)
boolean(interrupt)
interrupts()
noInterrupts()

Advanced I/O

tone(pin, freqhz)
tone(pin, freqhz, duration_ms)
noTone(pin)
shiftOut (dataPin, clockPin, how, value)
unsigned long **pulseIn**(pin, [HIGH,LOW])

Time

unsigned long **millis**()	50 days overflow
unsigned long **micros**()	70 min overflow
delay(ms)	
delayMicroseconds(us)	

Math

min(x,y)	**max**(x,y)	**abs**(x)
sin(rad)	**cos**(rad)	**tan**(rad)
pow(base, exponent)		
map(val, fromL, fromH, toL, toH)		
constrain(val, fromL, toH)		

Pseudo Random Numbers

randomSeed(seed)
long **random**(max)
long **random**(min, max)

ATmega328 Pinout

ATmega328 Arduino

RESET	1	28	SCL AIN5
DIO0 RXD	2	27	SDA AIN4
DIO1 TXD	3	26	AIN3
DIO2	4	25	AIN2
(pwm) DIO3	5	24	AIN1
DIO4	6	23	AIN0
VCC	7	22	GND
GND	8	21	AREF
XTAL1	9	20	AVCC
XTAL2	10	19	SCK DIO 13
(pwm) DIO5	11	18	MISO DIO 12
(pwm) DIO6	12	17	MOSI DIO 11 (pwm)
DIO7	13	16	DIO 10 (pwm)
DIO8	14	15	DIO 9 (pwm)
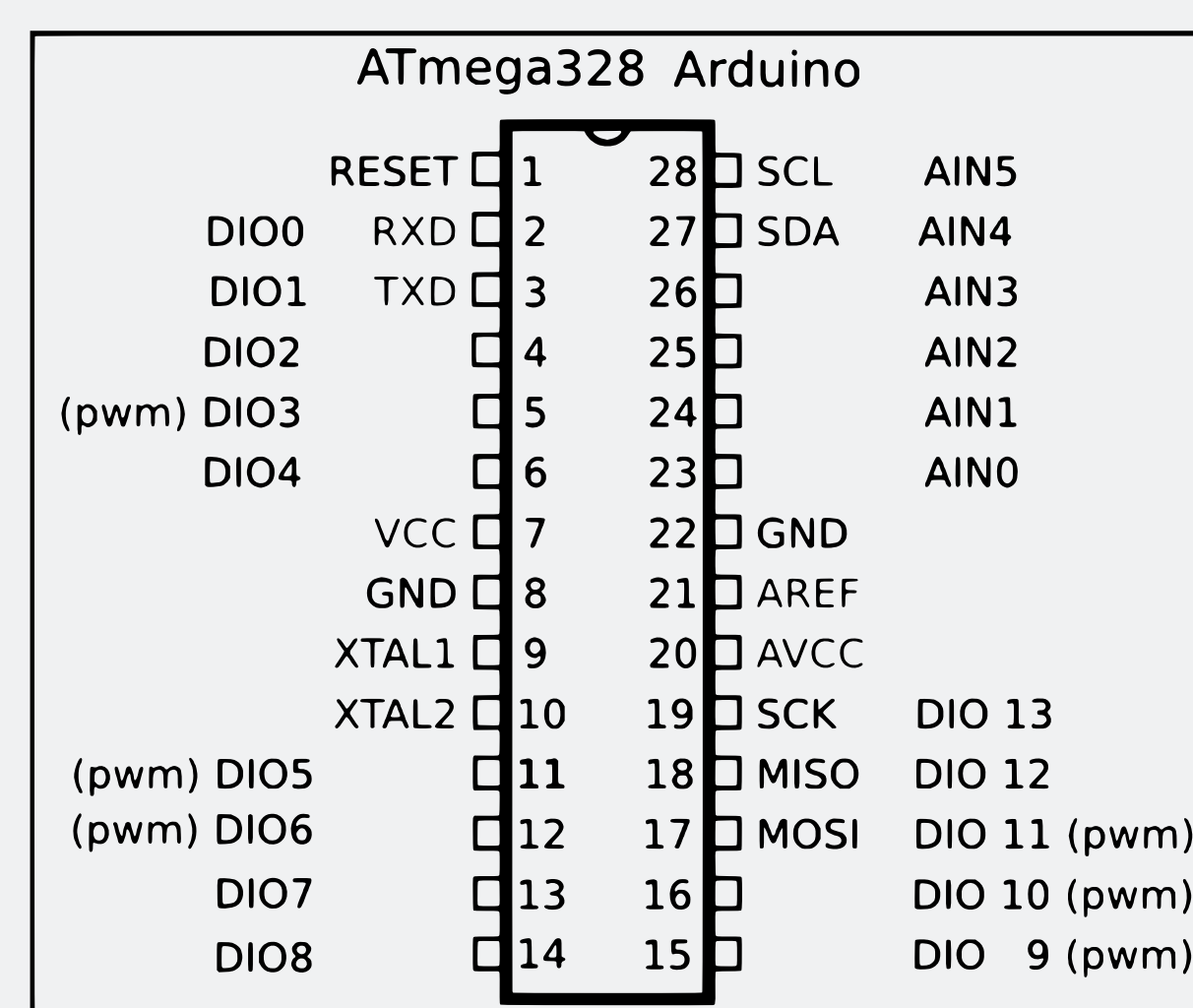
I/O Pins

	Uno	Mega
# of IO	14 + 6	54 + 11
Serial Pins 3	0 - RX, 1 -TX	RX1 → RX4
Interrupts	2,3	2,3,18,19,20,21
PWM Pins	5,6 - 9,10 - 3,11	0 → 13
SPI (SS, MOSI, MISO, SCK)	10→ 13	50→ 53
I2C (SDA, SCK)	A4, A5	20,21

Analog I/O

analogReference(EXTERNAL, INTERNAL)
analogRead(pin)
analogWrite(pin, value)

Digital I/O

pinMode(pin,[INPUT,OUTPUT])
digitalRead(pin)
digitalWrite(pin, value)

Serial Communication

Serial.begin(speed)
Serial.print("Text")
Serial.println("Text")

Websites

```
forum.arduino.cc
playground.arduino.cc
arduino.cc/en/Reference
```

Arduino Uno Board