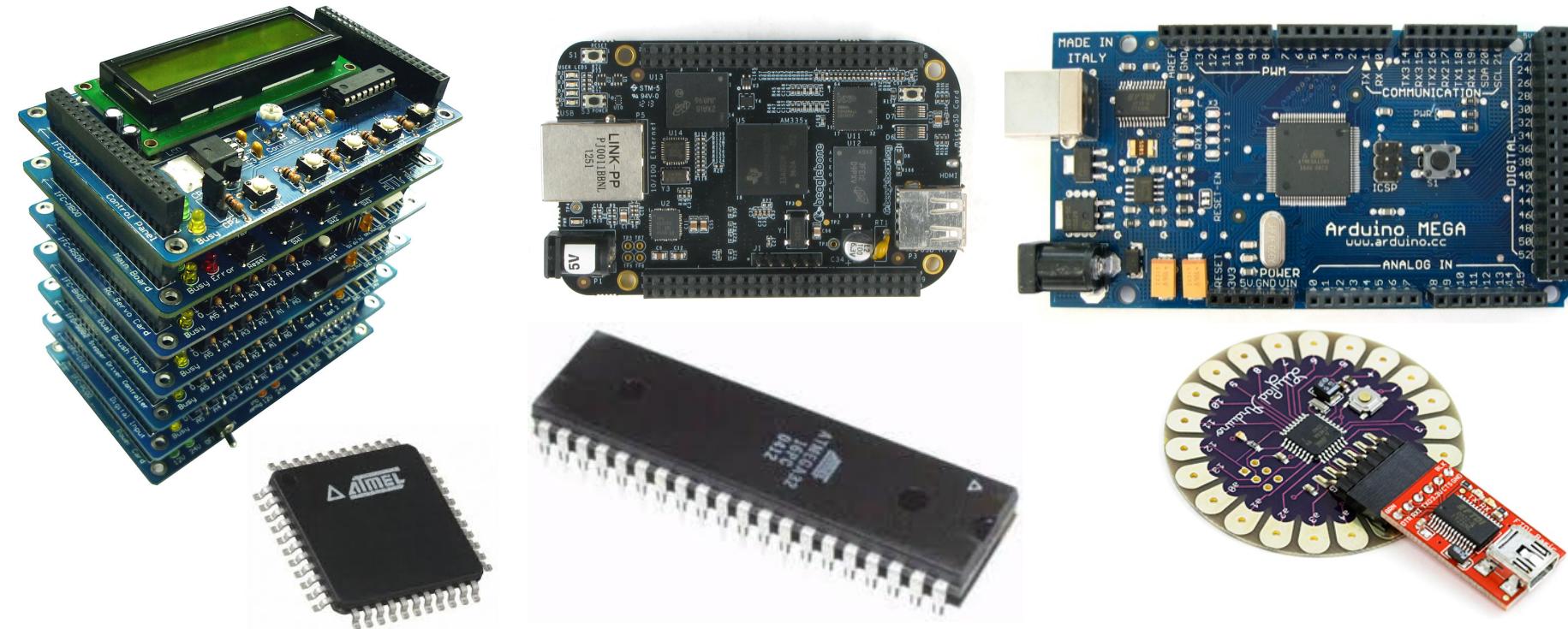


Micro-Controllers Workshop

Spring 2014 [June 1th @ 11 A.M.]

What are microcontrollers?

