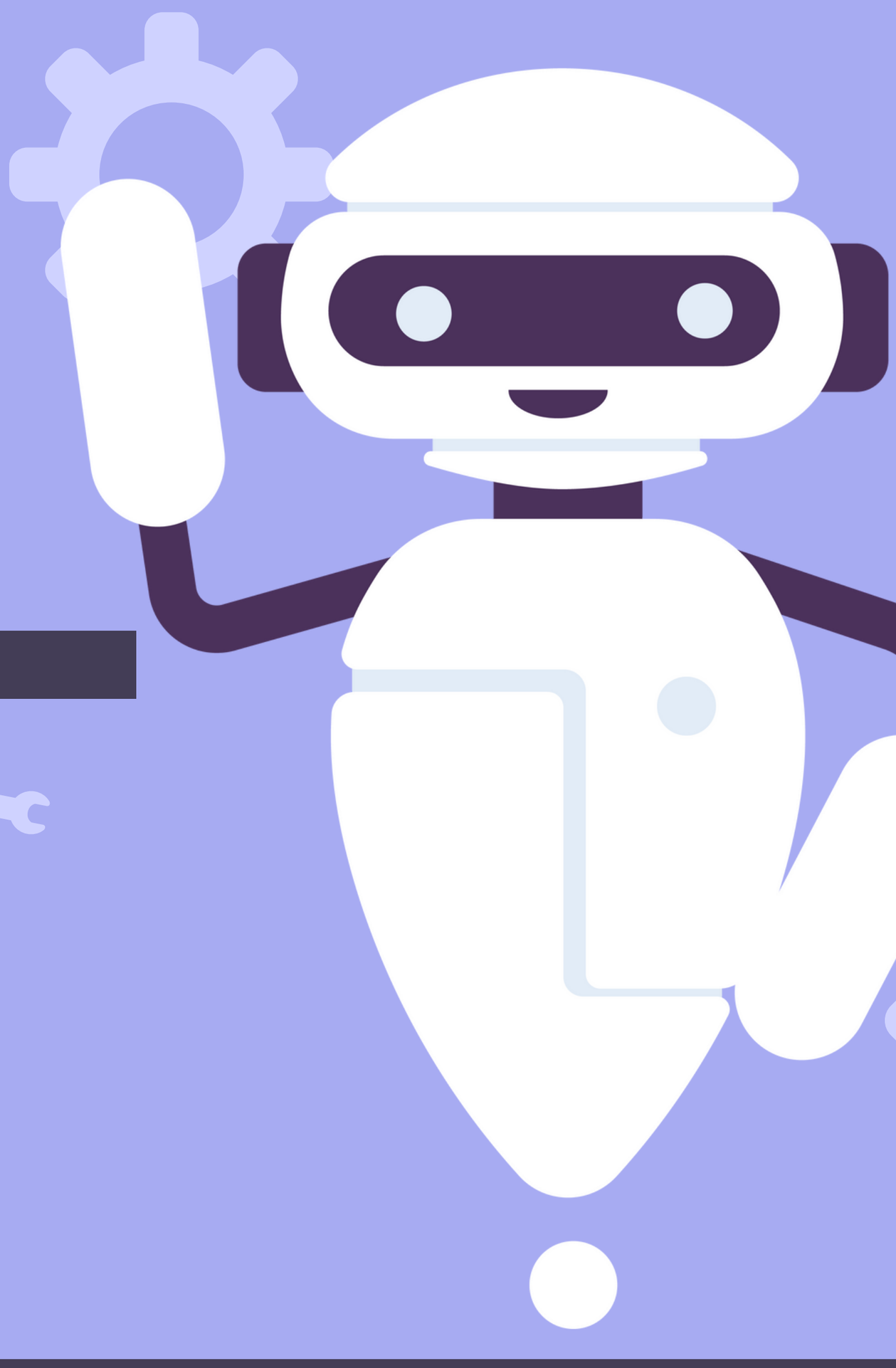
OPERATING AND MOVING THE ARM USING ROS



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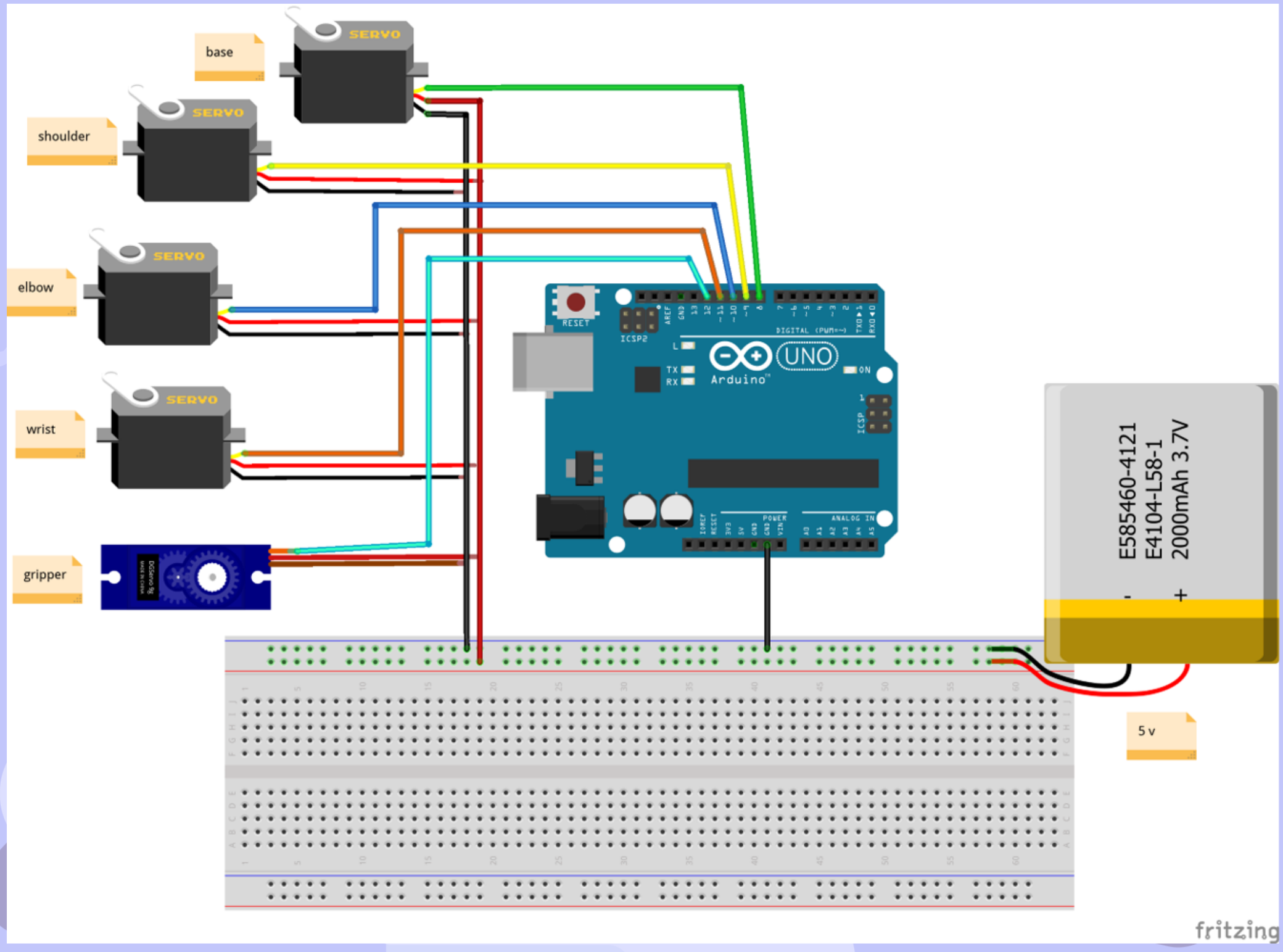
الدائر الكهربائية



يحتوي ذراع الروبوت على 5 وصلات فقط 4 وصلات يمكن التحكم فيها بشكل كامل عبر ROS و Rviz ، وللمفصل الأخير (القابض) حركة افتراضية يتم تنفيذها من كود Arduino مباشرة.

