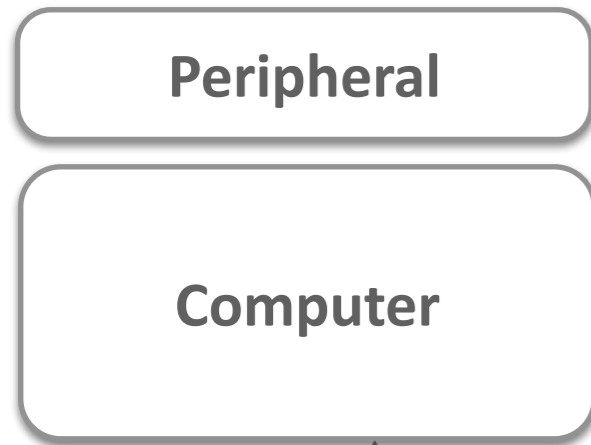


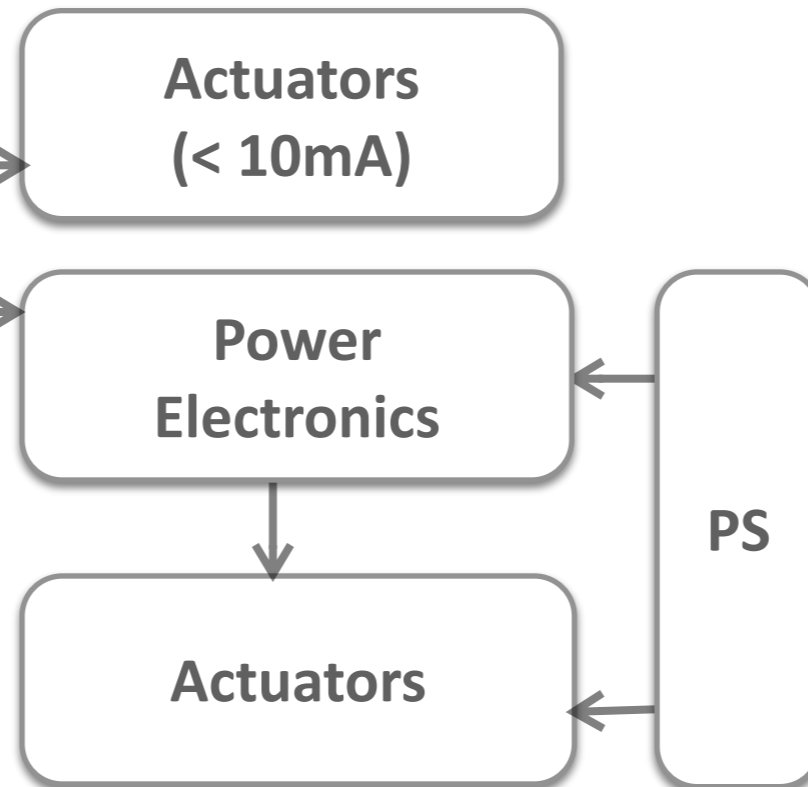
Sensors, Microcontrollers and Actuators

Microcontroller output
driving actuators

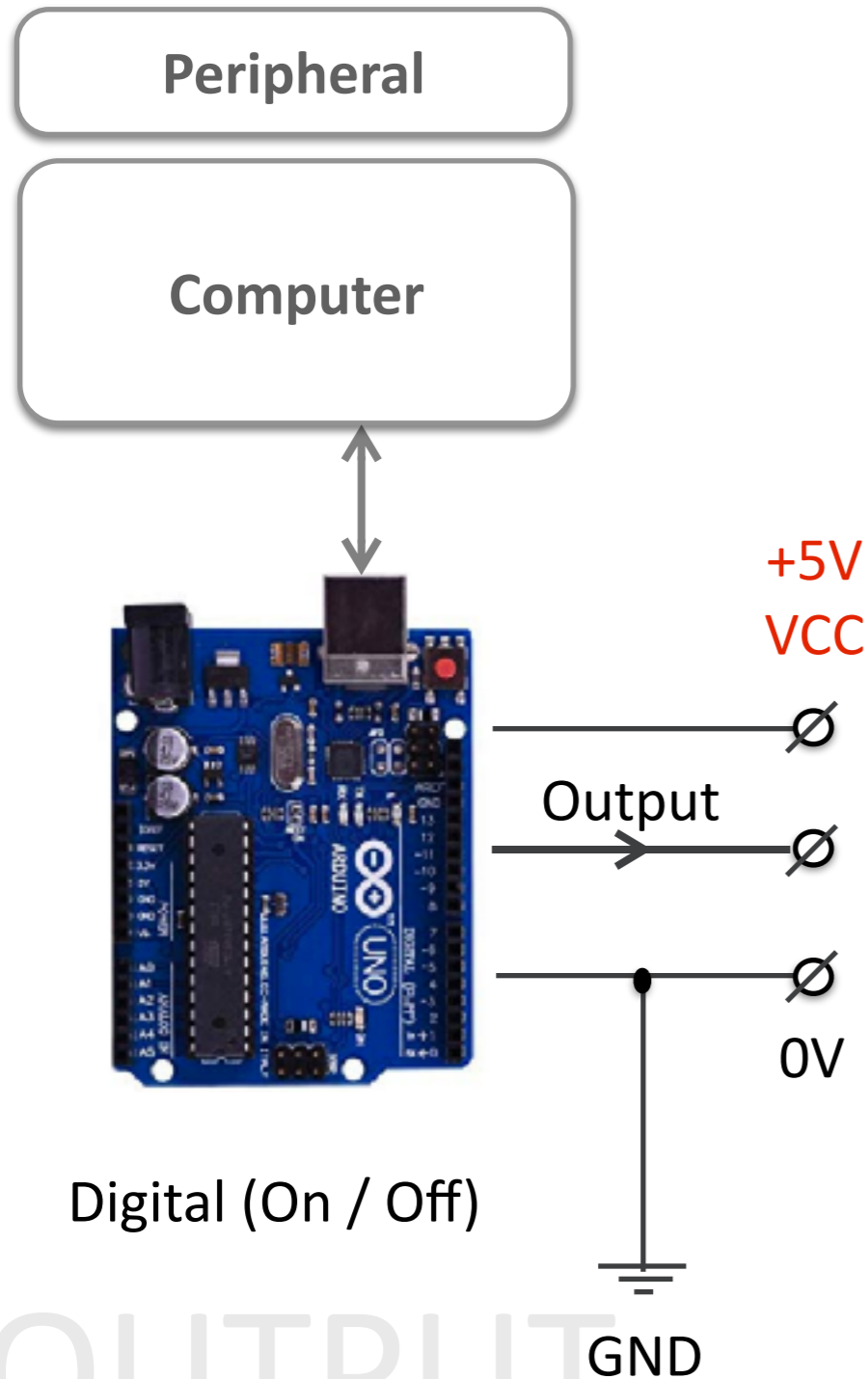
OUTPUT



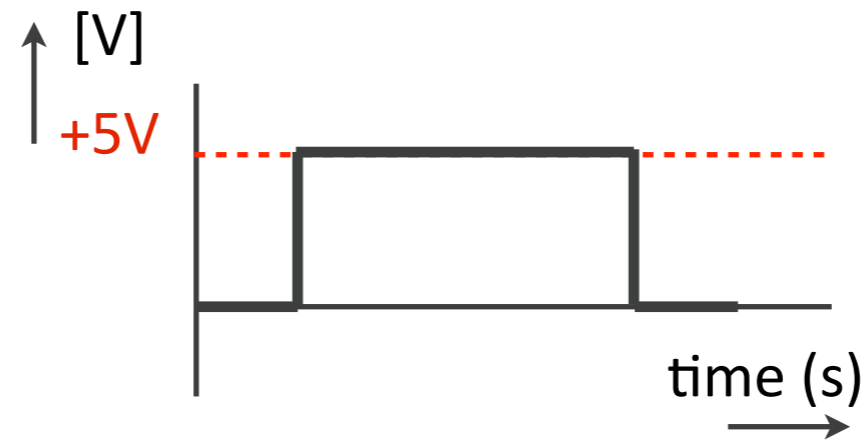
Microcontroller output driving actuators