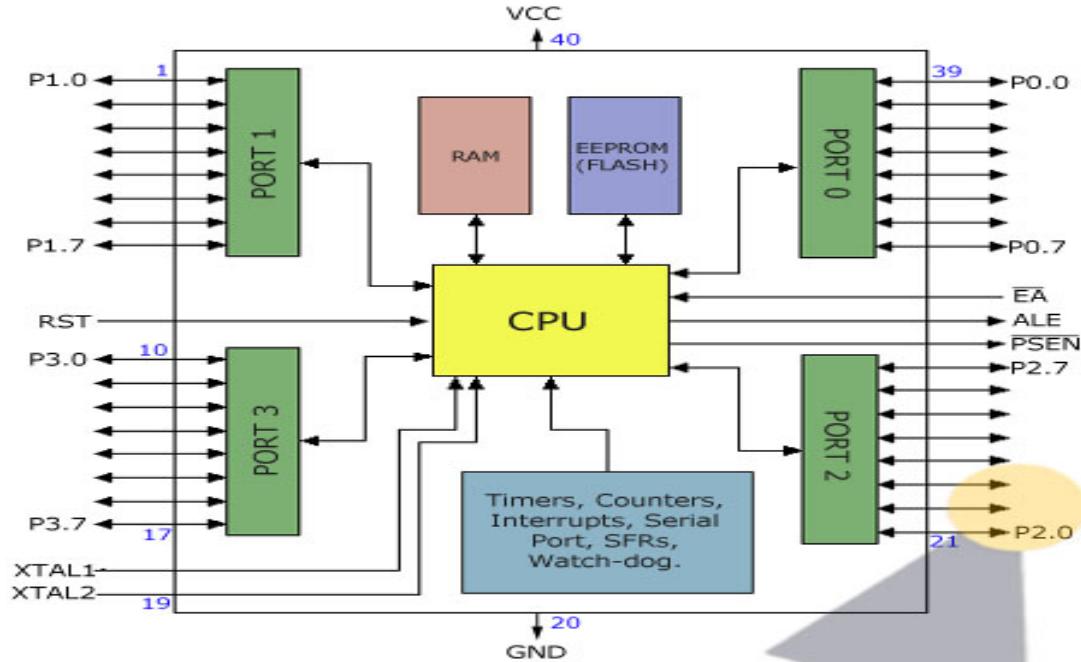


Why learn about them?

They are used everywhere:

- Microwaves
- Engines
- Cell phones
- TV
- Camcorders

In Embedded Controller



Programs

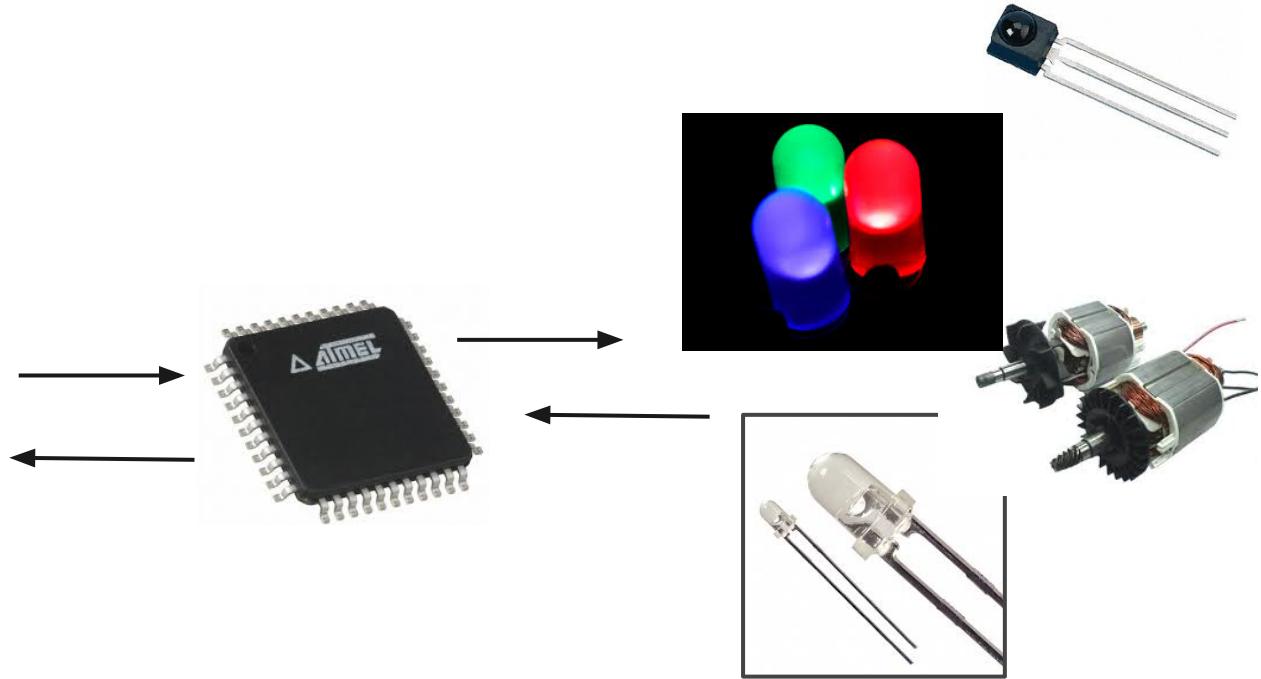
Process Info

```
# Generic relations were moved in Django revision 5172
try:
    from django.contrib.contenttypes import generic
except ImportError:
    import django.db.models as generic

class Tag(models.Model):
    """
    A basic tag.
    """
    name = models.CharField(max_length=50, unique=True,
                           db_index=True, validator_list=[isTag])

    objects = TagManager()

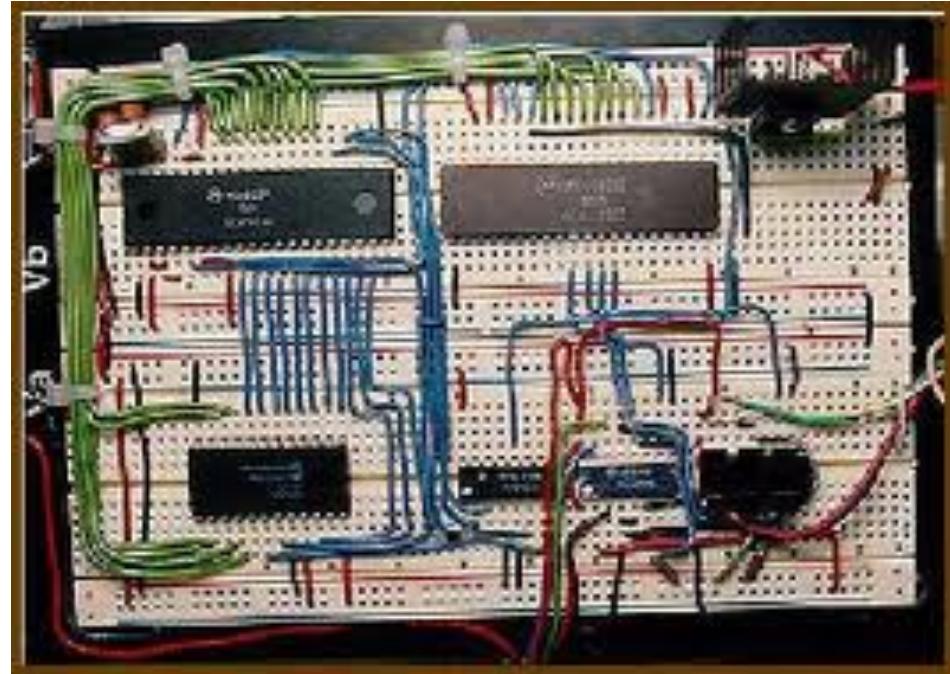
    class Meta:
        db_table = 'tag'
        verbose_name = 'Tag'
        verbose_name_plural = 'Tags'
        ordering = ('name',)
```



