INSTRUCTION BOOKLET

FROGGER

GAME TEAM 7

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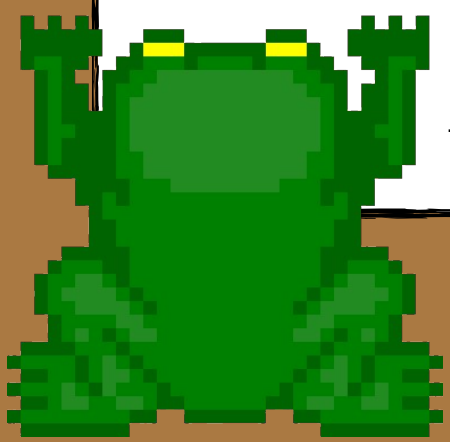
STORY

Meet Froggy, a brave little frog with a big heart and a simple mission: to reunite with his family in their cozy home by the lake. The lake is where Froggy's family waits, surrounded by lush greenery and gentle waters, a place where they spend their days together. But for Froggy, the journey back is far from easy.

One stormy night, strong winds swept Froggy far from his home, carrying him across rivers, forests, and busy roads filled with speeding cars and bustling traffic. Now, Froggy finds himself on the other side of a dangerous highway, with only one goal in mind: to cross all the obstacles and make it back to the safety of the lake.

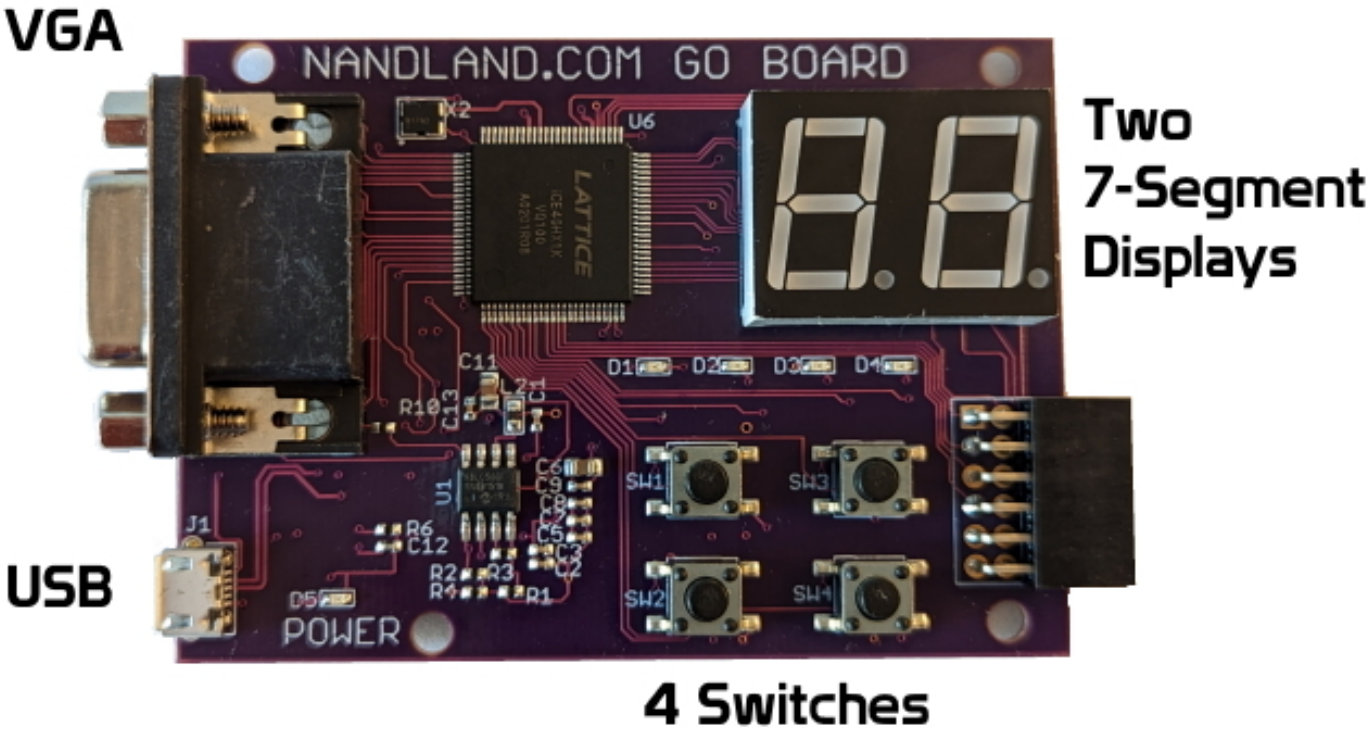
Your goal is to help Froggy navigate through these perilous roads and reach the lake, where his family eagerly awaits. But be careful! The journey is filled with challenges!

