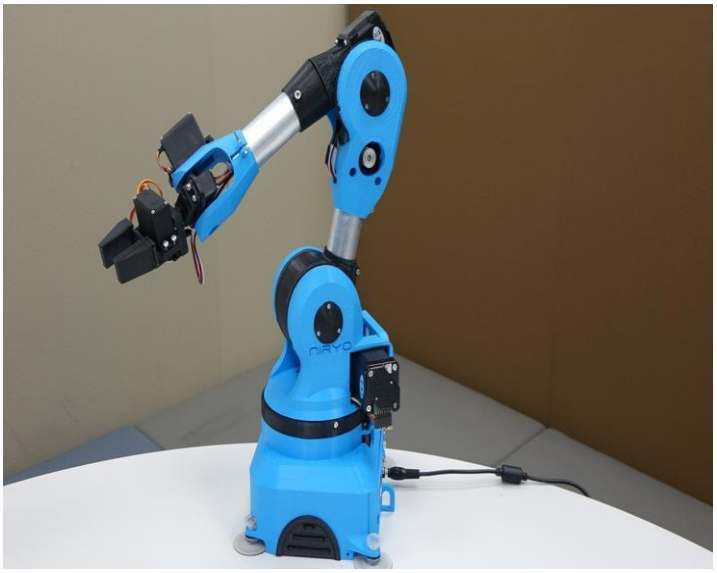
Robotic Arm



Robotic Arm

In this tutorial, we are going to design an **Rasberrypi based Robotic Arm** .Here in this project **raspberry pi is programmed to control DC motors** which are serving as joints of Robotic arm. This setup also looks as a **Robotic Crane** or we can convert it into a Crane by doing some easy tweaks. This project will be helpful for beginners who want to learn to develop a advance industrial robotic arm.

This **Robotic Arm** can be controlled by **joystick** attached to indpi kit, You can move these dc motor by controlling joystick button to pick some object, with some practice you can easily pick and move the object from one place to another.

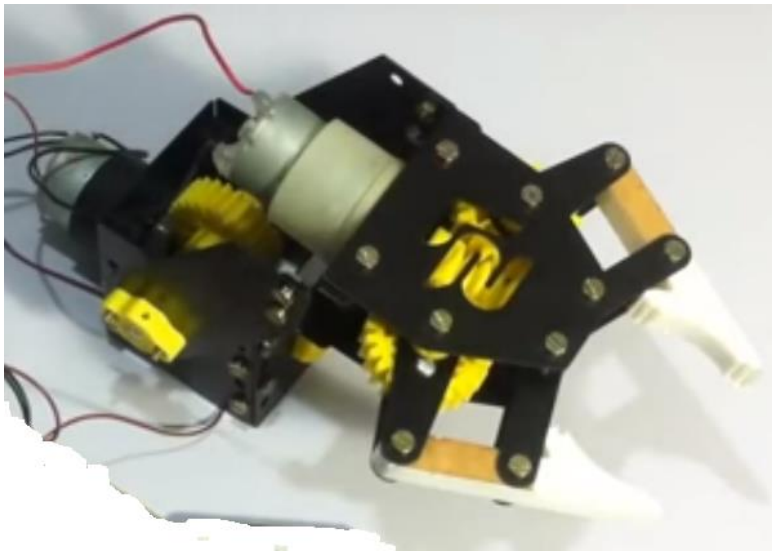
Components Required

- Indpi Evironment kit
- Gear box
- Handgripper
- Motror driver
- 12v power supply

Dc Geared Motor

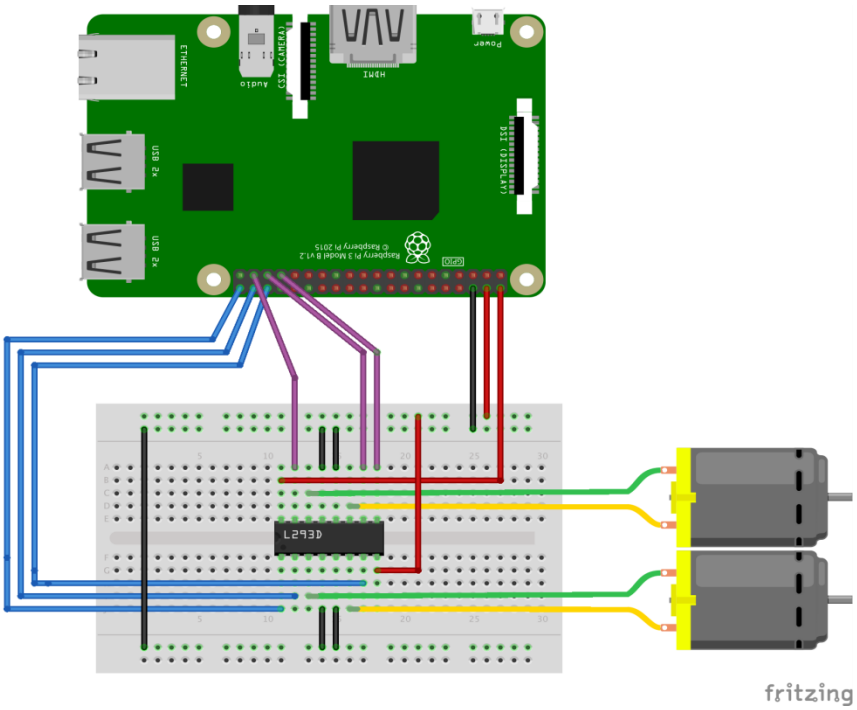
Geared DC motors can be defined as an extension of DC motor which already had its Insight details demystified here. A geared DC Motor has a gear assembly attached to the motor. The speed of motor is counted in terms of rotations of the shaft per minute and is termed as RPM .The gear assembly helps in increasing the torque and reducing the speed. Using the correct combination of gears in a gear motor, its speed can be reduced to any desirable figure. This concept where gears reduce the speed of the vehicle but increase its torque is known as gear reduction.