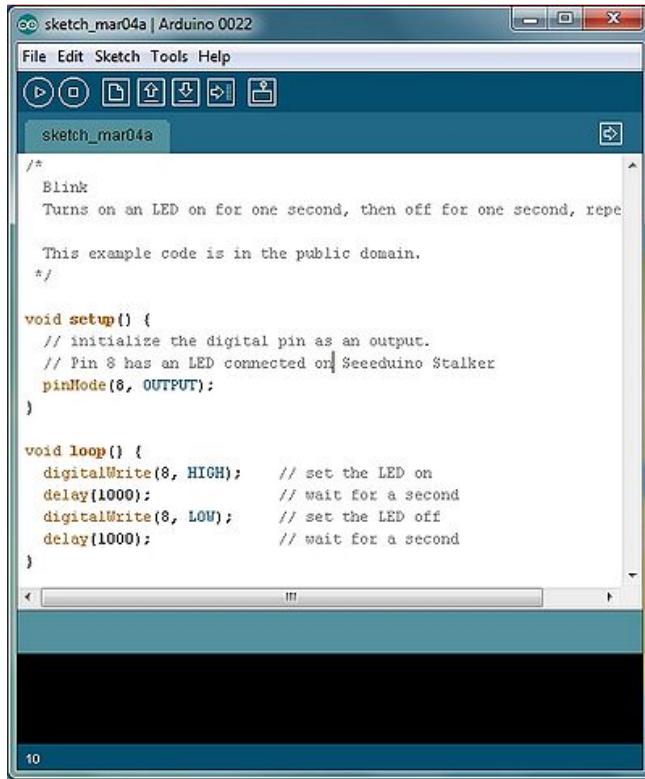
Circuits

Connect Devices

e.g. connecting a mouse to PC



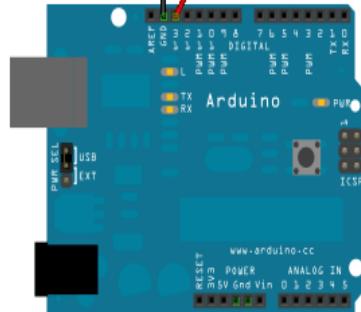
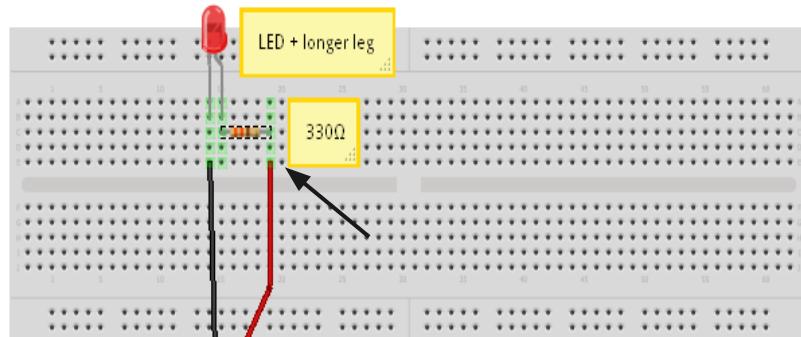
Blink Demonstration



