



Cuaderno de ejercicios I



Entorno

The screenshot shows the Arduino IDE interface with several key areas highlighted and annotated:

- Entorno**: The top-left corner of the application window.
- Herramientas básicas: Deshacer, borrar, girar y visualizar**: A blue box highlights the top toolbar icons.
- Propiedades de componentes**: A blue box highlights the component selection menu, which is currently set to **Arduino Uno R3** with a name field containing **Nombre 1**.
- Zona de diseño de circuitos**: A large black box highlights the central workspace where a digital image of an Arduino Uno R3 board is placed.
- Abrir espacio de programación e iniciar simulación**: A green arrow points to the **Código** button in the top toolbar.
- Programación Arduino: Bloques**: A purple box highlights the block-based programming area on the right, containing various code blocks like "definir LED integrado en ALTA", "definir pasador", "girar servo", "reproducir altavoz", "desactivar el altavoz", "imprimir en monitor en serie", and "definir LED RGB de pasadores".
- Eliminar bloques**: A red arrow points to the trash icon at the bottom right of the block programming area.

Ejercicio 1: LED integrado



The screenshot shows the TinkerCAD workspace for a project titled "Ejercicio 1 LED integrado". On the left, a 3D model of an Arduino Uno R3 board is shown with a USB Type-C cable connected. The main workspace contains a block-based code editor with the following sequence of blocks:

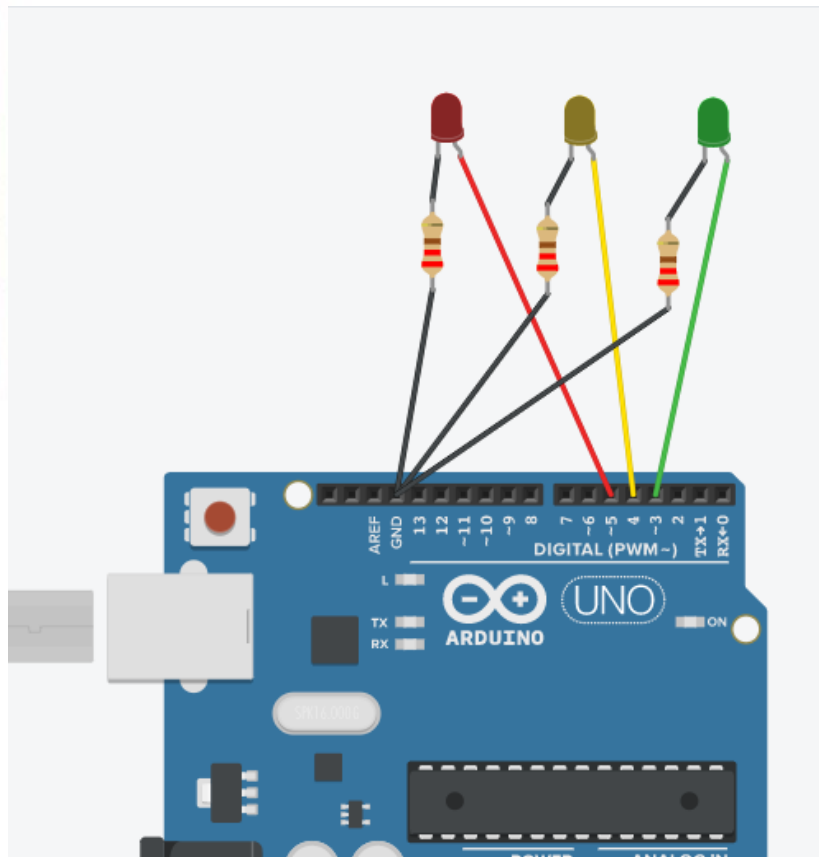
- definir LED integrado en ALTA
- definir pasador 0 en ALTA
- definir pasador 3 en 0
- girar servo en el pasador 0 a 0
- reproducir altavoz en el pasador 0
- desactivar el altavoz en pasador 0
- imprimir en monitor en serie hello world

The right sidebar shows a palette of blocks categorized by color: Salida (blue), Entrada (purple), Notación (grey), Control (orange), Matemáticas (green), and Variables (pink). The code editor also includes a "Monitor en serie" window at the bottom.