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الدائرة تحتوي على 5 سيرفوهات وبطارية خارجية (power supply)
السبب في استخدم كل هذا هو اننا لا يمكن توصيل السيرفوهات بشكل مبار على الاردوينو حتي نتجنب مشاكل تعطيل الاردوينو

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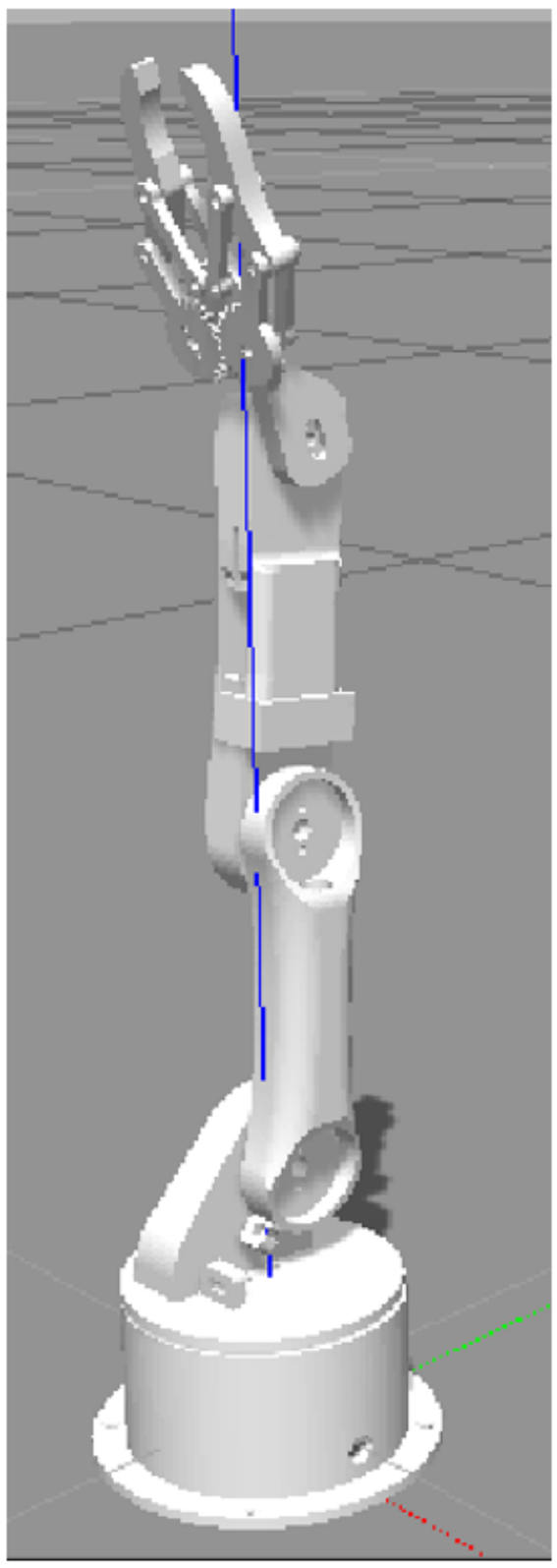
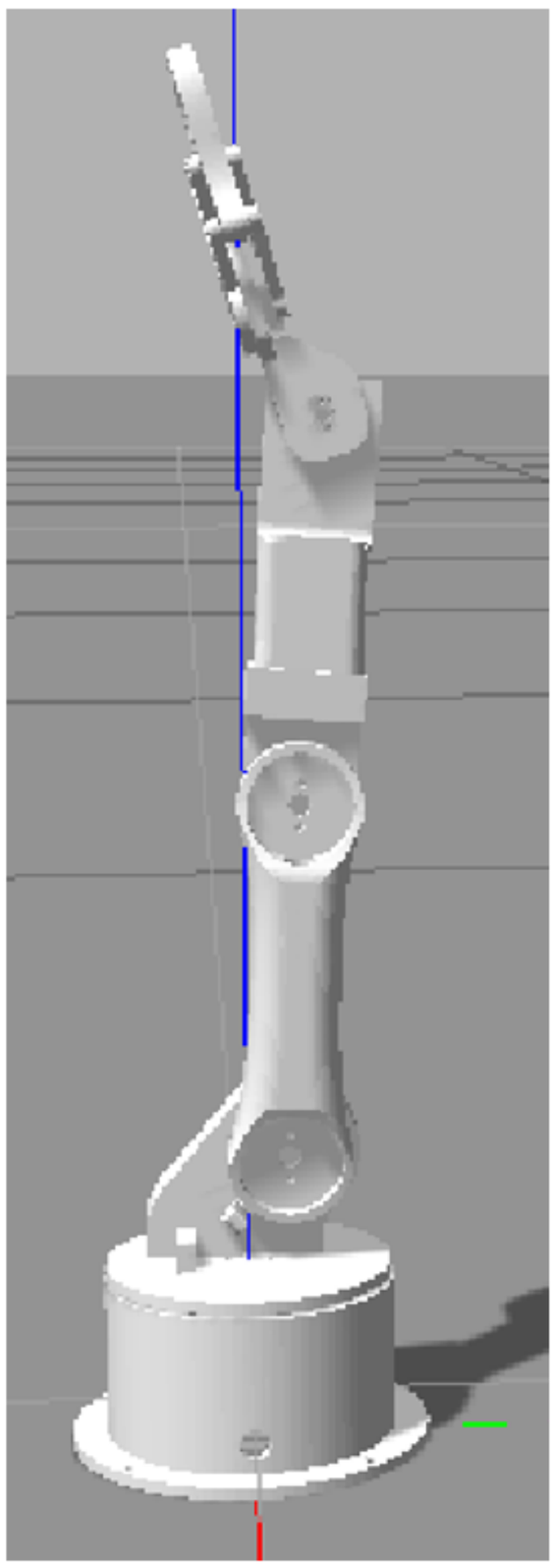
المواقف الأولية للروبوت