OUTPUT



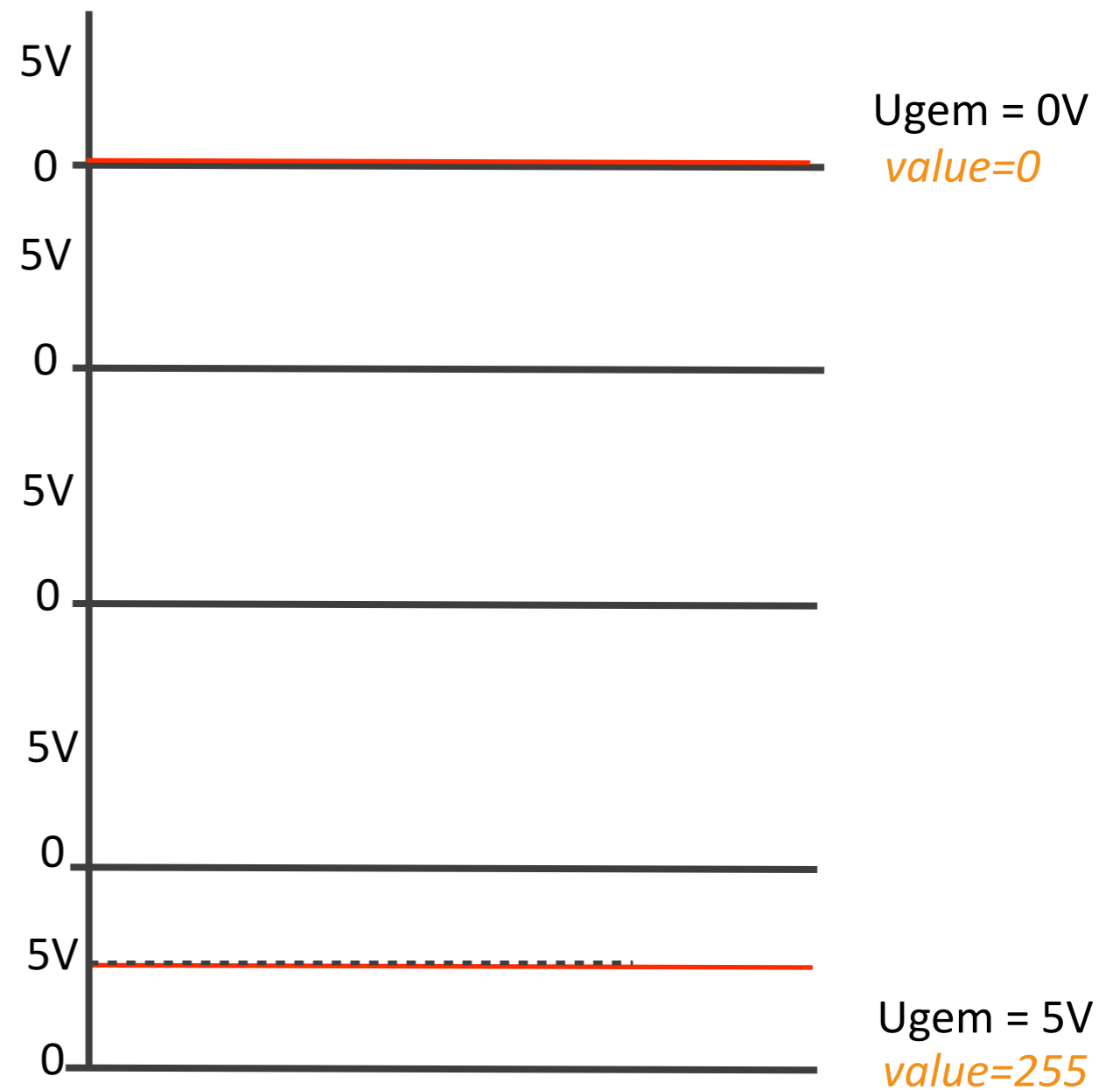
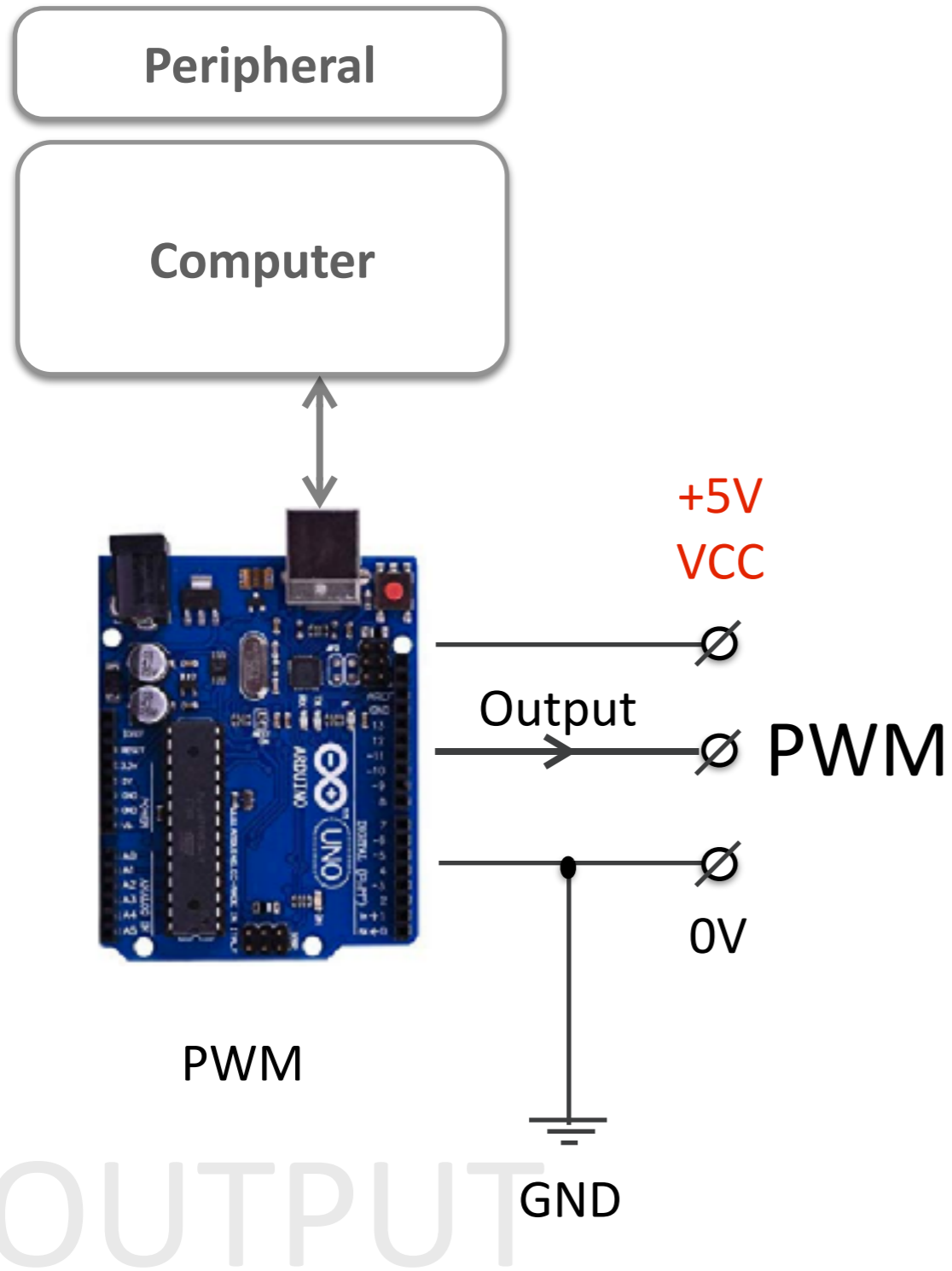
```
digitalWrite(PinName, HIGH);  
digitalWrite(PinName, LOW);
```



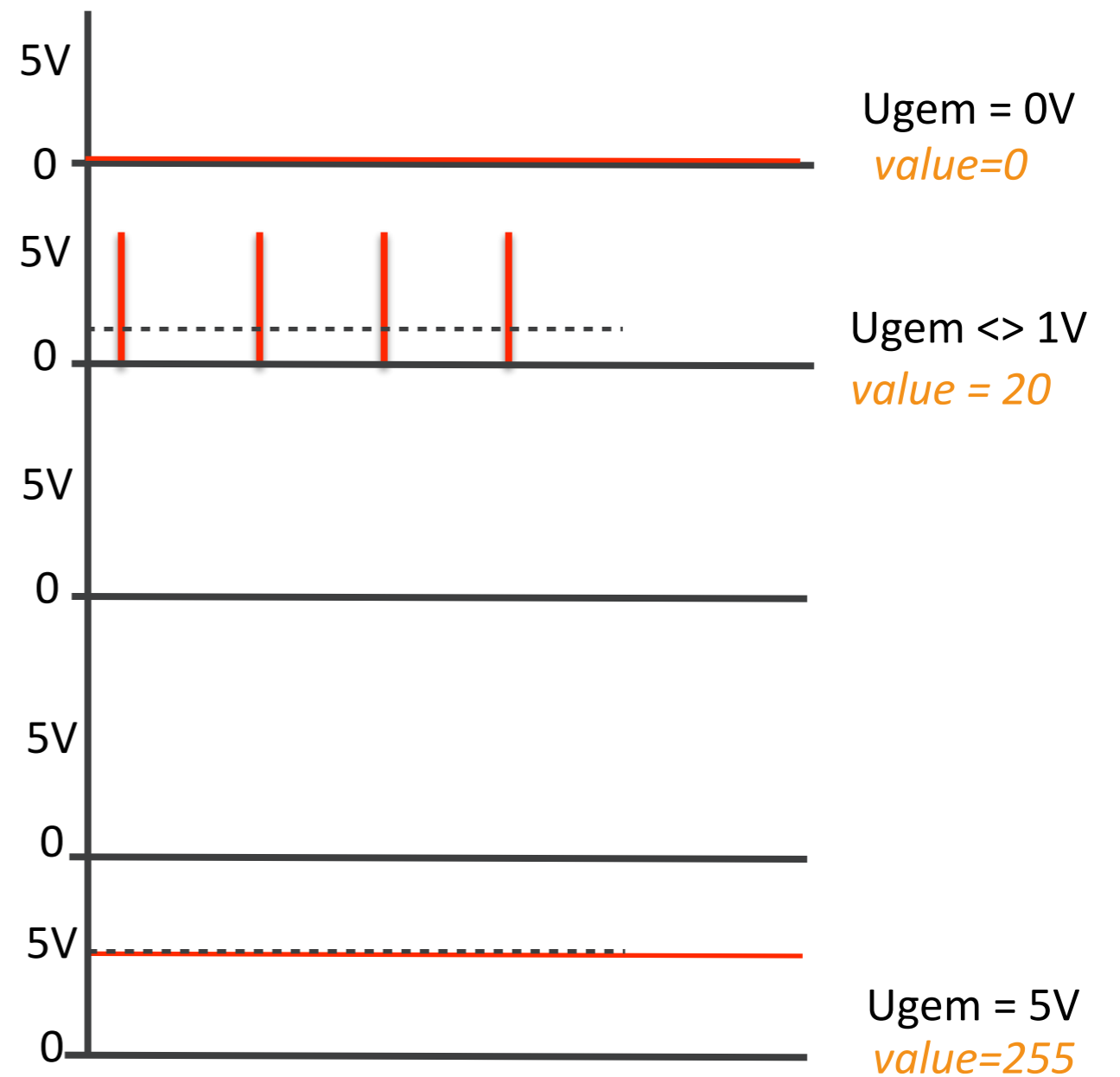
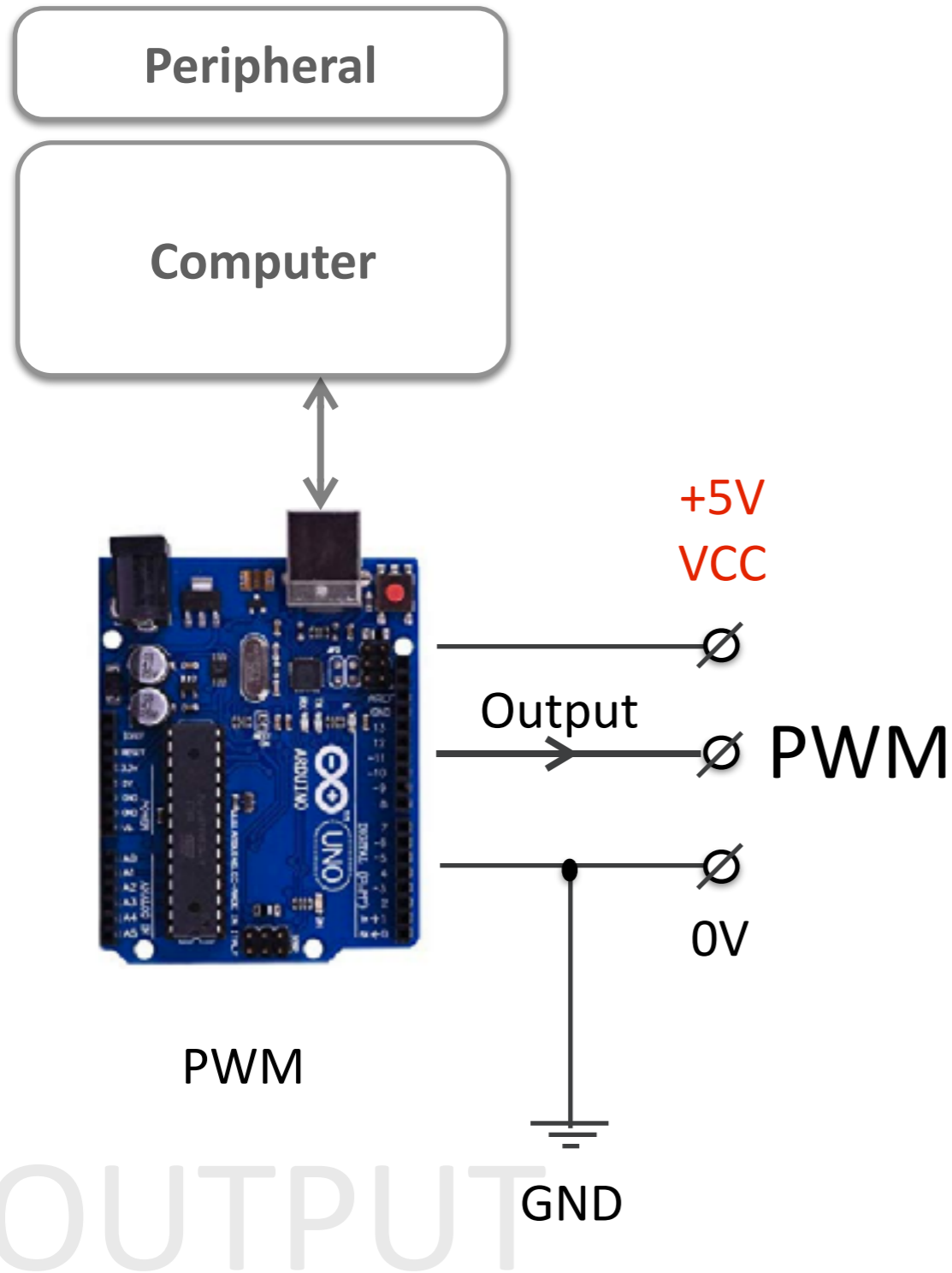
Digital 0-5V ON/OFF