Reto: Consigue la velocidad de intermitencia más rápida visible para el ojo humano

Ejercicio 2: Semáforo



Bloques

- Salida
- Entrada
- Notación
- Control
- Matemáticas
- Variables

comentario configuración del semáforo

repetir 5 veces

- definir pasador 5 en ALTA
- esperar 5 segundos
- definir pasador 5 en BAJA
- definir pasador 4 en ALTA
- esperar 5 segundos
- definir pasador 4 en BAJA
- definir pasador 3 en ALTA
- esperar 5 segundos

Monitor en serie

Solución:



Reto: Haz que el semáforo en ámbar sea intermitente



Ejercicio 3: Pulsador



The image is a composite showing a breadboard circuit, an Arduino Uno board, and a Scratch code editor. The breadboard circuit includes a red push button, a 10k pull-down resistor, and two 220Ω resistors. The Arduino Uno board is connected to the breadboard. The Scratch code editor shows a script for an Arduino Uno R3 that reads a digital pin (3) and sets a variable 'pasador' to 'ALTA' if the button is pressed, or 'BAJA' otherwise.

Breadboard Circuit: A red push button is connected to a 10k pull-down resistor. The other end of the resistor is connected to ground. The button's other terminal is connected to a 220Ω resistor, which is connected to digital pin 3 of the Arduino Uno. Another 220Ω resistor is connected to ground.

Arduino Uno Board: The board is connected to the breadboard. The USB cable is plugged into the USB port. The power pins are connected to the breadboard.

Scratch Code Editor: The code is written for an Arduino Uno R3. It includes a comment: "si el botón está pulsado, manda un 1 (mayor qu...". The script consists of a "si" block with a "leer pasador digital" block set to pin 3 and a "BAJA" dropdown. The "entonces" block contains a "definir pasador" block set to "12" and "ALTA". The "si no" block contains a "definir pasador" block set to "12" and "BAJA".

Ejercicio 4: LDR



The image shows a screenshot of the Arduino IDE interface. On the left, a breadboard circuit is connected to an Arduino Uno R3. The breadboard contains an LDR sensor module with a red LED, a servo motor, and a buzzer. Wires connect the sensor's pins to the Arduino's digital pins: pin 4 to the sensor's VCC, pin 5 to GND, pin 9 to the servo's VCC, pin 10 to the servo's GND, and pin 18 to the buzzer's VCC. The Arduino's GND is connected to the sensor's GND, and the 5V pin is connected to the sensor's VCC.

The right side of the IDE shows a block-based program for the Arduino Uno R3. The program is as follows:

```
definir LED integrado en ALTA
definir pasador 0 en ALTA
definir pasador 3 en 0
girar servo en el pasador 0 a 0
reproducir altavoz en el pasador 0 cuando se presiona el botón
desactivar el altavoz en el pasador 0
imprimir en monitor en serie hello world
definir LED RGB de pasadores 3 en 0

si leer pasador digital 4 = 1 entonces
  definir pasador 9 en BAJA
  esperar 1 segundos
si no
  definir pasador 9 en ALTA
  esperar 2 segundos
```

Ejercicio 5: LED RGB



Entrada
Notación
Matemáticas
Variables

esperar 1 segundos

repetir 10 veces

repetir mientras

si entonces

si entonces

si no

definir LED RGB de pasadores 11 10 9 en el color ●

esperar 1 segundos

definir LED RGB de pasadores 11 10 9 en el color ●

esperar 1 segundos

repetir 10 veces

definir LED RGB de pasadores 11 10 9 en el color ●

esperar 1 segundos

definir LED RGB de pasadores 11 10 9 en el color ●

esperar 1 segundos

Solución:



Reto: Haz el ejercicio del semáforo con RGB

Continuará...