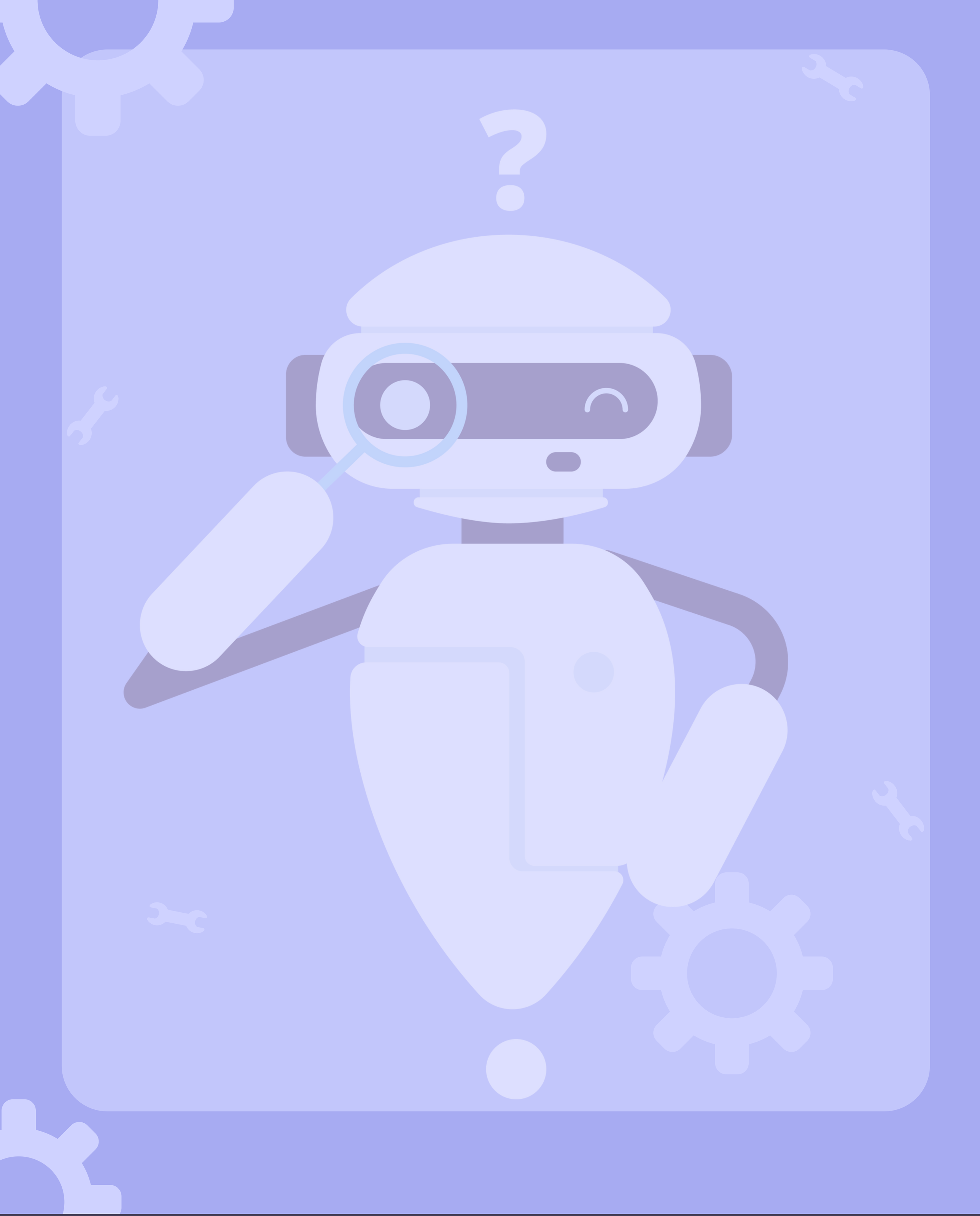
Base: 90°

Shoulder: 90°

Elbow: 90°

Wrist: 90°

Gripper: 0° (closed)



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CODE

Sweep

```
<by BARRAGAN <http://barraganstudio.com
.This example code is in the public domain

modified 8 Nov 2013
by Scott Fitzgerald
https://www.arduino.cc/en/Tutorial/LibraryExamples/Sweep
/*
<include <Servo.h#

Servo myservo;  // create servo object to control a servo
;Servo myservo1
;Servo myservo2
;Servo myservo3
twelve servo objects can be created on most // boards
```

```
int pos = 0;    // variable to store the servo
position


} ()void setup
myservo.attach(8);  // attaches the servo on
pin 9 to the servo object
;(myservo1.attach(9
   ;(myservo2.attach(10
 ;(myservo3.attach(11


{

} ()void loop
for (pos = 0; pos <= 180; pos += 1) { // goes
from 0 degrees to 180 degrees
in steps of 1 degree //
myservo.write(pos);                  // tell servo to go
'to position in variable 'pos
```

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```
  delay(15);                          // waits 15 ms for the
                                  servo to reach the position
{
for (pos = 180; pos >= 90; pos -= 1) { // goes
from 180 degrees to 0 degrees
myservo.write(pos);               // tell servo to
'go to position in variable 'pos
delay(15);                        // waits 15 ms for
the servo to reach the position
{