OUTPUT

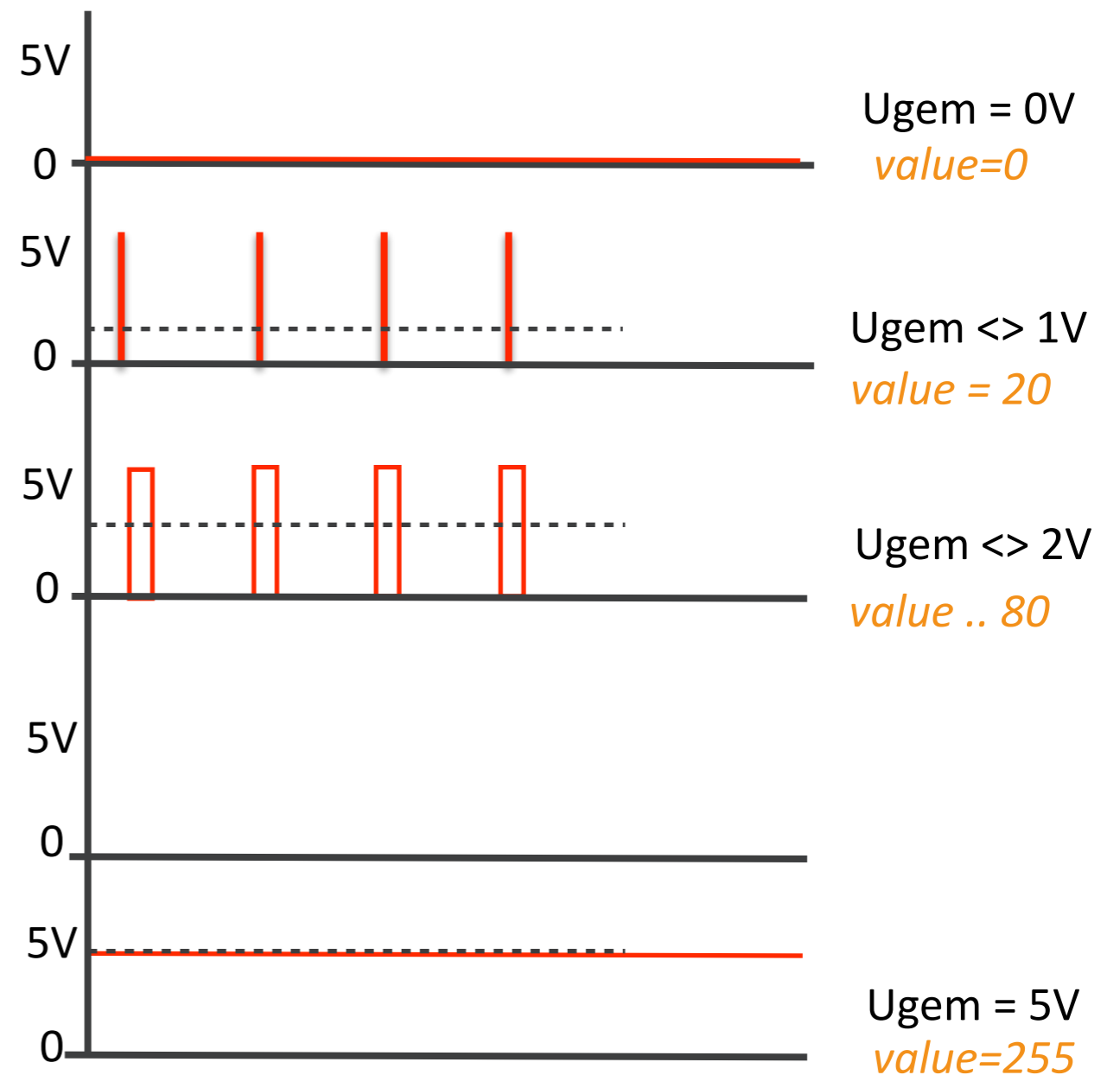
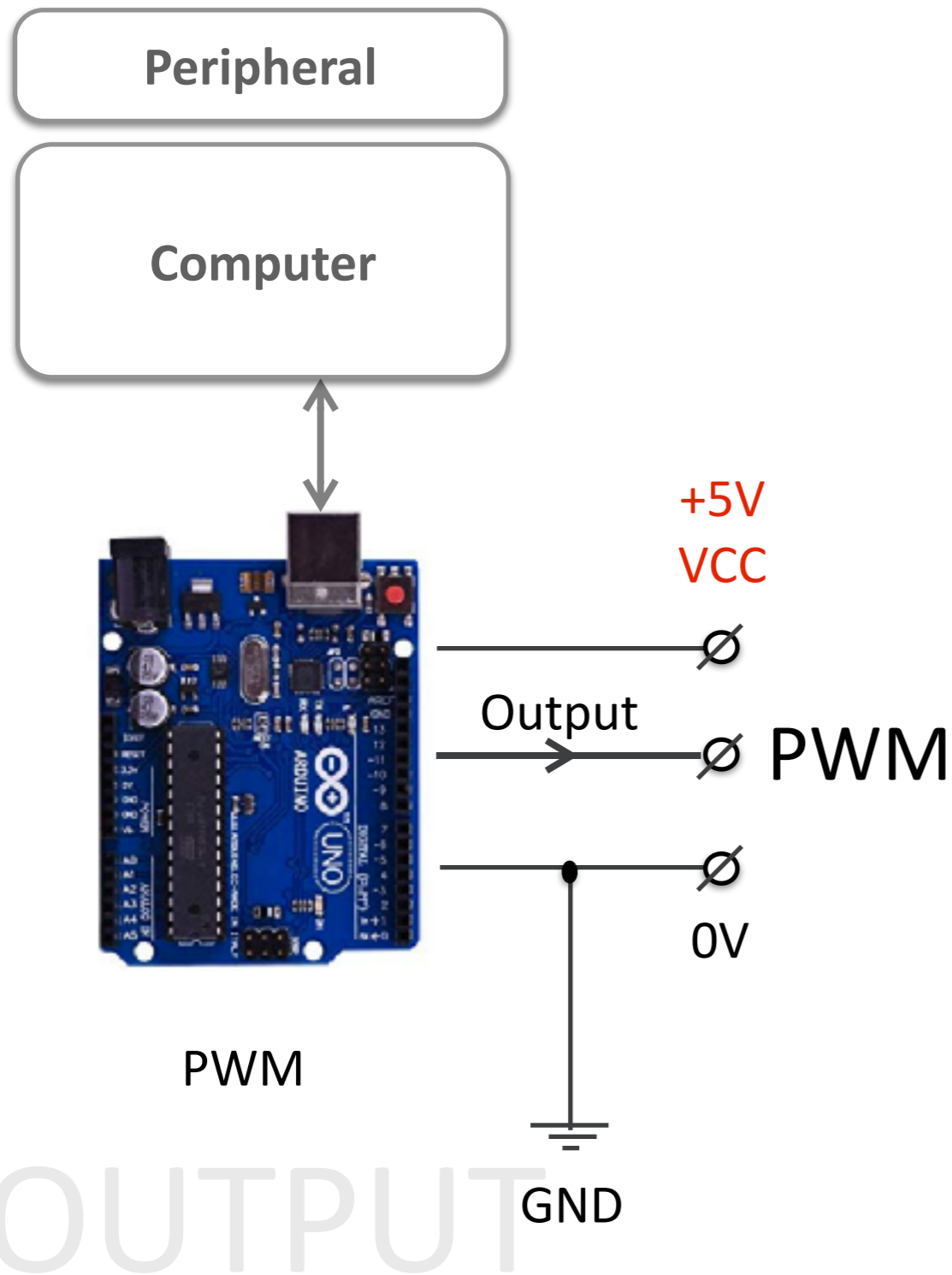
analogWrite(PinName, value);