The screenshot shows the Arduino IDE interface with the sketch `sketch_mar04a` open. The code is a standard Blink example:

```
sketch_mar04a | Arduino 0022
File Edit Sketch Tools Help
sketch_mar04a
/*
Blink
Turns on an LED on for one second, then off for one second, repe
This example code is in the public domain.
*/
void setup() {
  // initialize the digital pin as an output.
  // Pin 8 has an LED connected on| Seeduino Stalker
  pinMode(8, OUTPUT);
}

void loop() {
  digitalWrite(8, HIGH);      // set the LED on
  delay(1000);                // wait for a second
  digitalWrite(8, LOW);       // set the LED off
  delay(1000);                // wait for a second
}
```



Programming

- Understanding Basic Arduino Functions

- **setup()** called when a sketch starts. Use it to initialize variables, pin modes, start using libraries, etc. The setup function will only run once, after each powerup or reset of the Arduino board.
- **loop()** called in consecutive loop. Use it to control the board
- **pinMode(pin#, mode);** // mode: INPUT, OUTPUT
- **digitalWrite(pin#, value);** // value: HIGH, LOW
- **digitalRead(pin#);** // returns HIGH/LOW
- **delay(millisec);** // pauses program

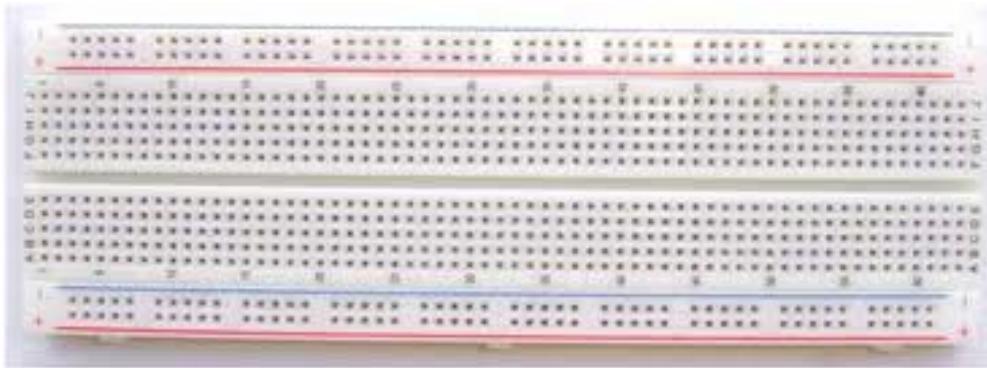
Programming Cont.

`setup()` : set up `pinMode`

`loop()` : do something with LED's

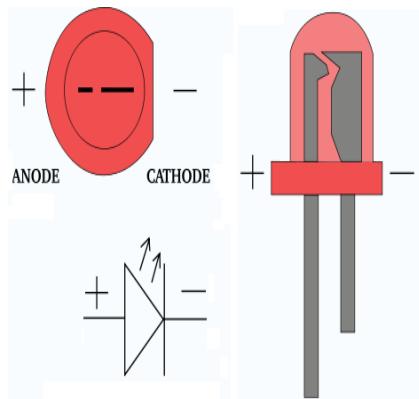
Circuit

Bread Board

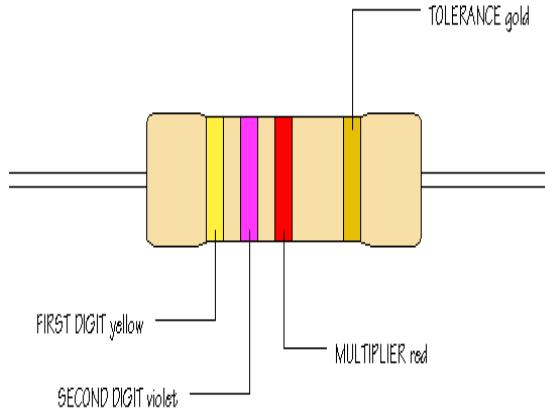


Circuit Cont.

LED's



Resistors



Have Fun

for(;;)

 Have fun;