



## TITLE: KNIGHT RIDER LEDS (CYLON EYE)

### LEARNING SCENARIO

|                 |                            |        |
|-----------------|----------------------------|--------|
| <b>School:</b>  | <b>Duration (minutes):</b> | 40     |
| <b>Teacher:</b> | <b>Students age:</b>       | 12 -13 |

#### Essential Question:

#### Topics:

- Arduino Programing Card and Block coding (Mblock)

#### Aims:

- They will use at least 4 Leds and code them by Mblock.

#### Outcomes:

- They will understand the basic electronic circuit.
- They will use digital pin and GND
- They will use LED, Resistor, breadboard, Jumper Cable
- They will code Arduino with Mblock.
- They will control digital pins with Mblock Code.
- They will use loop Mblock Code.
- They can adapt the circuit for the same task.

#### Work forms:

- Work in pairs

#### Methods:

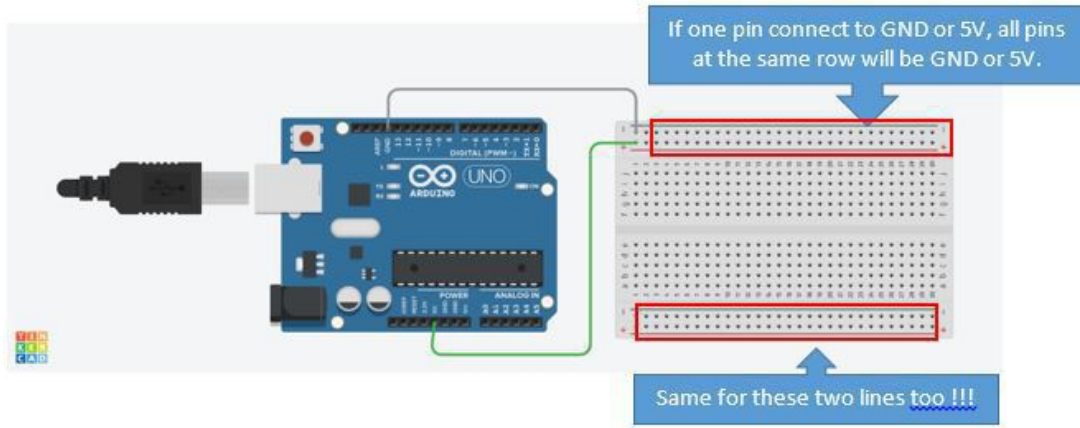
Presentation and Project based Learning

### ARTICULATION

#### Course of action (duration, minutes)

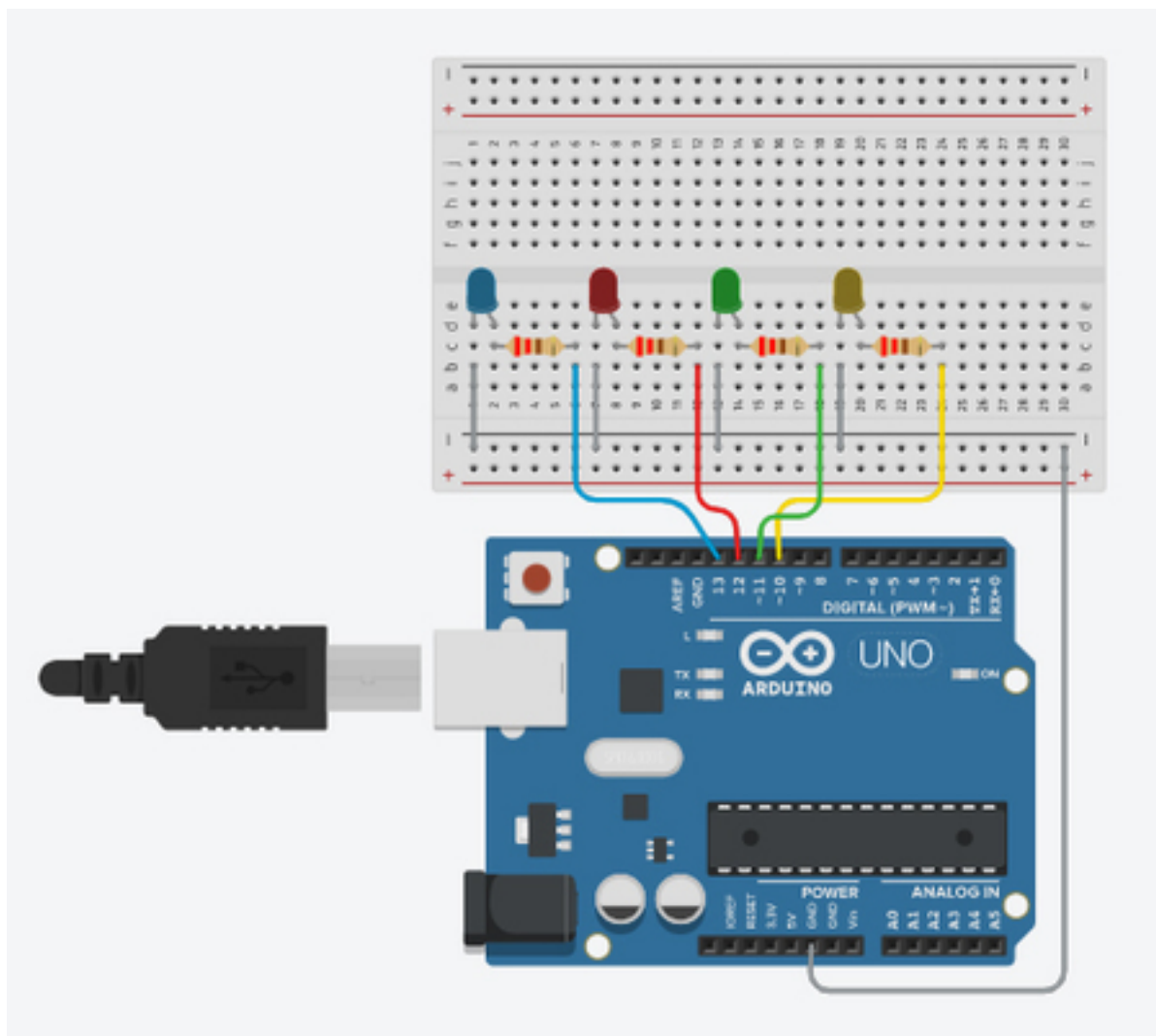
#### INTRODUCTION

- Remind the discussion at the last lesson. How can we turn on at least 4 LEDs although we have 3 GND? Is it Possible?
- Explain this:



### MAIN PART

- Let's make Knight Rider Leds (Cylon Eye)
- Set up this circuit with Arduino and other equipment



- Open Mblock and connect the Arduino



- Write this code:

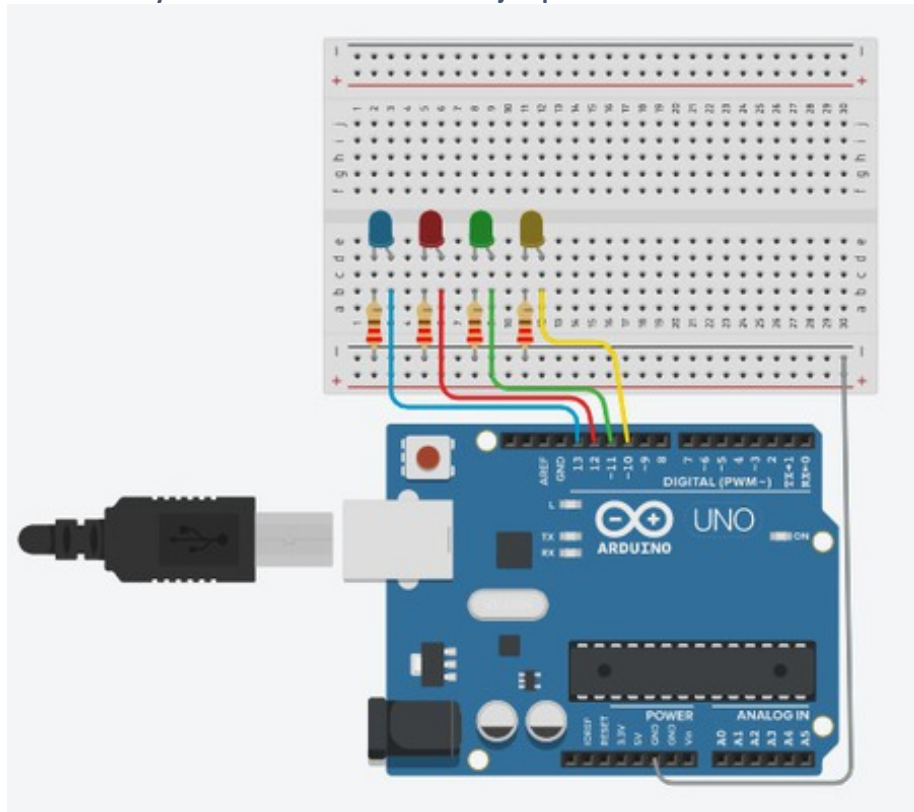
```
when green flag clicked
  forever loop
    set digital pin 10 output as HIGH*
    set digital pin 11 output as LOW*
    set digital pin 12 output as LOW*
    set digital pin 13 output as LOW*
    wait 0.1 secs
    set digital pin 10 output as LOW*