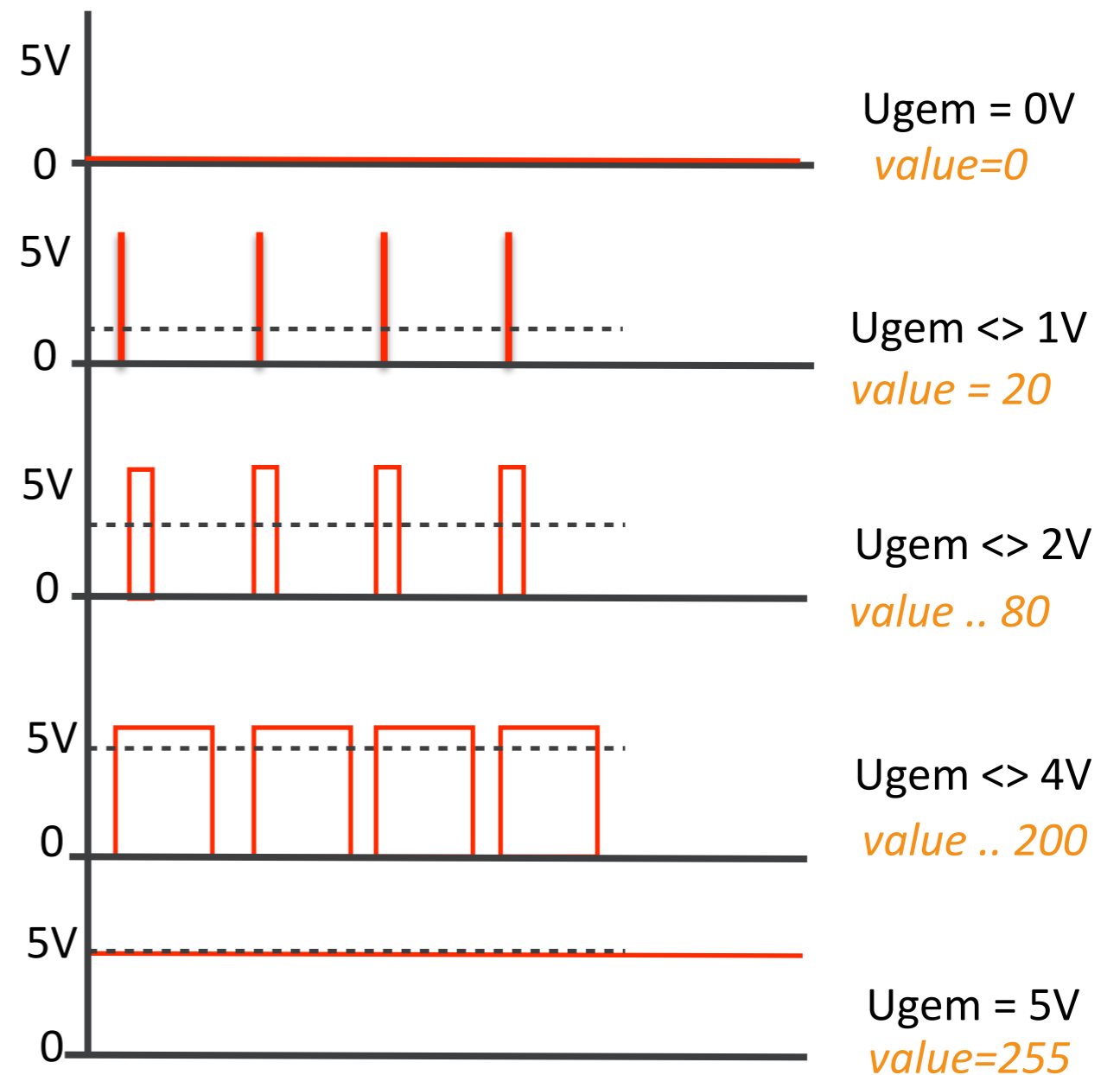
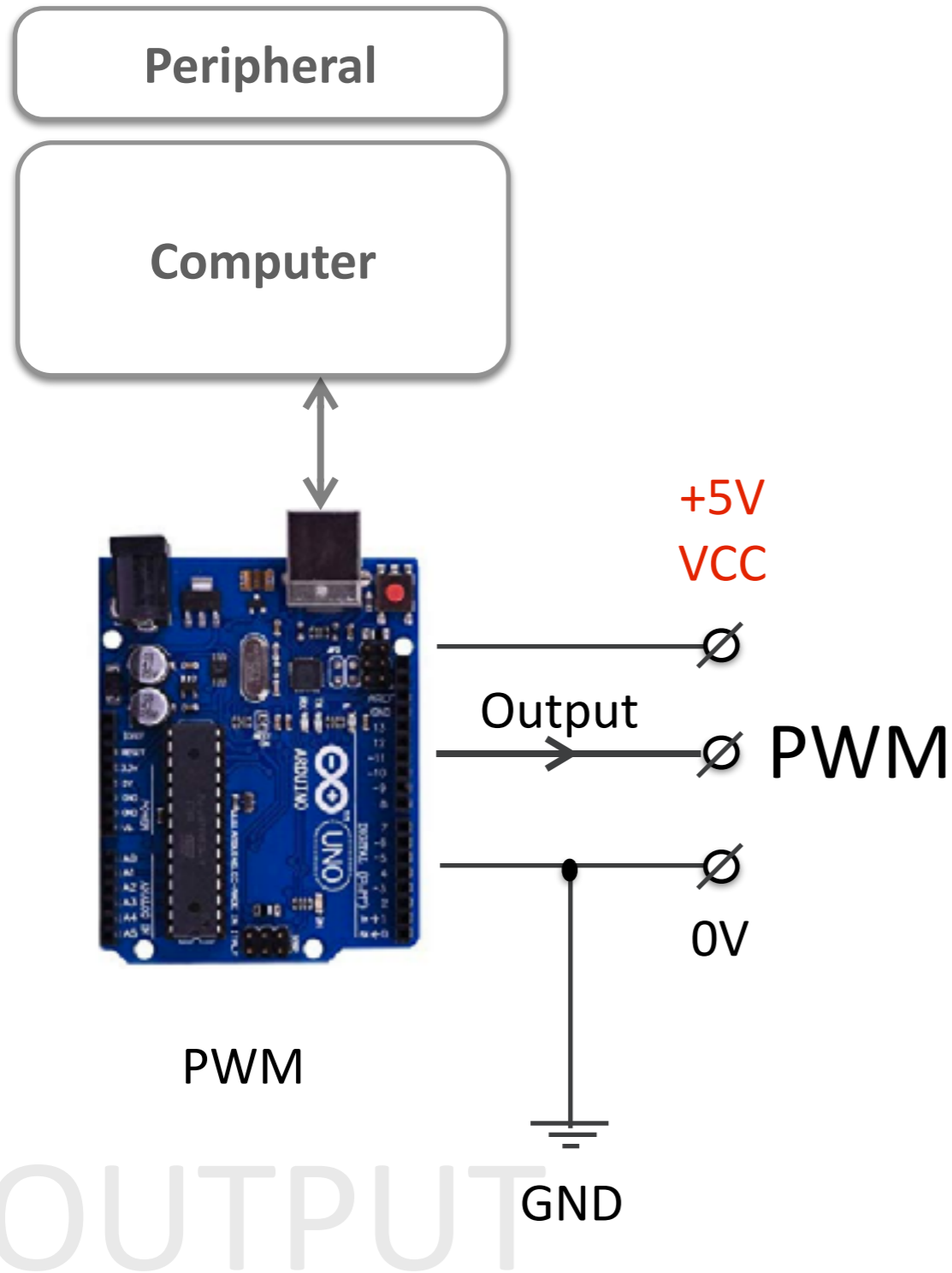
analogWrite(PinName, value);