Froggy's family is counting on you! With your help, Froggy can overcome the challenges and hop his way back home, where his loved ones await with open arms (and webbed feet). But remember, time is of the essence, and you'll need quick reflexes and sharp thinking to guide Froggy safely through each level. Will you be the one to guide Froggy back to the warmth and safety of his family by the lake? The adventure starts now —help Froggy find his way home!



YOUR GO-BOARD

This section is dedicated to helping you set up your Go-Board. Make sure that your Go-Board matches the model shown below, as this guide is specifically designed for this board. If your board differs from the one described, please obtain the correct model before proceeding.



SET UP AND GET STARTED

⚠️ ***WARNING***: *To play, you will need to perform some manual operations with the board. Be mindful that Go-Board can generate significant heat, especially during extended periods of use. Always allow the board to cool down before handling it directly to avoid burns.*

First steps with Go-Board

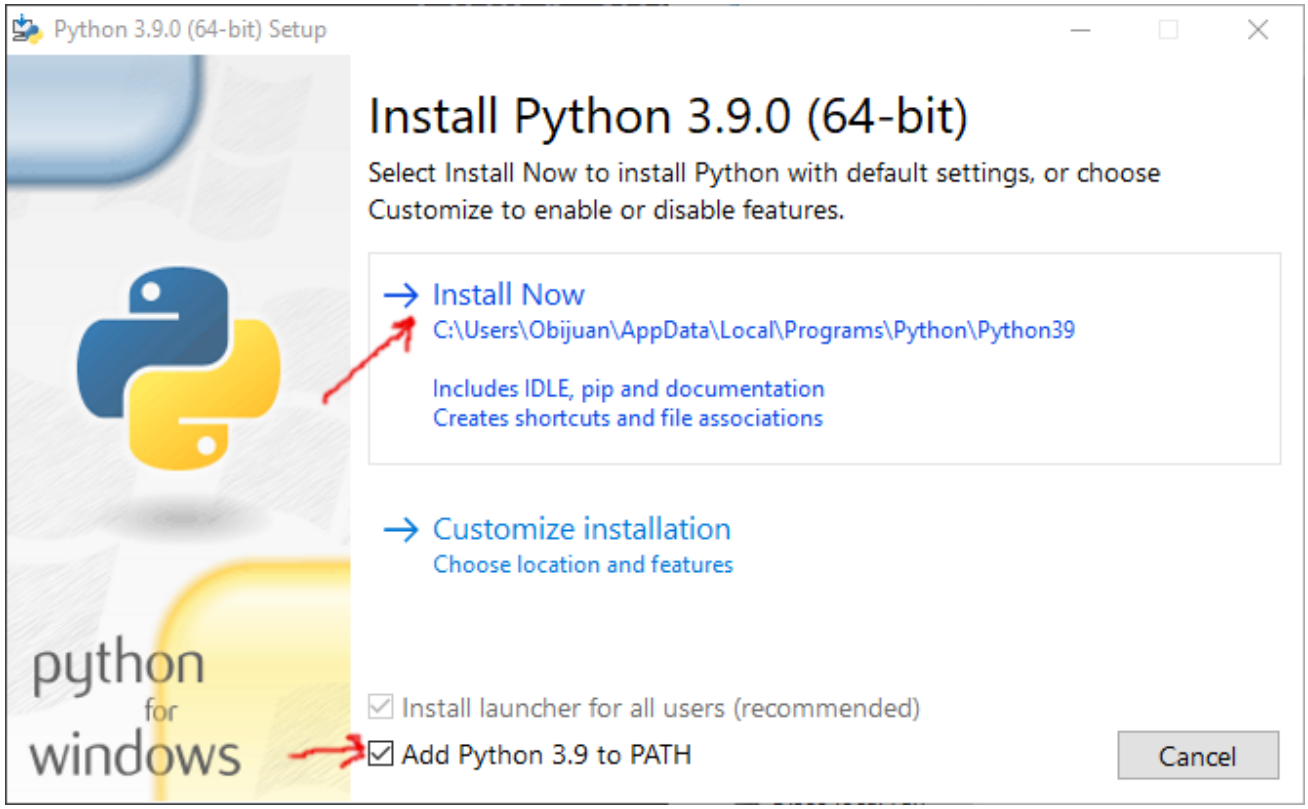
It takes just a few minutes to get up and running with Go-board.

