Video exemplars, code and circuits

Exemplars for DIY Hydraulic systems:

Hydraulic LIft

https://www.youtube.com/watch?v=Eh0kyhEa8g8

Robotic Arm (Advanced) – Would require multiple motors and more code for each one.

https://www.youtube.com/watch?v=xhB9mmDkzj8

Arduino circuit with DC motor arm transferring rotational motion into linear motion. The speed of the arm as is too fast as it is not currently pushing anything so no force is required from the arm. Since power is force times velocity the velocity will decrease as the force required from the arm increases.

https://www.youtube.com/watch?v=aGDe6u9fyJ4

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Arduino code for circuit attached circuit with DC motor

```
//Setting variable names for each arduino pin for more appropriates call throughout the code
2ons tint controlPin1 = 2;
2ons tint controlPin2 = 3;
2ons tint enablePin = 9;
2ons tint forwardPin = 4;
2ons tint backwardsPin = 5;

void setup() {
// forwardPin and backwardsPin are connected to the two buttons in the circuit
// enablePin turns the motor on and off
// when pin2 is HIGH the motor rotates clockwise, pin1 HIGH will rotate motor counterclockwise

 pinMode (forwardPin, INPUT);
 pinMode (backwardsPin, INPUT);
 pinMode (controlPin1, OUTPUT);
 pinMode (controlPin2, OUTPUT);
 pinMode (enablePin, OUTPUT);
}

void loop() {
  if (digitalRead (forwardPin) == HIGH){
  digitalWrite (controlPin2, HIGH);
  digitalWrite (controlPin1, LOW);
  digitalWrite (enablePin, HIGH);
  delay (5);
 }
 if (digitalRead (backwardsPin) == HIGH){
  digitalWrite (controlPin2, LOW);
  digitalWrite (controlPin1, HIGH);
  digitalWrite (enablePin, HIGH);
  delay (5);
 }
 else {
  digitalWrite (enablePin, LOW);
 }
}
```

The above code can be modified using a potentiometer for speed control if interested. I have included diagrams of the circuit which include this potentiometer however I removed it for this particular project.

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Circuit Diagram

A detailed explanation of the circuit and the steps for assembly can be found in the attached PDF for the Arduino projects. Controlling a DC motor using an H-Bridge is project 10 on page 102. The circuit and code is modified for this particular project.

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