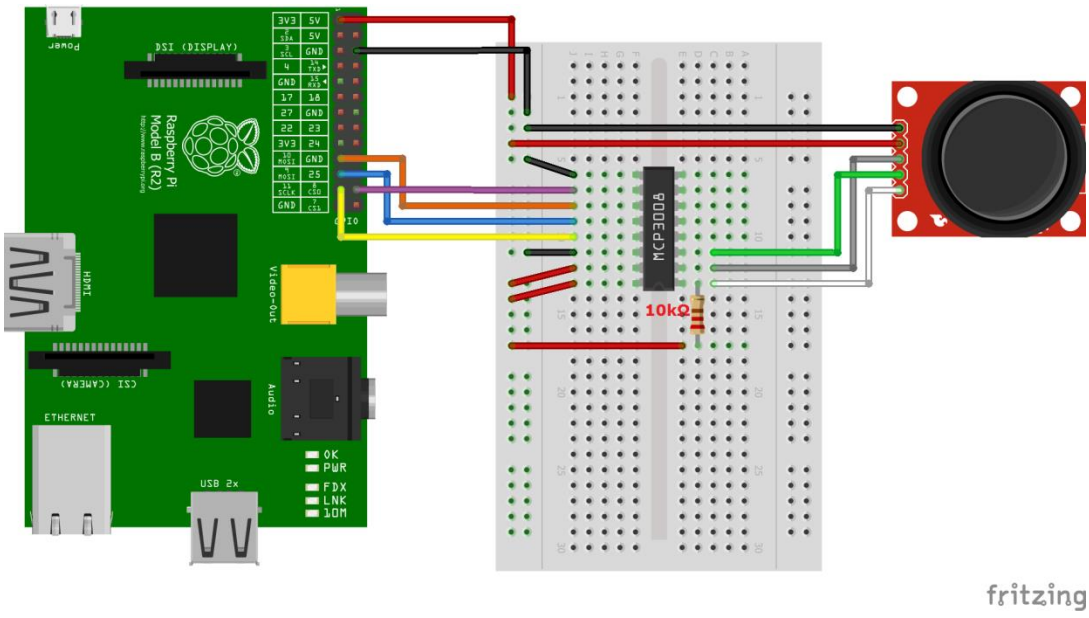
Construction of Robotic Arm



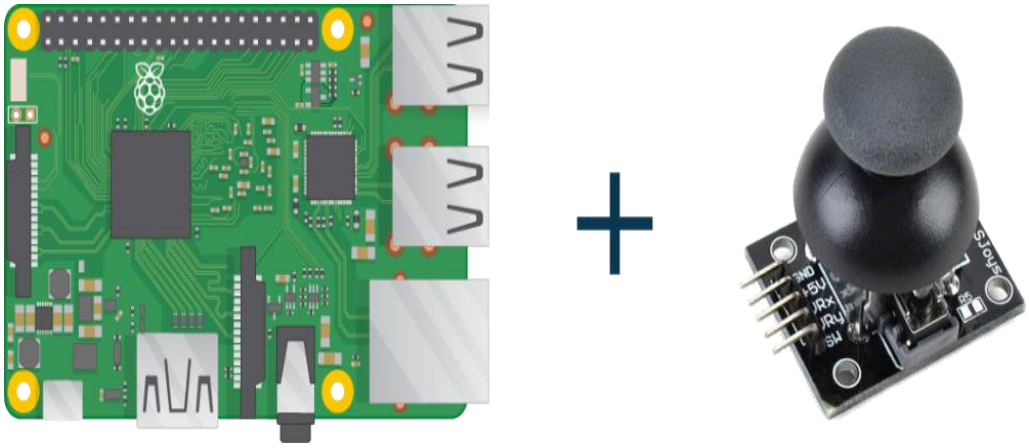
Circuit Diagram and Working Explanation:

The circuit connection for **Arduino Uno Robotic Arm** is shown below.





How to Operate Robotic Arm:



Joysticks are available in different shapes and sizes. A typical **Joystick module** is shown in the figure below. This Joystick module typically provides Analog Outputs and the output voltages provided by this module keep changing according to the direction in which we move it. And we can get the direction of movement by interpreting these voltage changes using some microcontroller.

This joystick module has two axes as you can see. They are X-axis and Y-axis. Each axis of JOY STICK is mounted to a potentiometer or pot. The mid points of these pots are driven out as Rx and Ry. So Rx and Ry are variable points to these pots. When the Joystick is in standby, Rx and Ry act as voltage divider.

When joystick is moved along the horizontal axis, the voltage at Rx pin changes. Similarly, when it is moved along the vertical axis, the voltage at Ry pin changes. So **we have four directions of Joystick on two ADC outputs**. When the stick is moved, the voltage on each pin goes high or low depending on direction.