

Controller Mapping

Input System

[Unity's Input System](#) is a new way to have consistent controls across a wide range of devices. It allows easy customization for multiplayer input and on the fly switching to different controllers. While Unity supports a wide range of controllers, It is dependent on SDL for Input on Linux OS. While many controllers are already known and recognised by SDL, Atari controllers are yet to be recognised.

1. Unlike Windows and MacOS, Unity asks SDL for information about any device on Linux platform. SDL then matches the Vendor ID and Device ID with its database and returns a layout with best match possible.
2. Layout is basically a map of all the buttons present in a controller. If Unity cannot find that map, it will not be able to register any input from that device.
3. SDL doesn't recognise Atari controllers, so it cannot provide a perfect layout for these controllers, although it does return a device with the same Device ID which we can then use to extend that device's layout at runtime. Unity allows developers to extend a layout to include more buttons.
4. Atari's Modern Controller and Classic Joystick are received by SDL in a [FourCC](#) Format (i.e. LJOY).
5. Classic Joystick's Device ID is 1001.
6. Modern Controller's Device ID is 1002.
7. If you look into SDL, these Device IDs are matched as [Keyboard Hub](#) and [Cetus CDC Device](#). So, For eg. whenever a Modern Controller is connected, Unity will notify the developer that a device "Keyboard Hub" is connected. Developers can then on the fly extend that layout to have all the Modern Controller buttons.
8. Check Unity's [documentation](#) for extending a layout for matched devices. Please refer below tables for the bits and offset values of each button for both Modern Controller and Classic Joystick.
9. Once a developer is able to set up the layout for both Modern Controller and Classic Joystick, They shall proceed to set up the Action map for their Game Controls. An Action Map as the name suggests is a keybinding to a certain action.
10. Unity Tutorial: <https://youtu.be/xF2zUOfPyg8>

Modern Controller

Button	Bit	Offset
A	0	0
B	1	0
X	3	0
Y	2	0
Back	6	0
Atari	0	1
Menu	7	0
Left Joystick Horizontal	0	4
Left Joystick Vertical	0	8
Right Joystick Horizontal	0	16
Right Joystick Vertical	0	20
D-Pad Horizontal	0	28
D-Pad Vertical	0	32
Left Bumper	4	0
Right Bumper	5	0
Left Trigger	0	12
Right Trigger	0	24
Left Joystick	1	1
Right Joystick	2	1

Classic Joystick

Buttons	Bits	Offset
Joystick Horizontal	0	8
Joystick Vertical	0	12
Menu	3	0
Back	2	0
Atari	4	0
A	0	0
B	1	0

Input Manager

Modern Controller

Button	Joystick Button/Axis
A	joystick button 0
B	joystick button 1
X	joystick button 3
Y	joystick button 2
Back	joystick button 6
Atari	joystick button 8
Menu	joystick button 7

Left Joystick Horizontal	Axis 1
Left Joystick Vertical	Axis 2
Right Joystick Horizontal	Axis 4
Right Joystick Vertical	Axis 5
D-Pad Horizontal	Axis 7
D-Pad Vertical	Axis 8
Left Bumper	joystick button 4
Right Bumper	joystick button 5
Left Trigger	Axis 3
Right Trigger	Axis 6
Left Joystick	joystick button 9
Right Joystick	joystick button 10

Classic Joystick

Button	Joystick Button/Axis
A	joystick button 0
B	joystick button 1
Back	joystick button 2
Atari	joystick button 4
Menu	joystick button 3
Joystick Horizontal	Axis 2
Joystick Vertical	Axis 3