for (pos = 0; pos <= 180; pos += 1) { // goes
from 0 degrees to 180 degrees
in steps of 1 degree //
    myservo1.write(pos);                 // tell servo
                  to go to position in variable 'pos'
delay(15);                           // waits 15 ms for
the servo to reach the position
{
```

```
for (pos = 180; pos >= 90; pos -= 1) { // goes
from 180 degrees to 0 degrees
myservo1.write(pos);              // tell servo to
'go to position in variable 'pos
delay(15);                        // waits 15 ms for
the servo to reach the position
{
for (pos = 0; pos <= 180; pos += 1) { // goes
from 0 degrees to 180 degrees
in steps of 1 degree //
myservo2.write(pos);              // tell servo to
'go to position in variable 'pos
delay(15);                        // waits 15 ms for
the servo to reach the position
{
```

```
for (pos = 180; pos >= 90; pos -= 1) { // goes
        from 180 degrees to 0 degrees
myservo2.write(pos);              // tell servo to go
        'to position in variable 'pos
delay(15);                        // waits 15 ms for the
        servo to reach the position
        {
for (pos = 0; pos <= 180; pos += 1) { // goes
        from 0 degrees to 180 degrees
        in steps of 1 degree //
myservo3.write(pos);              // tell servo to go
        'to position in variable 'pos
 delay(15);                       // waits 15 ms for the
        servo to reach the position
        {
```