Flashing the board

To start playing, you need to flash your Go-Board. Follow these instructions carefully:

Step 1: Prepare Your Computer

1. **Download Python** (if you don't already have it):
   - Ensure you download Python version **3.9 or higher**.
   - Run the downloaded file.
   - During the installation, **make sure that "Add Python 3.X to PATH" is checked**.
   - Click **Install Now** as shown in the image below.



2. **Open Command Prompt as an Administrator**:
    - On **Windows**, right-click the Command Prompt and select **Run as Administrator**.
    - On **macOS**, use **Terminal**.

Step 2: Install Required Software

3. **Install Apio**:
    - In the Command Prompt/Terminal, run the following command:

```
python -m pip install apio
```

    - **Install all packages** required by Apio:

```
apio install -a
```

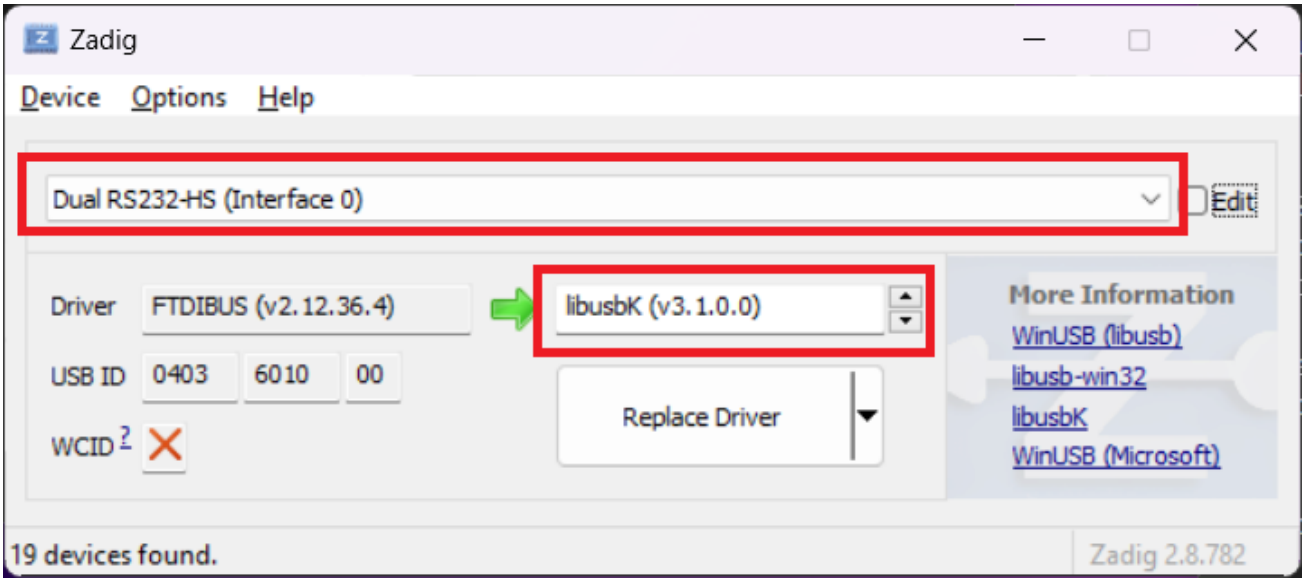
Step 3: Connect the Go-Board

4. **Plug the Go-Board** into your computer using a USB cable.
5. **Enable Drivers**:
    - Run the following command:

apio drivers --ftdi-enable

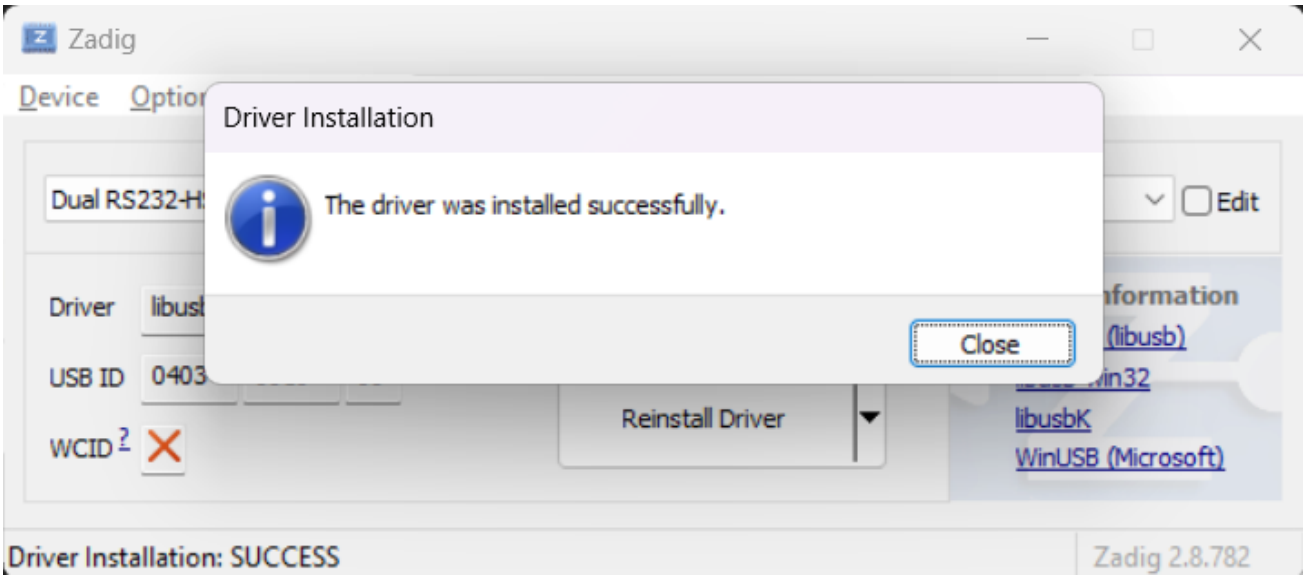
Step 4: Driver Setup (Windows Only)

6. **WINDOWS ONLY**: Configure Drivers with Zadig:
    - On this screen, **select "Dual RS232-HS (Interface 0)"** from the



- Select **“libusbK”** from the Driver dropdown.
- If the option does not appear, go to **Options -> List All Devices**.

7. **WINDOWS ONLY**: Click **Replace Driver**.
8. **WINDOWS ONLY**: Wait for a few minutes for the driver installation to complete. When done, you’ll see **“The driver was installed successfully.”**

