# Instruction Manual for **Sokoban**

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**Requirements:**
- Recommend around 1-5 Players.
- Approximately 3-5 minutes.
- Age 6+.

## Objective

In Sokoban, players need to push the box to the target location to succeed.
In Multi-player mode, the player competes to find the shortest route to get the box to the target

## Setup

To set up the game:

**1**, Open Ripes, and click the "I/O" tab on the left.

**2**, Double-click on the "LED Matrix" device to get an LED matrix if there is not already one. To the right, players should see a panel "LED Matrix 0" with parameters "Height", "Width", and "Size". Set the height and width to 8 and 8.

**3**, Set the size to a value that makes it comfortable for players to distinguish the LEDs.(Range)

**4**, Double-click on the "D-Pad" device to get a D-pad if there is not already one. To the right, players should see a panel "D-Pad 0".

**5,** Single-click the window sign under the cross sign for "LED Matrix 0" and "D-Pad 0".
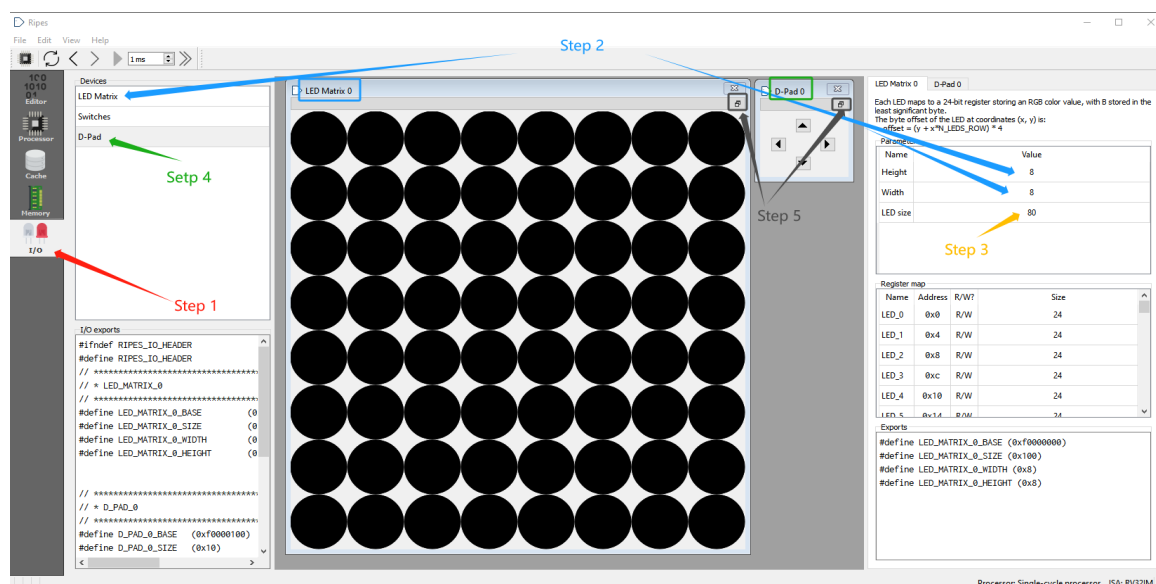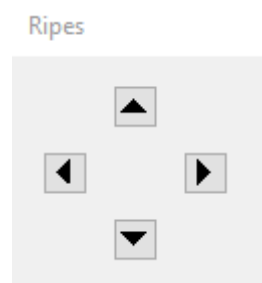


Now we have successfully set up the game.
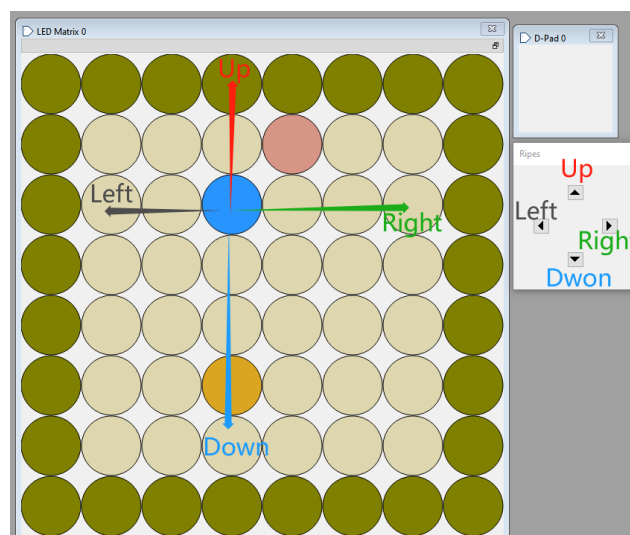Let's get to know the game's components!