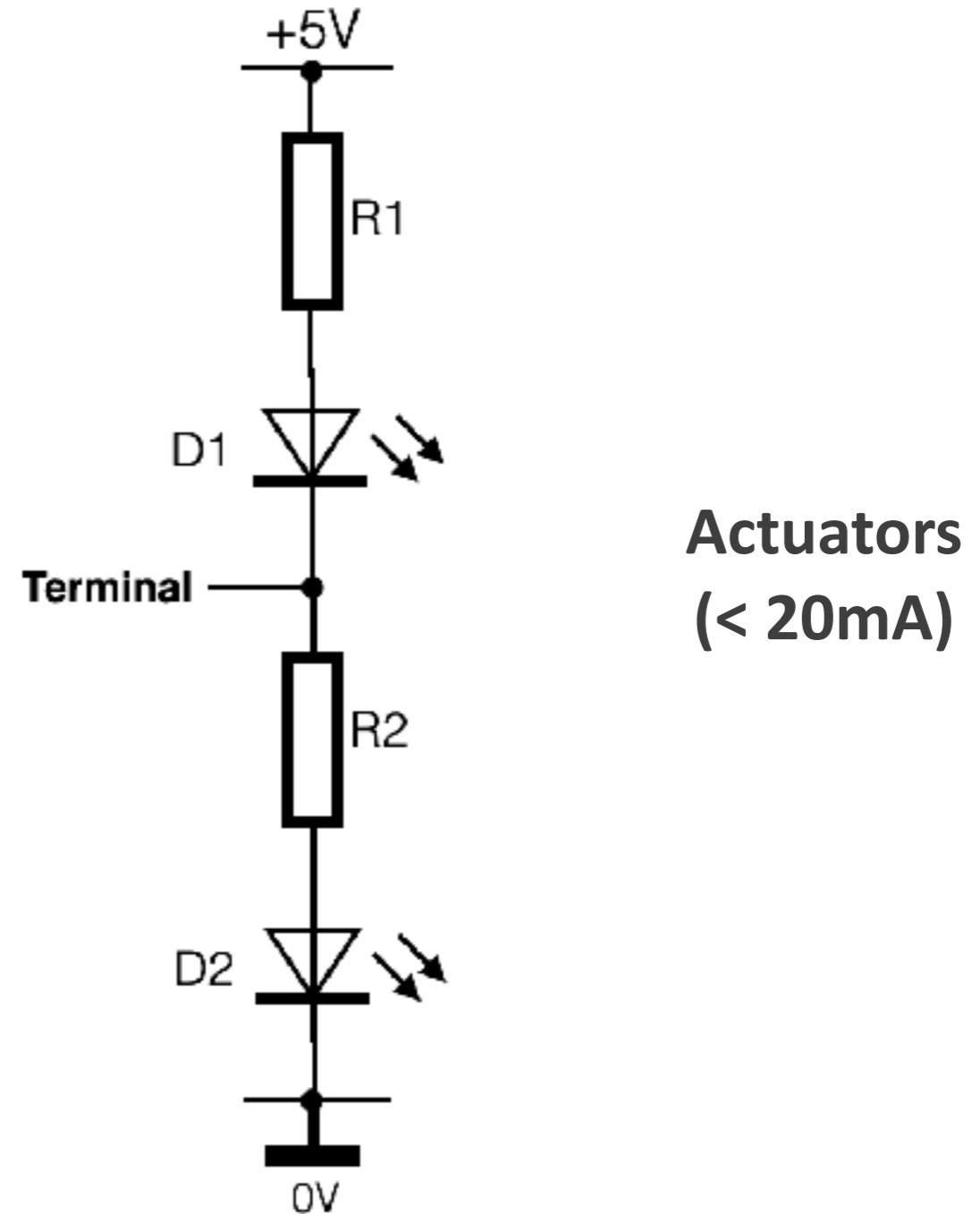
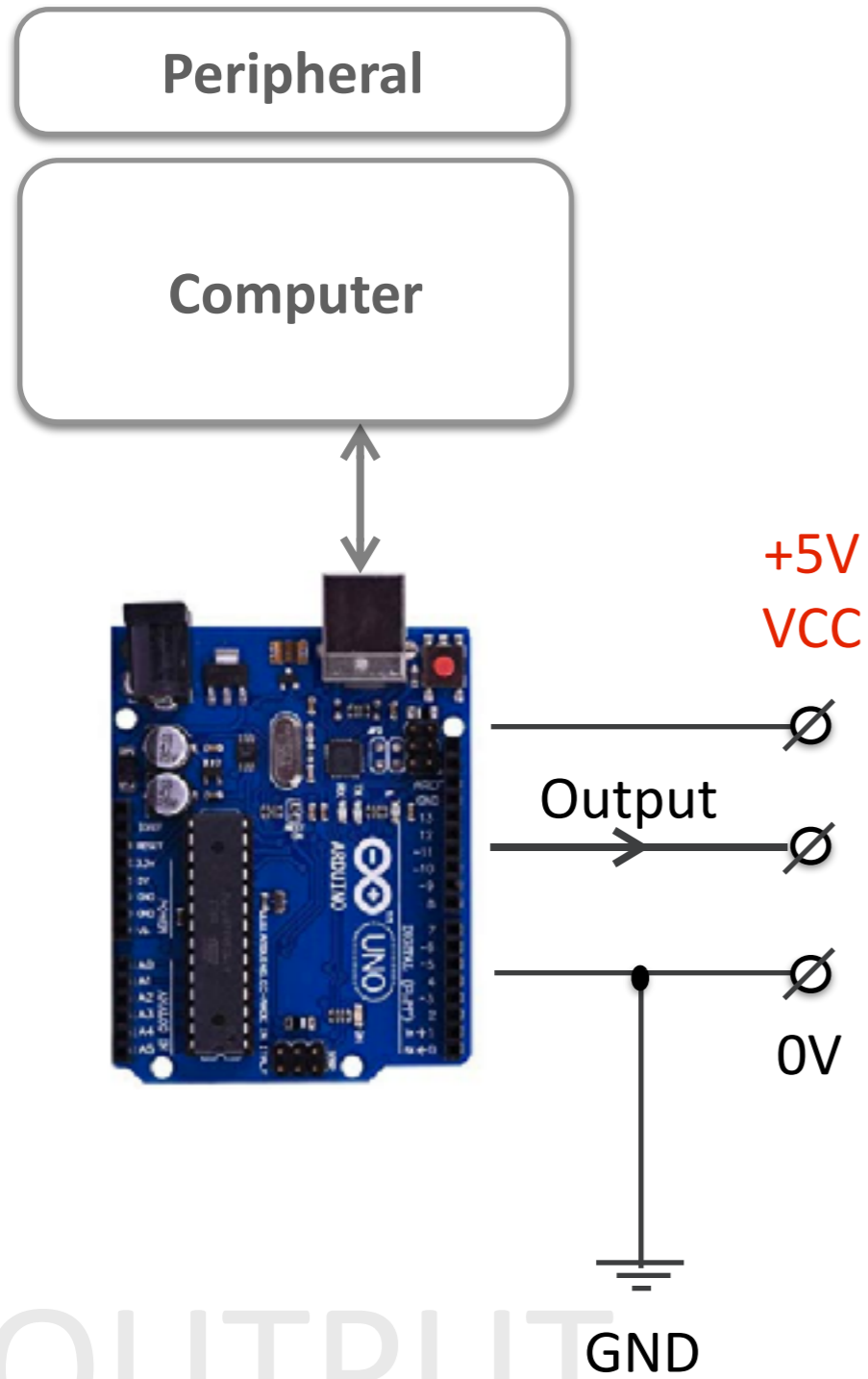


analogWrite(PinName, value);



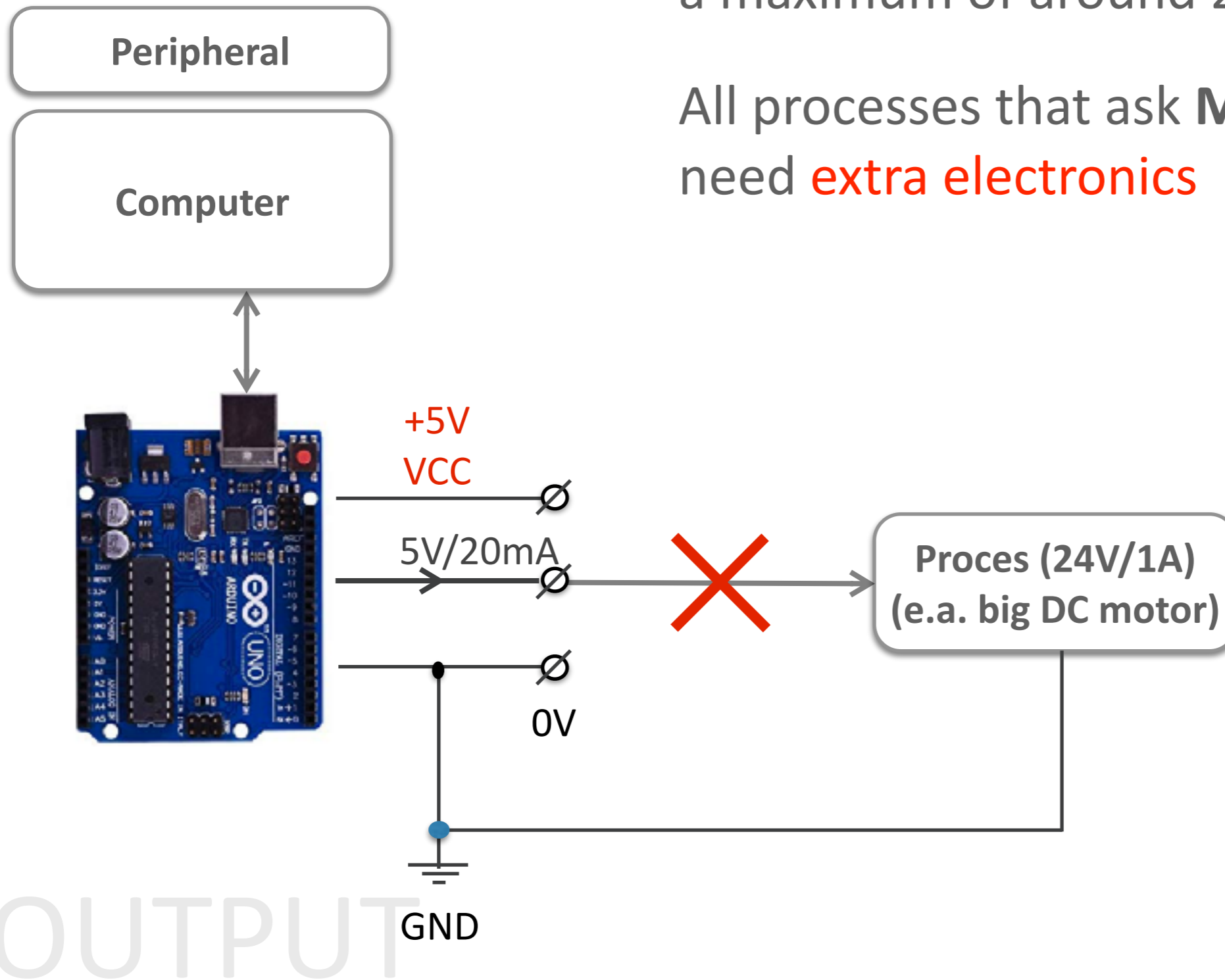
analogWrite(PinName, value);