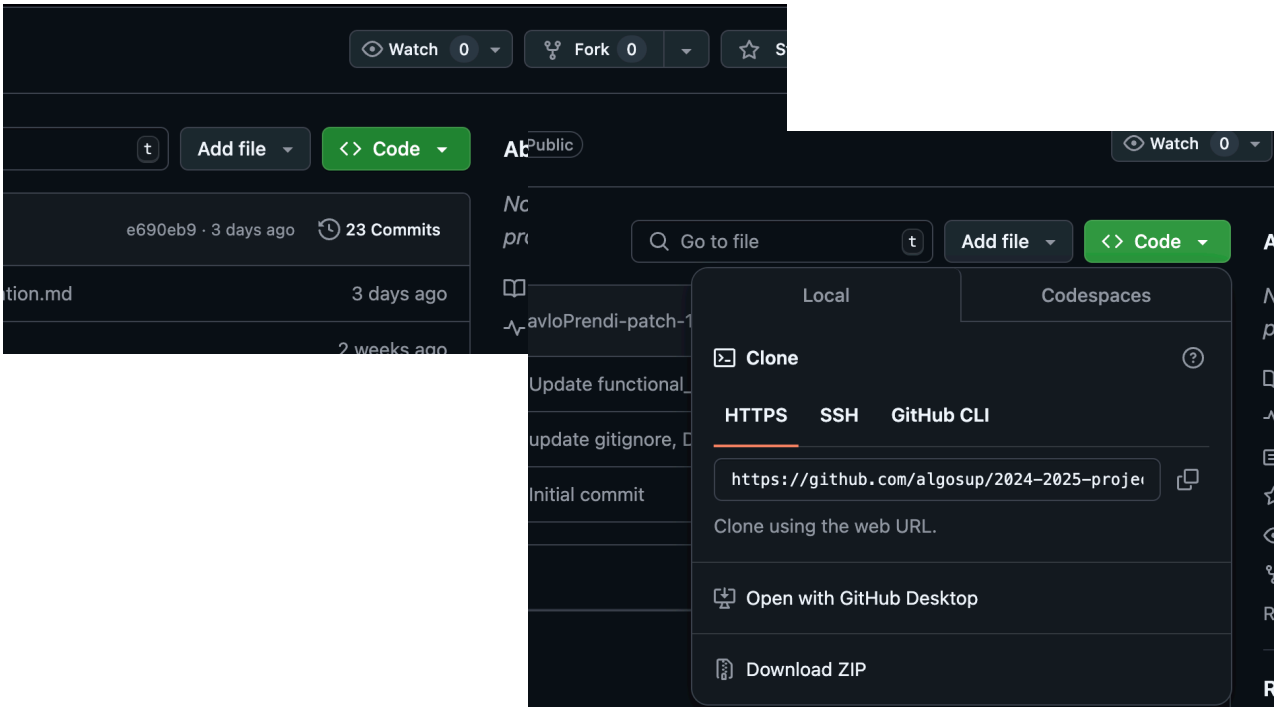


9. **WINDOWS ONLY**: Close the **Zadig** application.
10. **Unplug** and then **re-plug** the Go-Board into your computer.

Step 5: Flash the Game onto Your Board

11. **Download the Game**:

- Go to the GitHub repository (https://github.com/algosup/2024-2025-project-1-fpga-team-7) and click the **Code** button and then **Download**



12. **Unzip the Downloaded File**:

- Extract the contents of the downloaded zip file.

13. **Navigate to the Game Directory**:

- Open a terminal and use the cd command to navigate to the extracted game directory:

cd path/to/your/downloaded/game

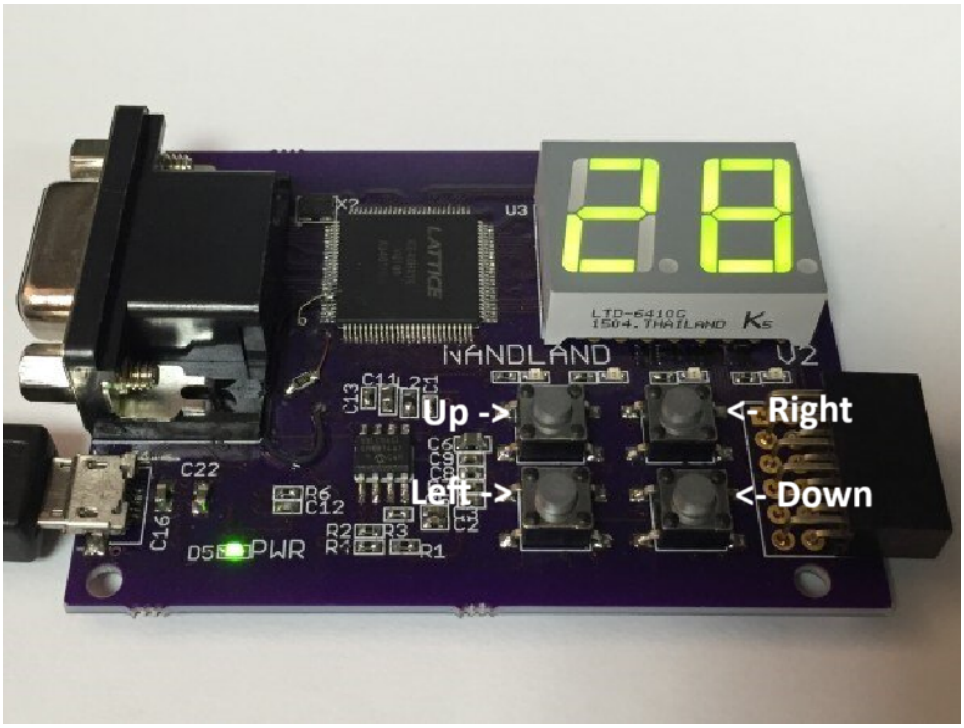
14. **Upload the Game to the Go-Board**:

- Ensure that your board is still connected to your computer.
- Run the following command:

apio upload

15. **Unplug the Go-Board** after the upload process is complete.

CONTROLLER OPERATION

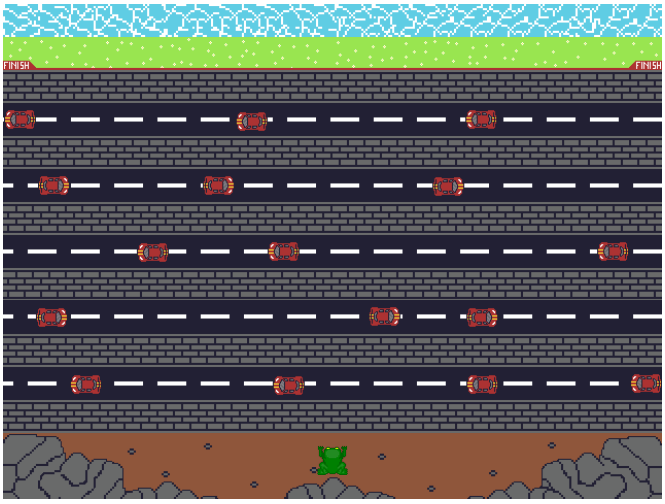


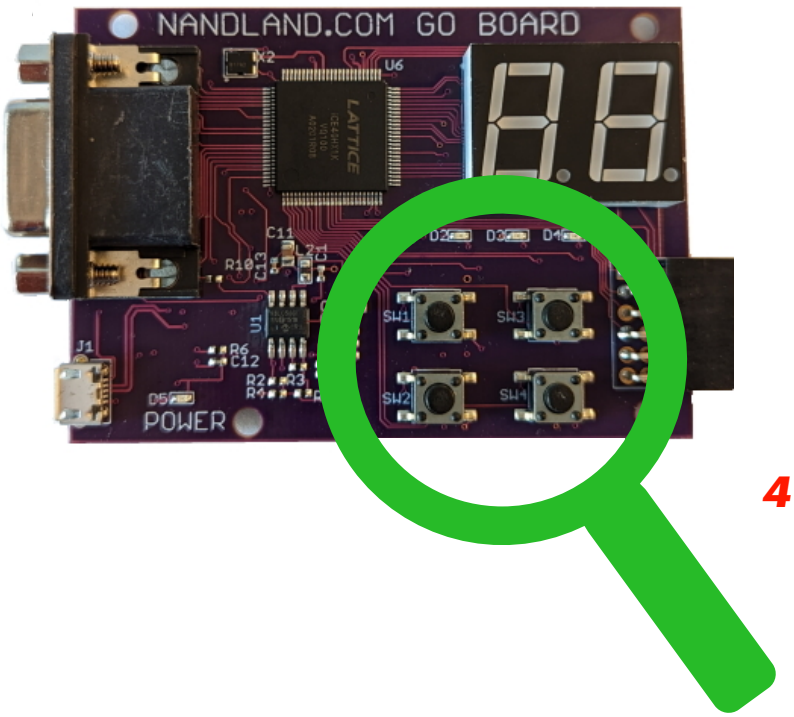
Frog Movement:

- Each time you press a button, Froggy moves **one space** in the chosen direction.
- To move Froggy several spaces in a row, you must press the directional button **multiple times**.
- Holding down a button will not cause Froggy to move continuously. Instead, each press results in a single step.