    set digital pin 11 output as HIGH*
    set digital pin 12 output as LOW*
    set digital pin 13 output as LOW*
    wait 0.1 secs
    set digital pin 10 output as LOW*
    set digital pin 11 output as LOW*
    set digital pin 12 output as HIGH*
    set digital pin 13 output as LOW*
    wait 0.1 secs
    set digital pin 10 output as LOW*
    set digital pin 11 output as LOW*
    set digital pin 12 output as LOW*
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    wait 0.1 secs
    set digital pin 10 output as LOW*
    set digital pin 11 output as LOW*
    set digital pin 12 output as HIGH*
    set digital pin 13 output as LOW*
    wait 0.1 secs
    set digital pin 10 output as LOW*
    set digital pin 11 output as HIGH*
    set digital pin 12 output as LOW*
    set digital pin 13 output as LOW*
    wait 0.1 secs
```

Video:  
<https://youtu.be/ldsH8nJqY8>

Scenarios for discussion  
How can we set up this circuit with less jumper cable?



The other way of the circuit with less than 5 jumper Cable.



Video:

[https://youtu.be/\\_QkEmbSb3Vw](https://youtu.be/_QkEmbSb3Vw)

### CONCLUSION

The + line and the - line on the breadboard are connected horizontal, So if you connect the beginning of one of this line to GND all pins can be used as GND.

### Methods

presentation  
 talk  
 work on the text  
 graphic work  
 interactive exercise /simulation on the computer

### Work forms

individual work  
 work in pairs  
 group work  
 frontal work

### Material

- Arduino and USB connection Cable
- Computer
- 4 Leds
- BreadBoard
- 330 ohms Resistors
- Jumper Cables

### Literature



PERSONAL OBSERVATIONS, COMMENTS AND NOTES