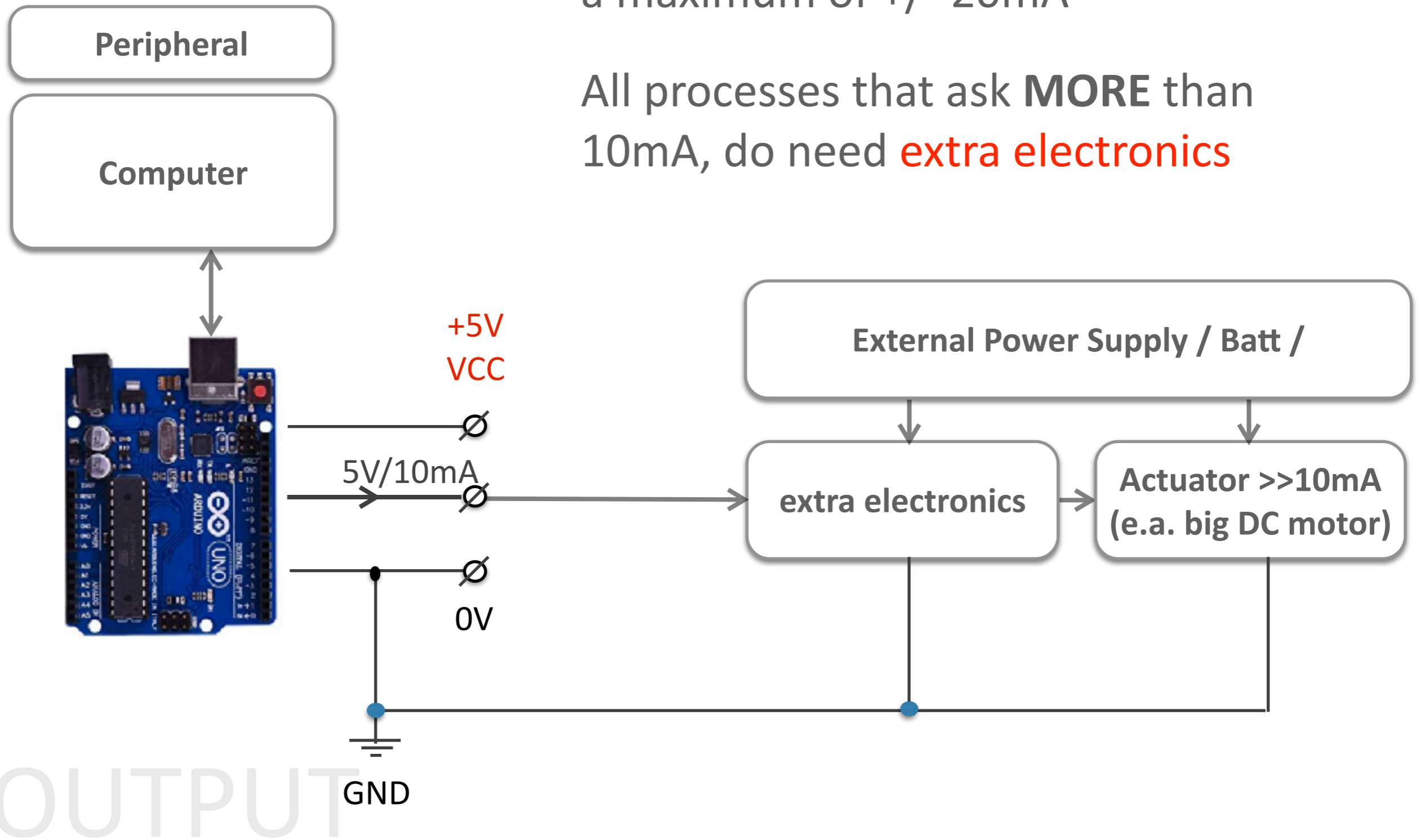
The output of a microcontroller can give a maximum of around 20mA

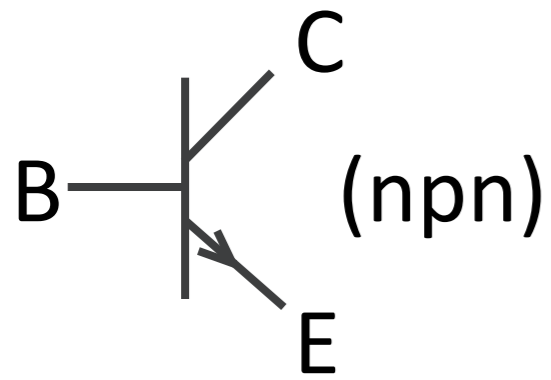
All processes that ask **MORE** than 20mA need **extra electronics**



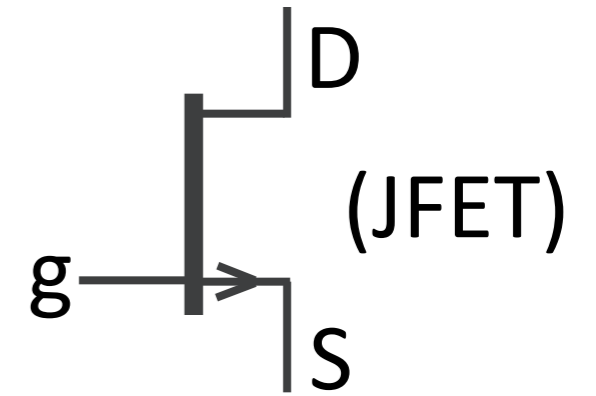
The output of a microcontroller can give a maximum of +/- 20mA

All processes that ask **MORE** than 10mA, do need **extra electronics**

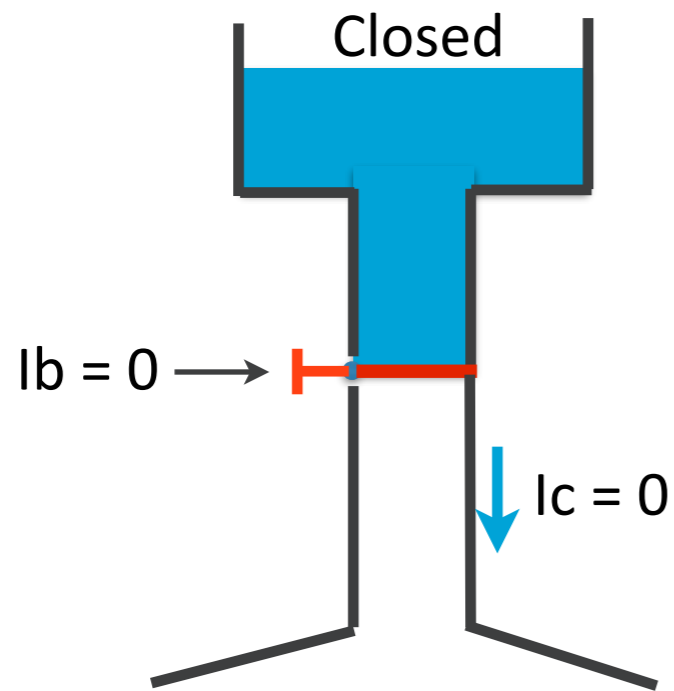




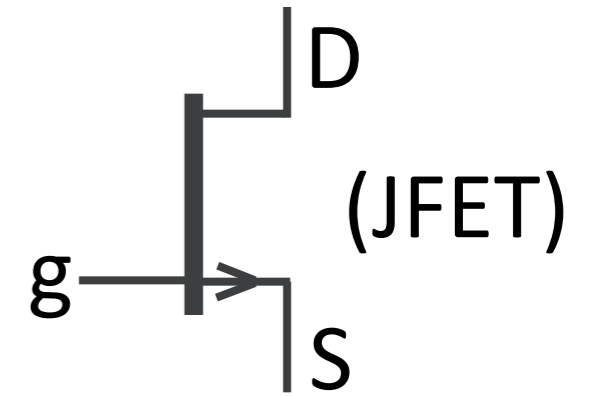
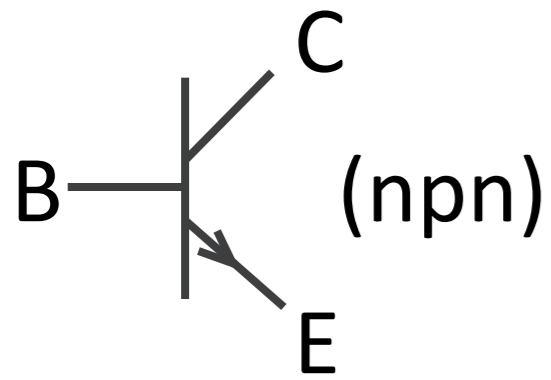
Transistor



