

# INTENTIONAL INTERACTIONS

Module Overview

	WEEK 1	WEEK 2	WEEK 3
MON	<p><b>Introduction Setup</b></p> <p><b>Arduino Basics</b> Japan House Visit</p>	<p><b>Arduino + Unity</b> Hardware &lt;-&gt; Software</p> <p><b>Arduino + Unity</b> Synchronised Robot Arm</p>	<p>Solo Project</p> <p>Solo Project</p>
TUE	<p><b>Arduino</b> Servos and Robot Arm</p> <p><b>Arduino</b> Interaction</p>	<p><b>Catch Up</b> Answering Questions</p> <p><b>Robot Arm</b> Designing Behaviours</p>	<p>Solo Project</p> <p>Solo Project</p>
WED	<p><b>Unity</b> Introduction</p> <p><b>Unity</b> Basics</p>	<p><b>Robot Arm</b> Designing Behaviours</p> <p><b>Group Work</b> Multiple Arms</p>	<p>Solo Project</p> <p><b>Solo Assessment</b></p>
THU	<p><b>Unity</b> 3D Models</p> <p><b>Unity</b> Robot Arm</p>	<p><b>Review</b> Robot Arms</p> <p><b>Durrell Bishop Lecture</b> <b>Solo Project Kick-off</b></p>	<p>Surprise</p> <p>Surprise</p>

# INTENTIONAL INTERACTIONS

*Slide from the module introduction lecture*



In a way, interaction design was born when it became necessary to think about interactions between human and objects in more complex terms than *action/reaction*