```
            for (pos = 180; pos >= 90; pos -= 1) { //
              goes from 180 degrees to 0 degrees
myservo3.write(pos);                  // tell servo
'to go to position in variable 'pos
delay(15);                            // waits 15 ms for
the servo to reach the position
{
{
```


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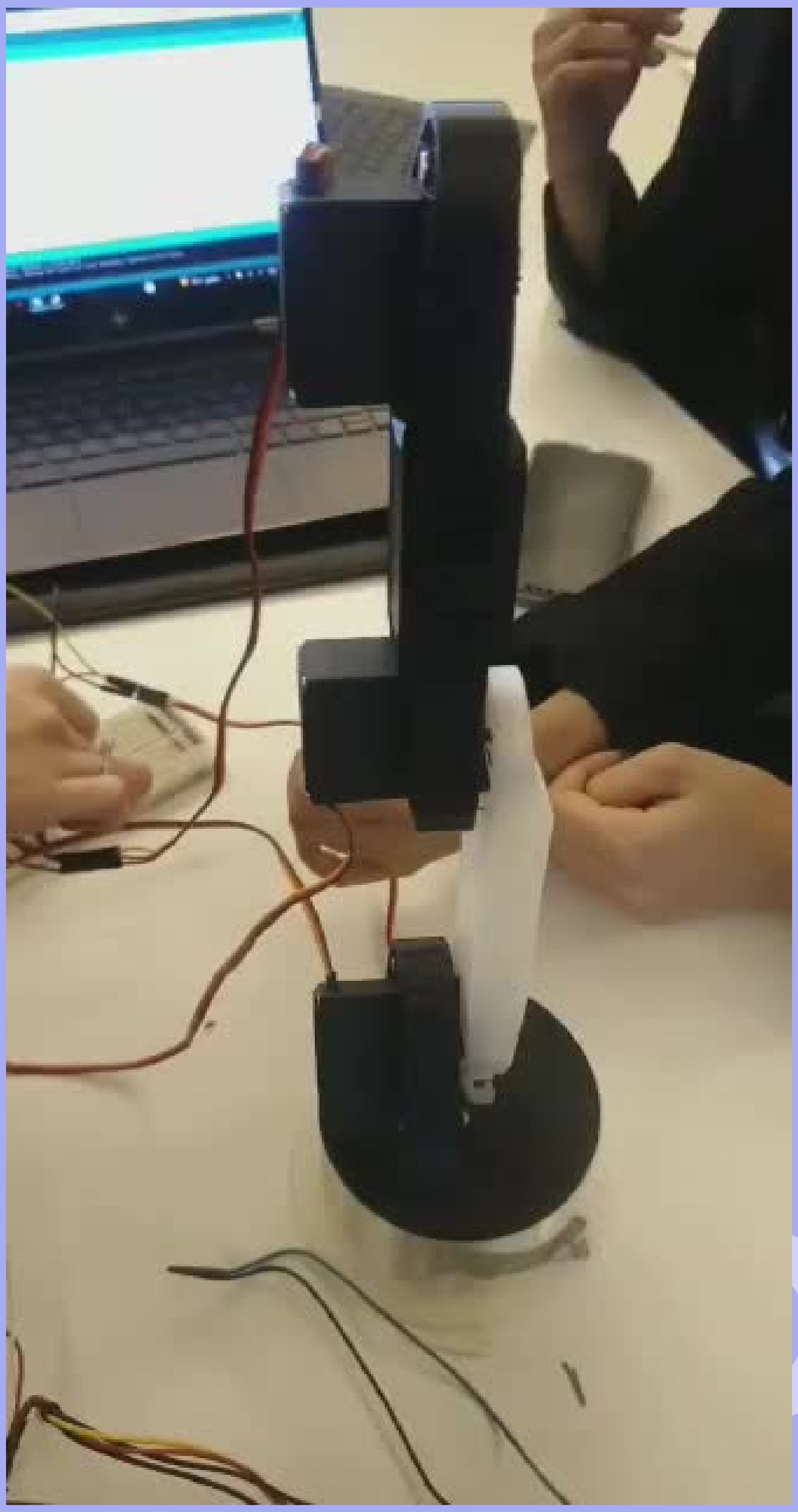

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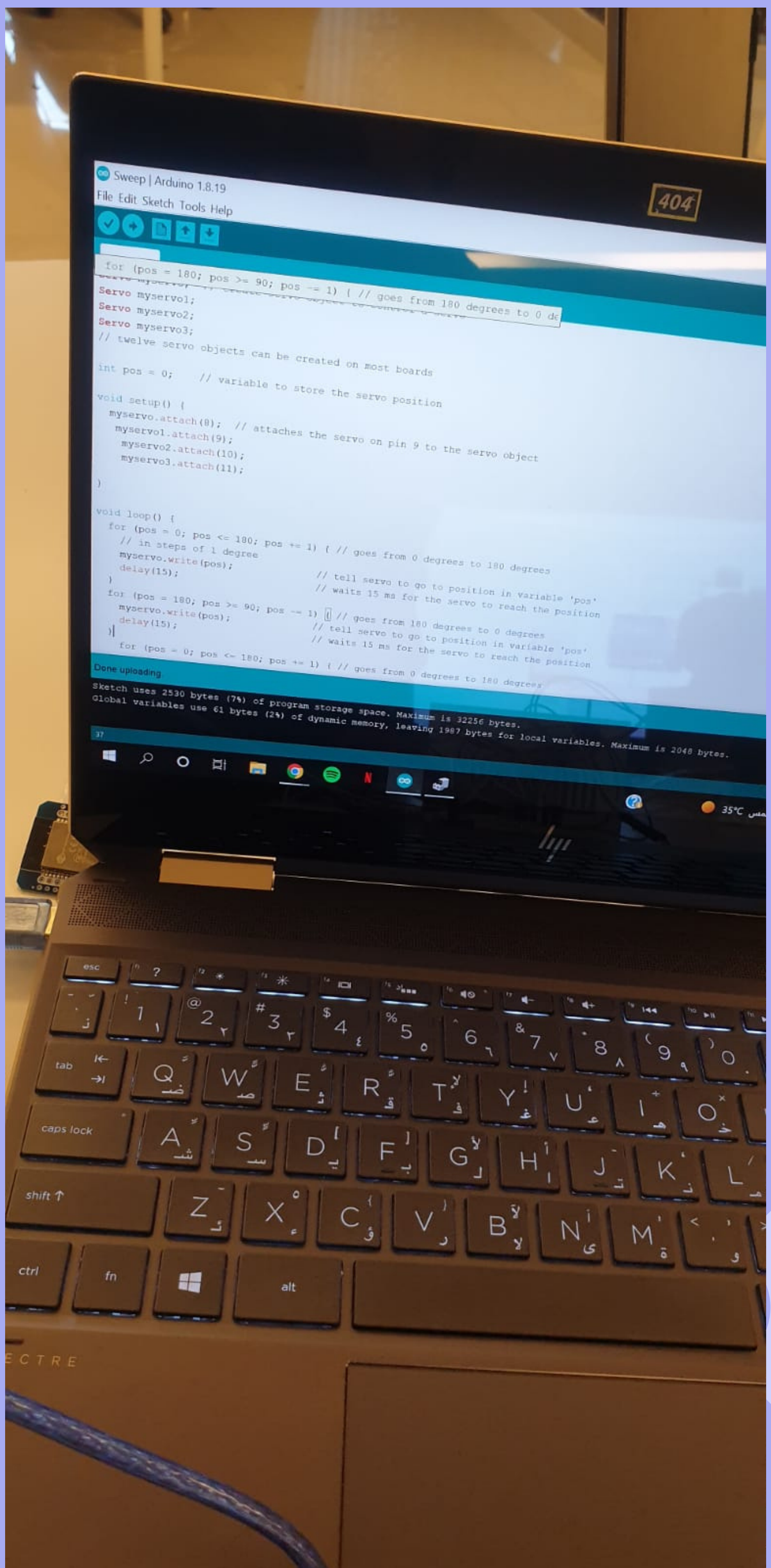

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