FET

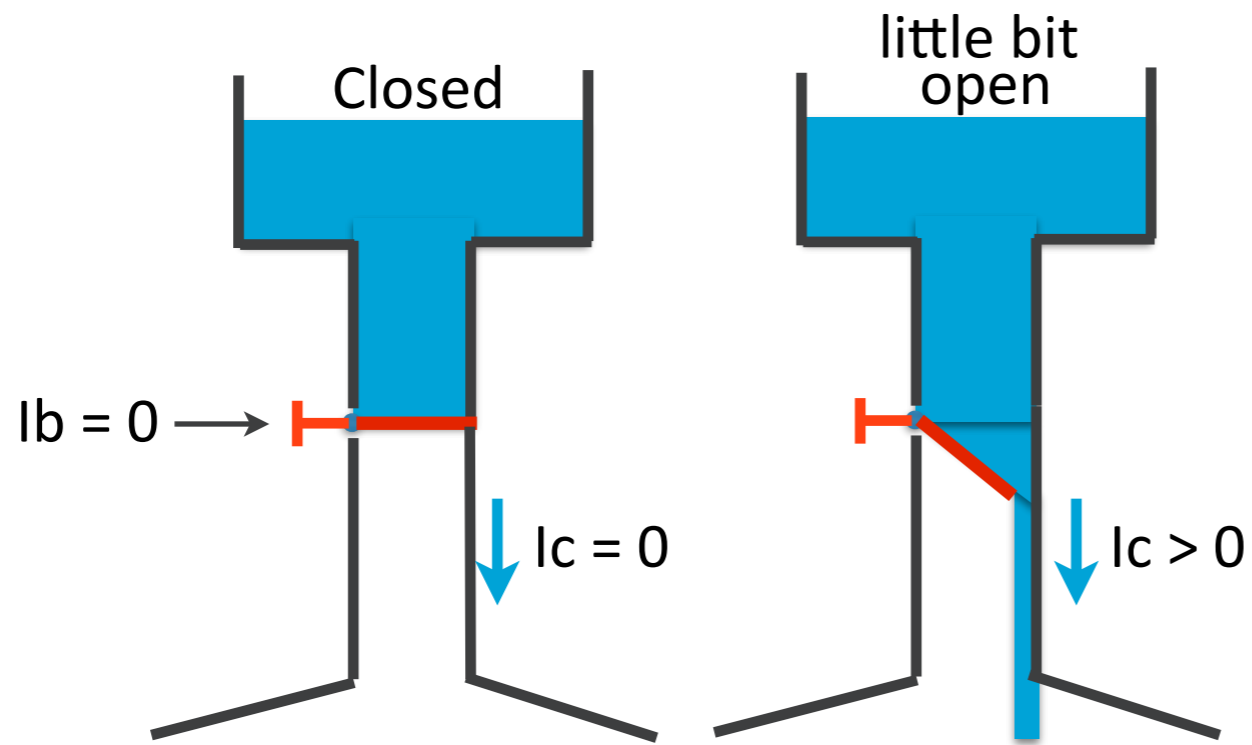


OUTPUT

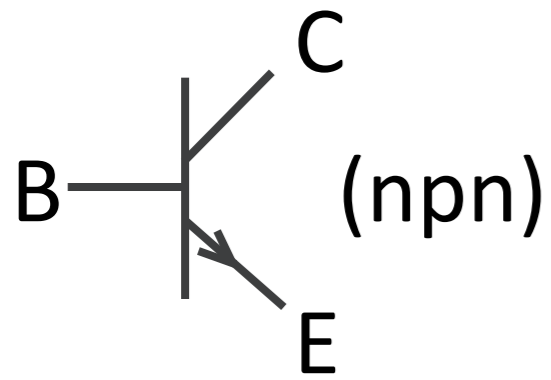


Transistor

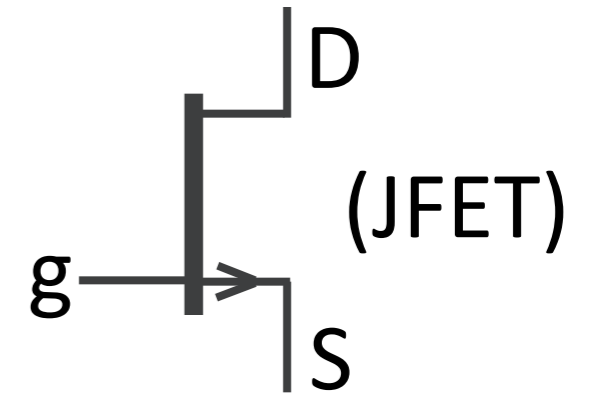
FET



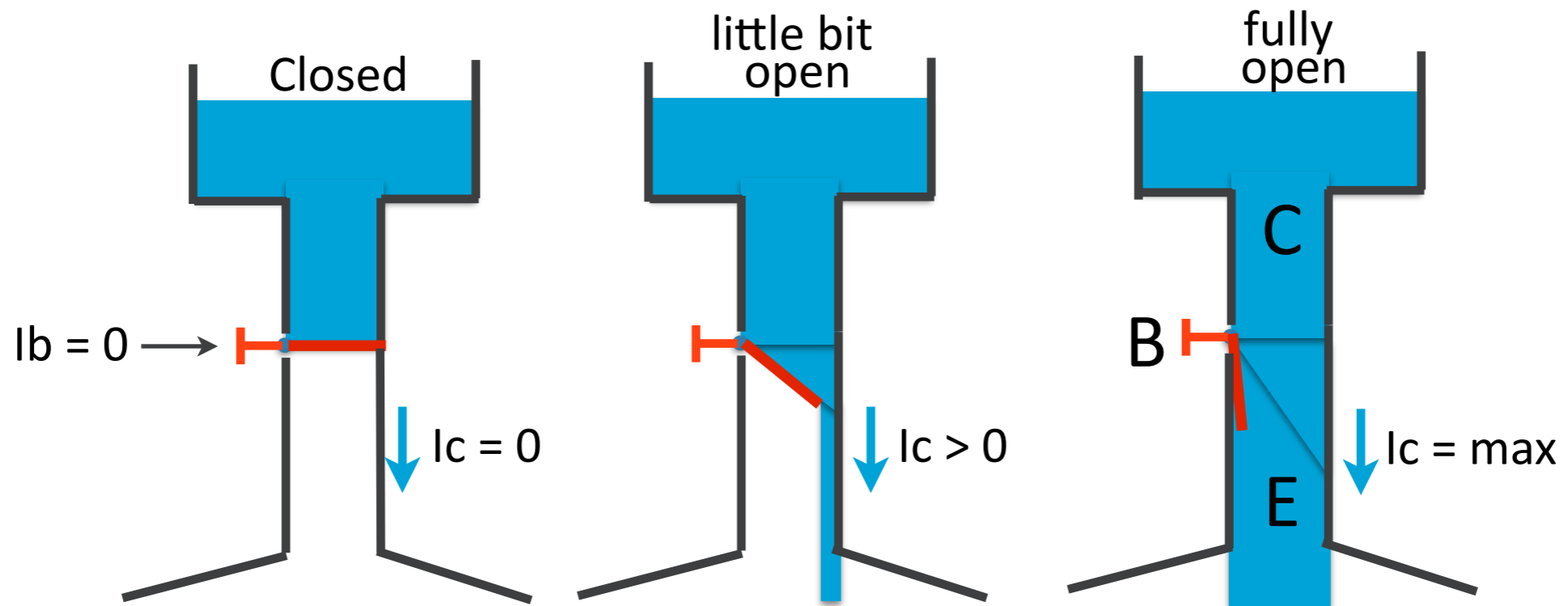
OUTPUT



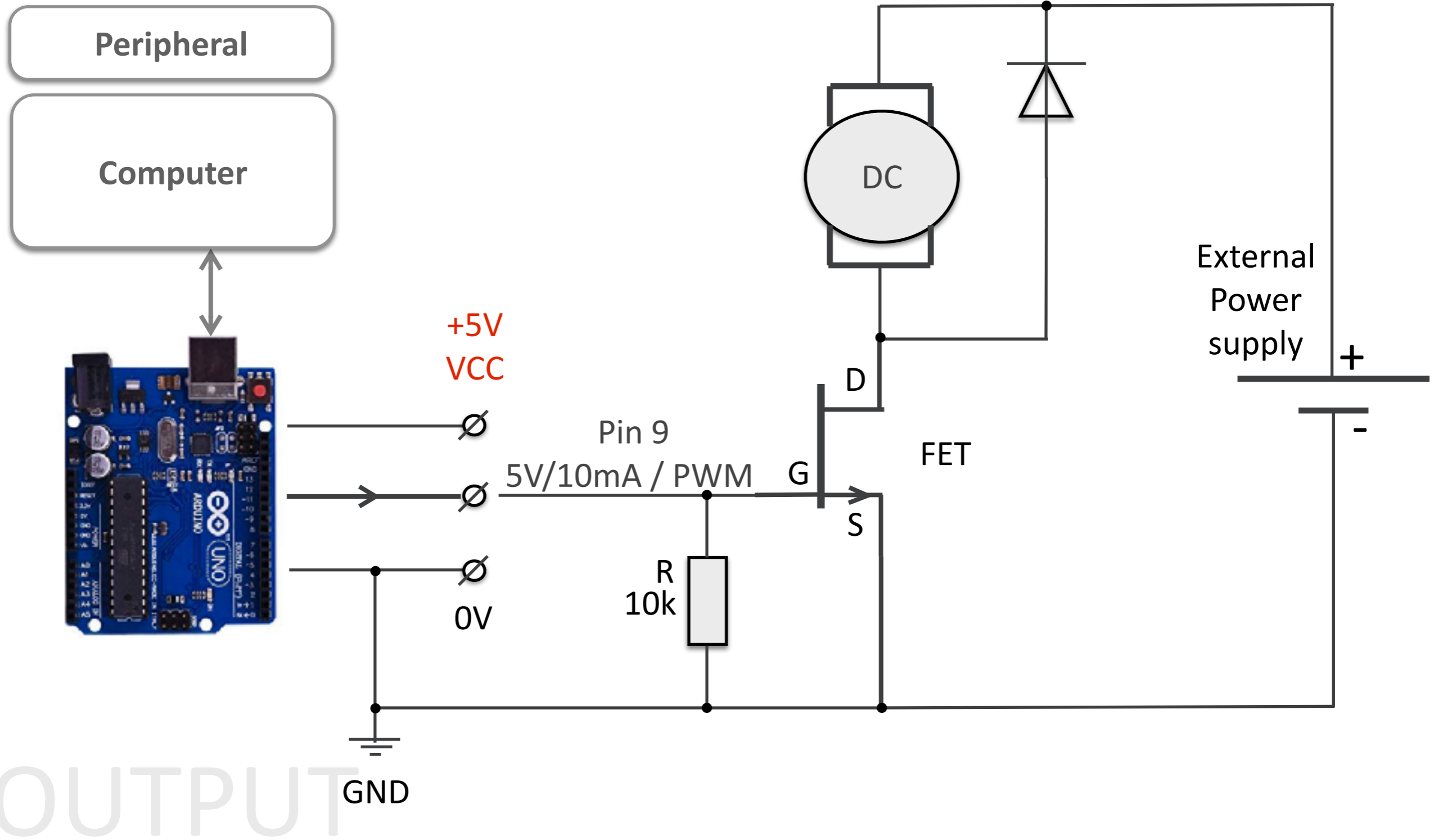
Transistor