# Components

Sokoban contains the following components:

**1**, A **D-pad** for players to control the character.



The buttons on the **D-pad** correspond to the **up, down, left,** and **right** movement of the character on the **LED grid**, as shown below:



**2**,  An **8x8 LED grid** that displays the game.

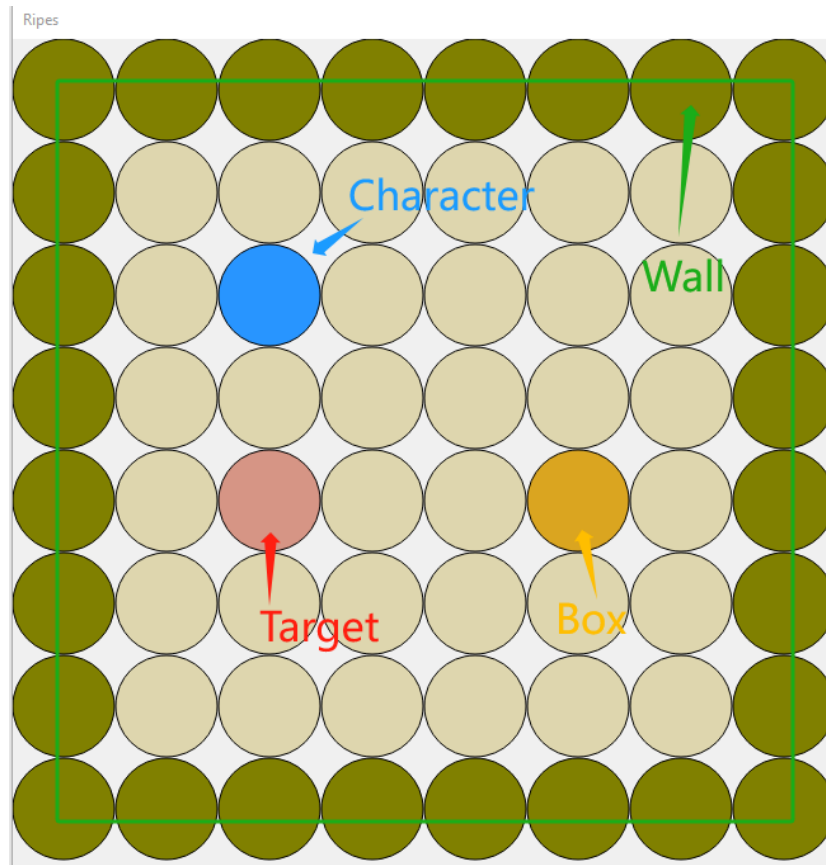Different elements in the grid:

**Character**    The **Character** is controlled by the **D-pad.**

**Box**    The **Box** can only be **pushed** by the **Character.**

**Target**    The **Target** indicates the location where the **box** should be pushed to.

**Wall**    The **Wall** serves as an immovable barrier that defines the play area and limits the pathways for pushing boxes to the **Target**.

3, A **Console** acts as an interface that displays the game's current status and registers the inputs made by players.



```
Console

Now is Player2 turn!
Good Job!

==============================
        Result for round 1
 Player1    Moves made: 7
 Player2    Moves made: 9
==============================
        Cumulative Board
 Player1    Moves made: 7
 Player2    Moves made: 9
==============================
 Player1 is leading the game!!
Would you like to continue to next round? (Enter 0-Yes, Anything else-No):
```

# How to Play

## Starting a New Game

**1**, Single-click the "Editor" tab  on the left.

**2**, Single-click the fast execution tab ≫ at the top left to run the game.

**3**, Enter the number of players into the Console.

## Starting a New Round

**1**, Once the player inputs the number of players, the first round will start, and the Console will display a message to notice the player.