PLAYING THE GAME

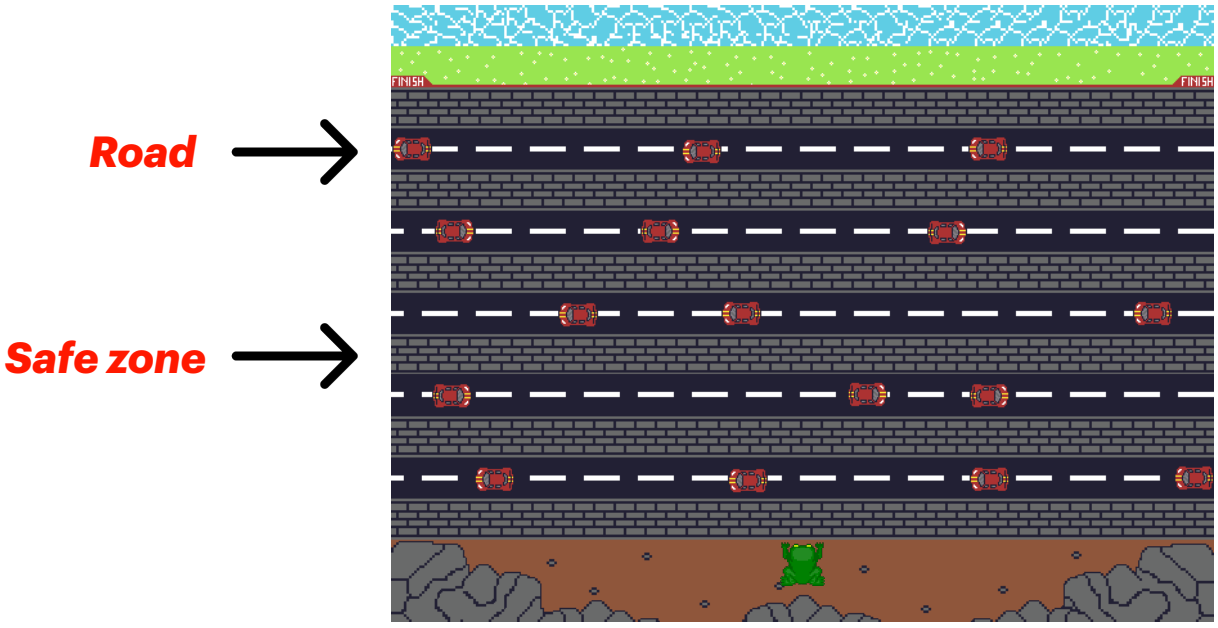
Use a VGA cable to connect the Go-Board to a screen that supports VGA input. Make sure the cable is plugged in securely to avoid any display issues. Your screen should automatically detect the VGA connection and switch to the appropriate source. If the screen does not switch automatically, use the input/source button on your monitor or TV to manually select the **VGA** source. Once the connection is established, the screen at the right will appear on your monitor. Press the four buttons on the Go-Board to start the game and begin controlling **Froggy**.





4 Buttons

MAP SCREEN



The map consists of several roads and safe places. Froggy starts the game positioned at the bottom center of the screen, and the objective is to reach the top. The entire top edge of the screen acts as the finish line —you do not have to aim for the center of the top, any part of the top edge will allow you to complete the level.

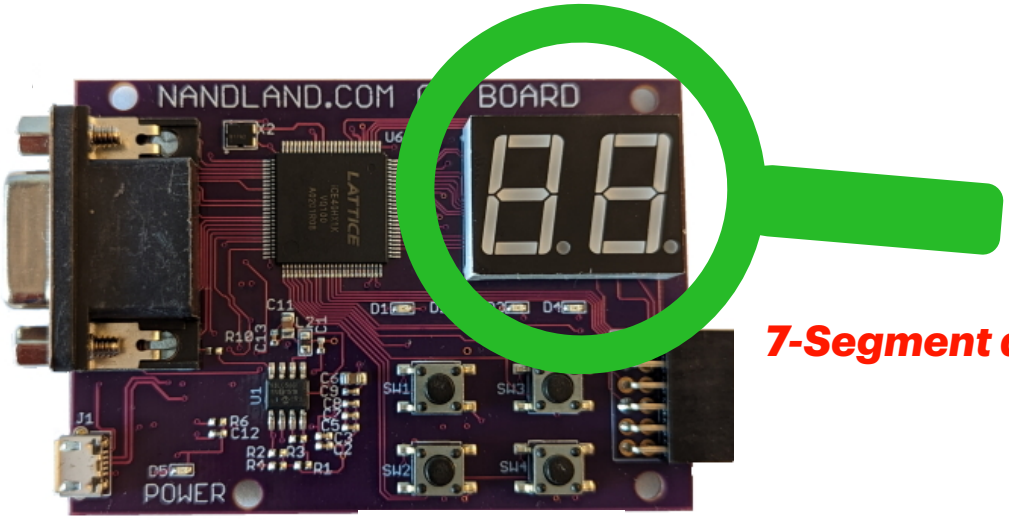
Between each road, there are safe places where Froggy can pause and plan the next move. These safe zones allow you to wait safely until you find the right moment to cross the next road without getting hit by a vehicle.