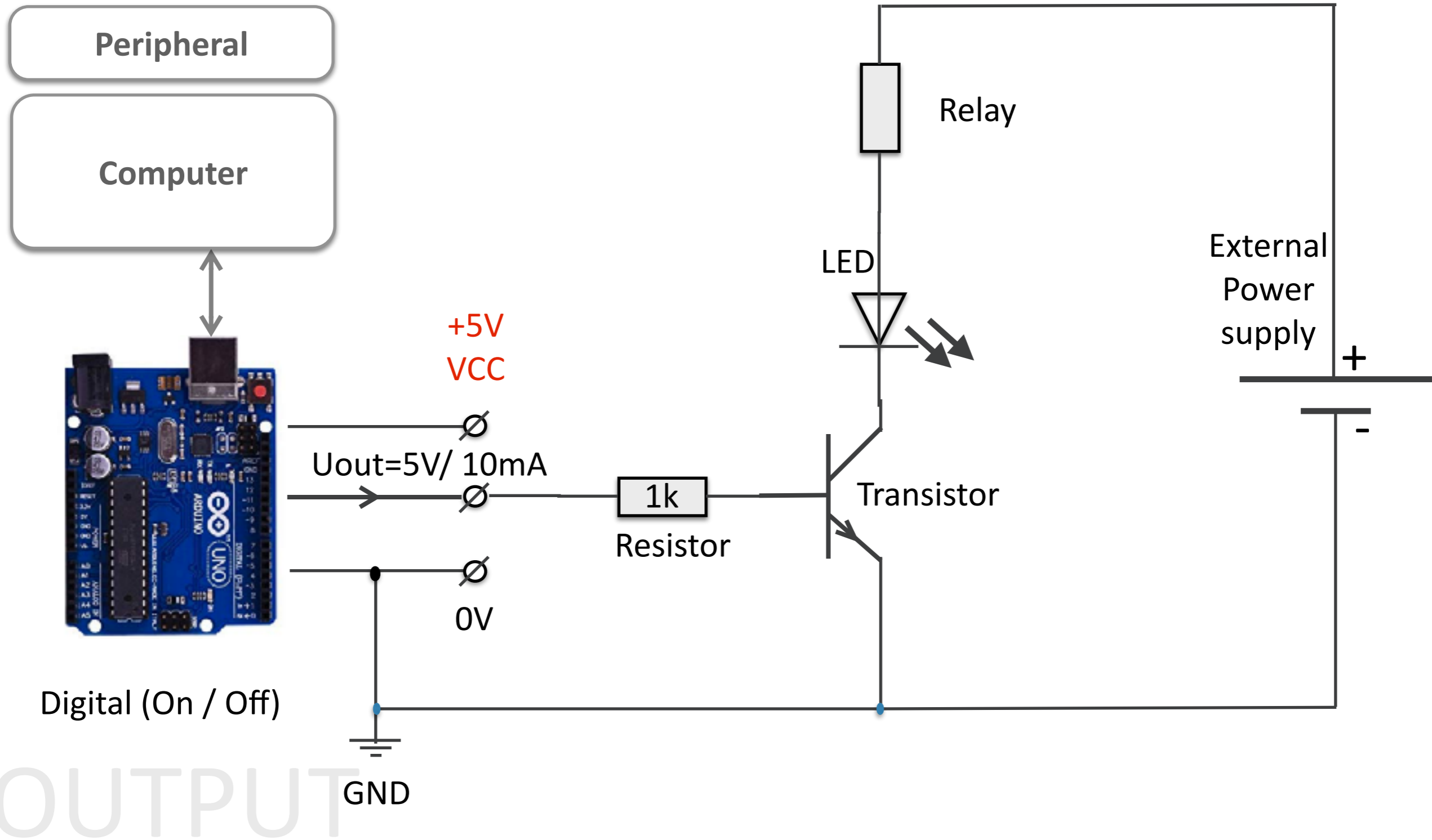


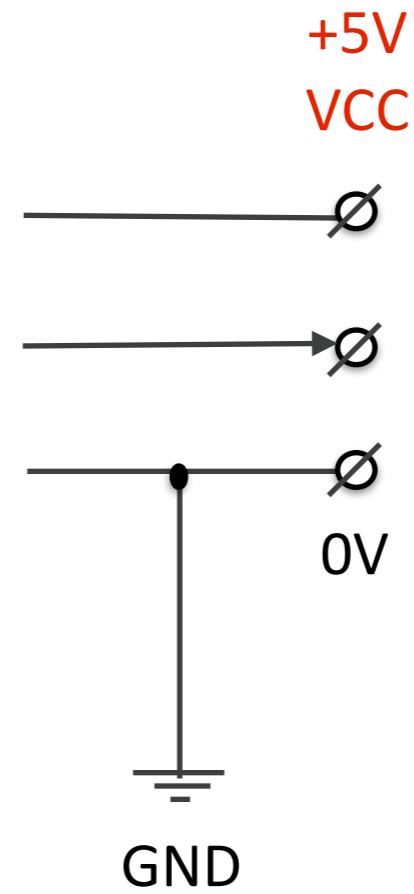
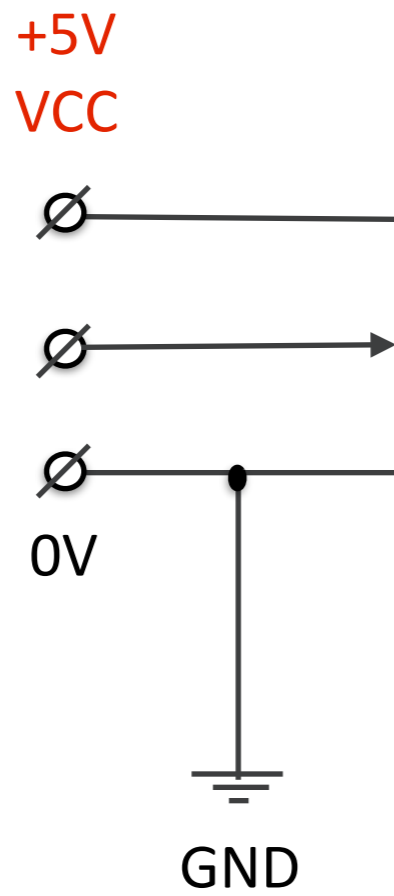
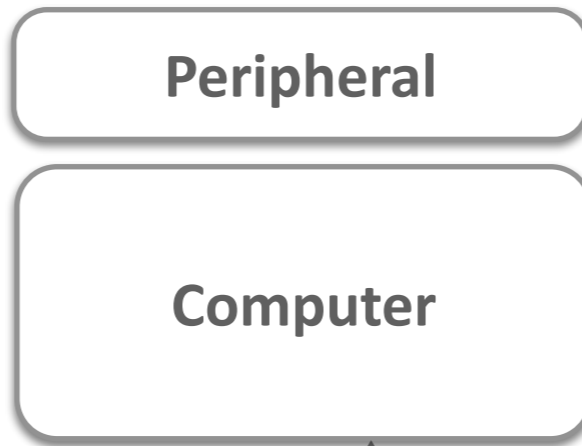
FET



OUTPUT



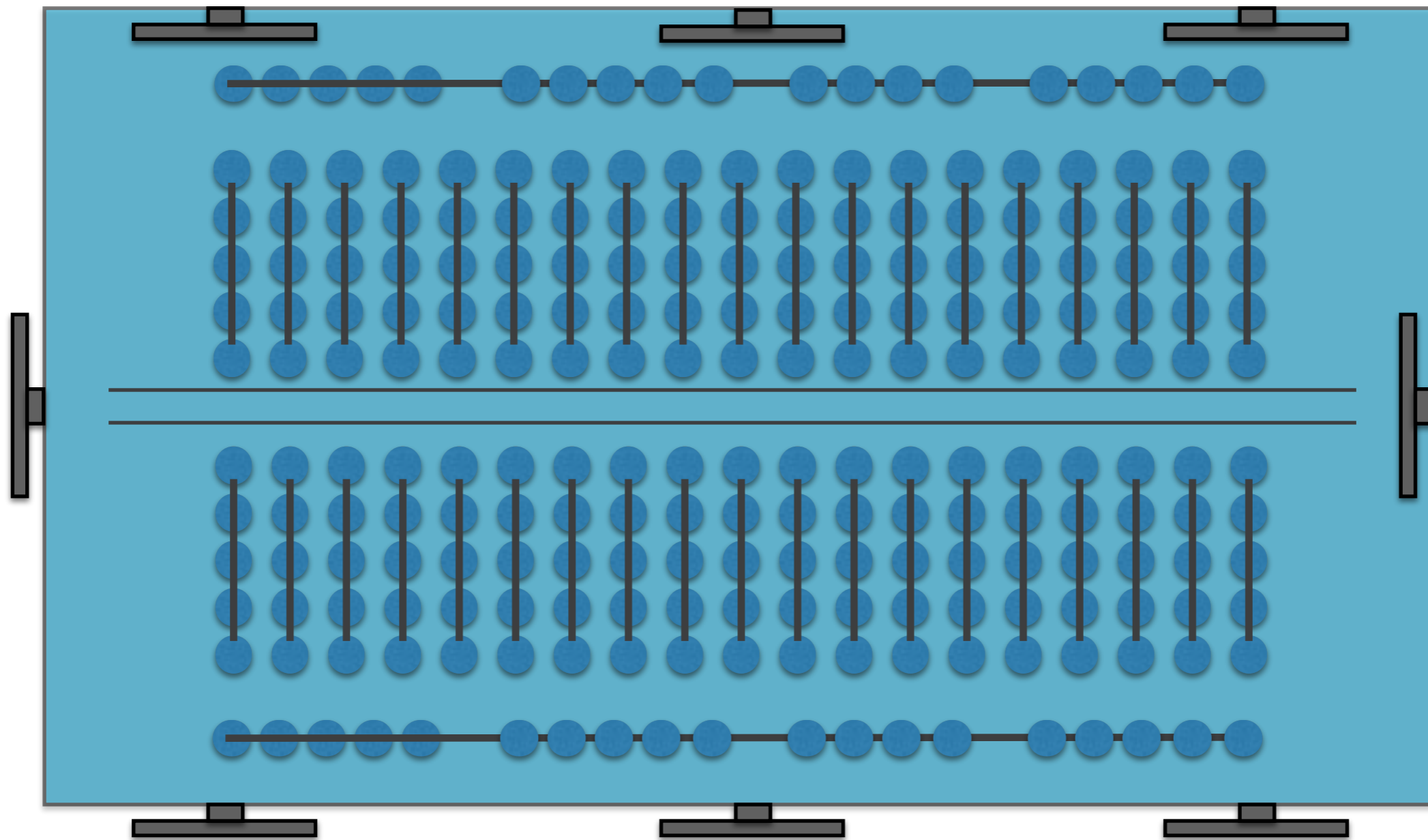




INPUT

OUTPUT

Breadboard layout



OUTPUT