**2**, The Console will display messages indicating when it is each player's turn.

**3**, If players solve the puzzle and succeed, the Console will display "Good Job!" If a play fails, the player can choose to skip the round(More detail below), the Console will prompt "It's okay, do better next round!".

**4**, Once every player finishes, the Console will display the result of the round and the cumulative scoreboard.

```
How many players do you have(Recomand around 1-5): 4


Round 1 started!!!

Now is Player1 turn!
Would you like to skip this round? (Enter 0-Yes, Anything else-No): 0
It's okay, do better next round!

Now is Player2 turn!
Good Job!

Now is Player3 turn!
Good Job!

Now is Player4 turn!
Would you like to skip this round? (Enter 0-Yes, Anything else-No): miss click
Good Job!

===============================
        Result for round 1
Player1    FAIL
Player2    Moves made: 8
Player3    Moves made: 12
Player4    Moves made: 13
===============================
    Cumulative Leaderboard
Player2    Moves made: 8
Player3    Moves made: 12
Player4    Moves made: 13
Player1    Moves made: 20
===============================
Would you like to continue to next round? (Enter 0-Yes, Anything else-No):
```

# Description of Special Player Actions

- **Stuck? Skip!**
  If players maneuver the Box into an unsolvable position, they have the option to bypass the current round. To initiate this, the player can control the Character to push against any Wall, and the Console will ask the player to confirm whether they wish to skip the round.

  #If a player skips his round, his current round result will count as FAIL, and the move count for the round will be auto-set to 20.
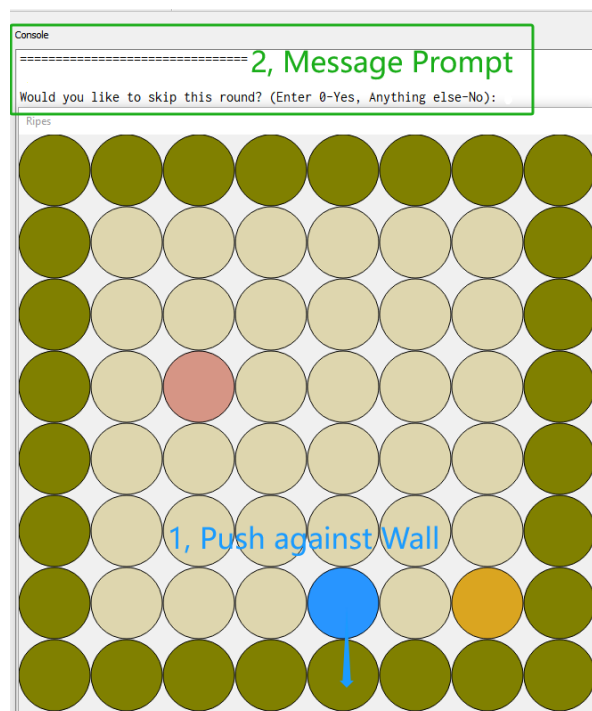


# End of a Round/Game

- **Exit or Continue**
  At the end of each round, the console will ask the player to confirm whether they wish to continue to the next round.
  If yes, the game will start a new round; otherwise, the game will end. At this time, the player who has the lowest Score (Least moves made) will win the game.

```
================================
        Cumulative Board
  Player1     Moves made: 15
  Player2     Moves made: 25
  Player3     Moves made: 34
================================
  Player1 is leading the game!!
Would you like to continue to next round? (Enter 0-Yes, Anything else-No): end
  Player1 is the winner!!
```

Player input

The game ended, winner was printed

# Things to Keep in Mind

- Only enter data into the Console when prompted.
- If there is no response after input when requesting a skip round, please attempt to request again.
- Please prevent entering invalid data when entering the number of players, which may cause the game to end.
- If multiple players are in first place at the end of the game, they are all winners!
- If the Grid LED occurs a display error, the players can set up the LEDs first(The **Setup** Section at the top), and reload the code by restarting the Ripes.