

# Joystick Script Documentation

## Overview

This script is used to create a virtual joystick in Unity for controlling game objects. It provides a customizable joystick interface that can be used for touch input.

## Variables

- `OnTouch` : A UnityEvent that is invoked when the joystick is touched.
- `OnRelease` : A UnityEvent that is invoked when the joystick is released.
- `AxisType` : An enum that determines the type of axis for the joystick ( `Angle` or `Cross` ).
- `JoystickType` : An enum that determines the type of joystick ( `Default` or `Custom` ).
- `JoystickSize` : The size of the joystick background.
- `HandleSize` : The size of the joystick handle.
- `BackgroundAlpha` : The alpha value of the joystick background.
- `HandleAlpha` : The alpha value of the joystick handle.
- `Ratio` : The ratio of the handle movement to the joystick background size.
- `DeadZone` : The dead zone radius for the joystick.
- `ShowOnTouch` : Determines whether the joystick should be shown only when touched.

## Functions

- `Start()` : Initializes the variables and settings for the joystick.
- `UpdateConfig()` : Updates the configuration of the joystick based on the settings.
- `InputTouch()` : Handles the touch input for the joystick.
- `Down(Touch touch)` : Handles the touch down event for the joystick.
- `Drag(Touch touch)` : Handles the touch drag event for the joystick.
- `Drop()` : Handles the touch release event for the joystick.
- `InBounds(Touch touch, RectTransform rect)` : Checks if the touch is within the bounds of a given RectTransform.
- `GetAxis()` : Calculates the axis values based on the joystick handle position.
- `GetDirection()` : Determines the direction and angle of the joystick handle movement.
- `GetAngle(Vector2 Axis)` : Calculates the angle of the joystick handle movement.
- `OnStartTouch()` : Called when the joystick touch begins.
- `OnEndTouch()` : Called when the joystick touch ends.

## Notes

- This script should be attached to a game object with a UI Image component.
- The joystick can be customized by adjusting the variables in the inspector.
- The `OnTouch` and `OnRelease` events can be used to perform specific actions when the joystick is touched or released.
- The `AxisType` determines how the joystick handle movement is calculated: `Angle` calculates the axis based on the angle of movement, while `Cross` uses predefined directions (up, down, left, right).
- The `JoystickType` determines the type of joystick: `Default` is the default Unity UI joystick, while `Custom` allows for custom graphics and animations.