Each road is populated with cars moving at different speeds. You'll need to time your movements carefully to avoid being hit.

LEVEL

Every time Froggy successfully reaches the top of the screen, you advance to the **next level**. The objective remains the same—help Froggy cross the roads and obstacles to reach the top again—but with each level, the **difficulty increases**:

- **Car Speed Increases**: As you progress to the next level, the cars on the roads will move faster
- **Nine Levels Total**: There are a total of **9 levels**. With each level, the car speeds continue to ramp up
- **Level Display**: The current level number will be displayed on the **7-Segment display** of your Go-Board, as shown in the picture below.



LOOSING

You have **only one life**. If Froggy is hit by a car while attempting to cross a road, you will lose the game and be teleported back to the **starting point**.

- **Game Reset**: If you are in a higher level when you lose, the game will reset to **Level 1**. You will need to start from the very beginning.
- **Restarting the Game**: To start a new game after losing, you will need to press the four buttons again, just like when you first began, to control Froggy's movements and start a new attempt.

FAQ

1. **Do I need to flash the board if I reconnect it to the screen?**

No, once you flash the board, the game is stored permanently. You do not need to re-flash the board every time you reconnect it to the screen.

2. **I can't move the frog. What should I do?**

Make sure you have pressed the four buttons to start the game before attempting to move Froggy. The game will not respond to movement until this action is completed.

3. **Do I need to stay connected to my computer to play the game?**

Yes, the Go-Board does not have an integrated battery. If you want to make it portable by adding a battery, refer to the Go-Board documentation on nandland.com.

4. **The colors in the game are incorrect or buggy. How can I fix this?**

Check that the VGA cable is connected properly. Ensure it is securely plugged into both the Go-Board and your screen, and use the screws to fasten the VGA connector to the port tightly to avoid any display issues.

SAFETY AND HANDLING

⚠ ***WARNING*** *To ensure proper use and avoid damage to your Go-Board, follow these safety and handling guidelines*

1. **Heat Management:** The Go-Board can become hot during extended use. Allow the board to cool down before handling after prolonged operation to avoid burns.

2. **Storage:** When not in use, store the Go-Board in a dry, cool environment, avoiding extreme temperatures that could damage components.

3. **Handle with Care During Connection**: When connecting the Go-Board to your computer or a display, ensure all cables (USB, VGA) are properly aligned before inserting them into the ports. For VGA connections, use the screws to secure the connector firmly.

4. **Avoid Static Discharge**: Handle the board in an anti-static environment, especially when connecting or disconnecting components. Use an anti-static wrist strap or similar precautions to avoid electrostatic discharge (ESD) that could damage sensitive components.

5. **Keep Dry:** Avoid exposing the Go-Board to moisture or liquid. Water or condensation can cause short circuits or permanent damage.

6. **Avoid Dropping or Bending:** The Go-Board contains delicate circuits and components. Avoid dropping the board, and never apply excessive pressure or bend the board.

7. **Power Off:** Always power down and unplug the board from your computer or power source before handling or making adjustments. Never attempt to adjust or manipulate the board while it is powered on.

8. **No Integrated Battery:** The Go-Board requires continuous power from an external source. If you are considering adding a battery, consult the official Go-Board documentation available on nandland.com for guidance on compatible battery options and