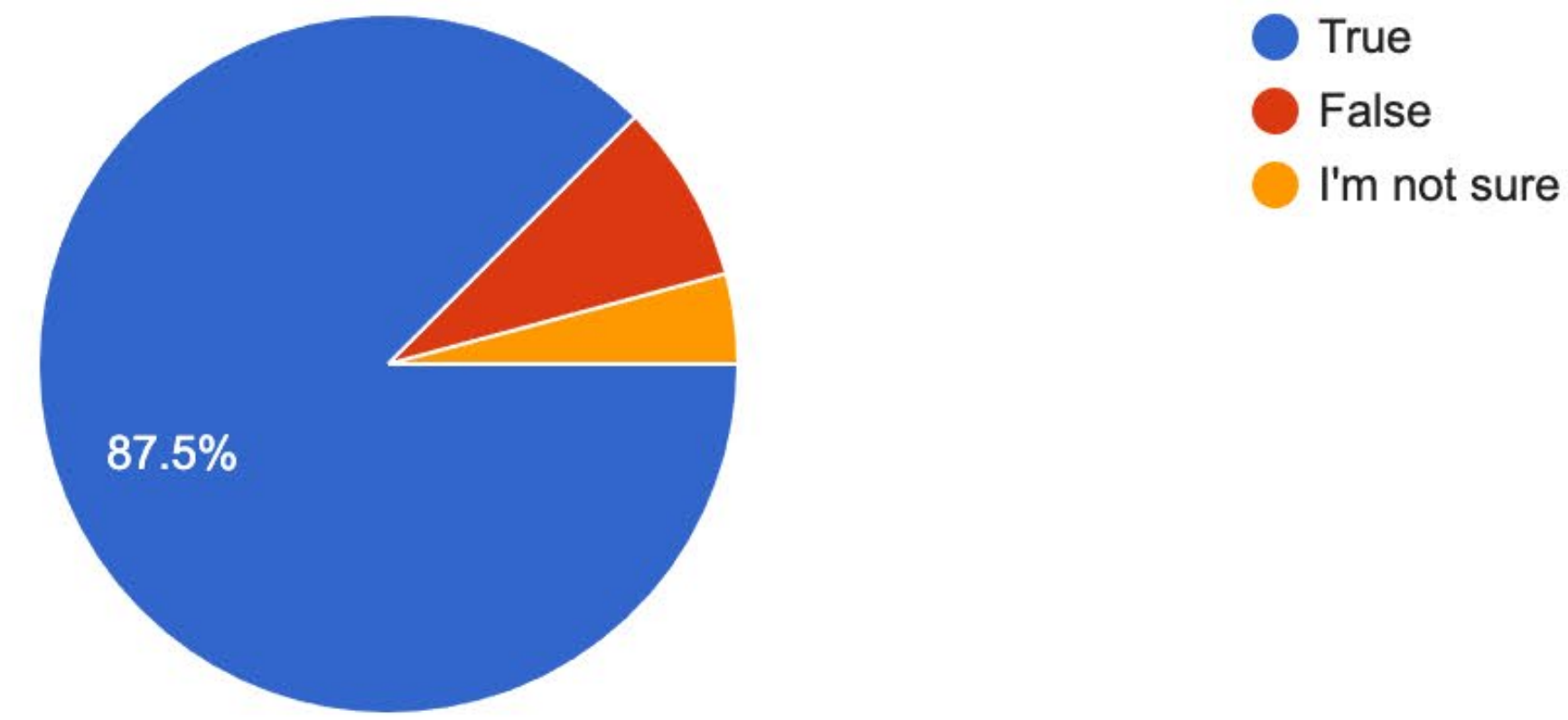
Learning	Workshop	Day		Prototyped			
What is Arduino	Hello World	Week 1 D1	Arduino	01-arduino/01-hello-world			
What is a code editor	Hello World			01-arduino/01-hello-world			
Building a code	Hello World			01-arduino/01-hello-world			
Uploading a code	Hello World			01-arduino/01-hello-world			
Printing "Hello World!"	Hello World			01-arduino/01-hello-world			
Spotting / Fixing Errors	Hello World						
Difference between setup and loop functions	Hello World			01-arduino/01-hello-world			
Turn on an LED	Hello Output			01-arduino/02-hello-output/01-blink			
Variables, global vs local	Hello Output			01-arduino/02-hello-output/01-blink			
Commenting out code	Hello Output			01-arduino/02-hello-output/01-blink			
Writing analog values	Hello Output			01-arduino/02-hello-output/02-intensity			
While Loop	Hello Output			01-arduino/02-hello-output/03-fade			
Reading Analog Values	Hello Input			01-arduino/03-hello-input/01-potentiometer			
Remapping values	Hello Input			01-arduino/03-hello-input/01-potentiometer			
Reading Digital Values	Hello Input			01-arduino/03-hello-input/02-button			
Reading Serial values	Hello Input			01-arduino/03-hello-input/03-serial			
What is a function	Bonus			01-arduino/04-bonus-functions			
Reading Documentation	Micro Challenges						
Controlling a Servo	Robot Operator			Week 1 D2		01-arduino/05-servo/01-servo-basics	
Moving a servo at different speeds	Robot Operator				01-arduino/05-servo/02-servo-speed		
For Loop	Robot Operator	01-arduino/05-servo/02-servo-speed					
Array	Robot Operator	01-arduino/05-servo/03-servo-positions					
Multiple Servos	Robot Operator	01-arduino/05-servo/04-servo-multiple					
Input can be digital and output physical	Robot Operator	01-arduino/05-servo/					
What makes a good mapping?	Robot Operator	01-arduino/06-human-operator/01-pot-servo					
Smoothing sensor signals	Human Operator	01-arduino/06-human-operator/02-smoothing					
Input can be physical and output digital	Human Operator	01-arduino/06-human-operator/02-smoothing					
Complex relationship between input and output (e.g. position equation)	Human Operator	01-arduino/07-robot-arm/01-arm-position					
What is Unity	Hello Unity	Week 1 D3	Unity				
What is a Scene in Unity							
Difference between Scene view and Game view							
Difference between Unity and the code editor							
Difference between start and update functions							
Building a code in Unity							
Running code in Unity							
Reading mouse inputs				Unity Inputs			
Reading Keyboard inputs							
If statement							
Create a basic 3D object							
Move the camera							
Private / Public variables							

# INTENTIONAL INTERACTIONS

*Extract from a tutors-only working document allowing for tracking the curriculum goals of the module*

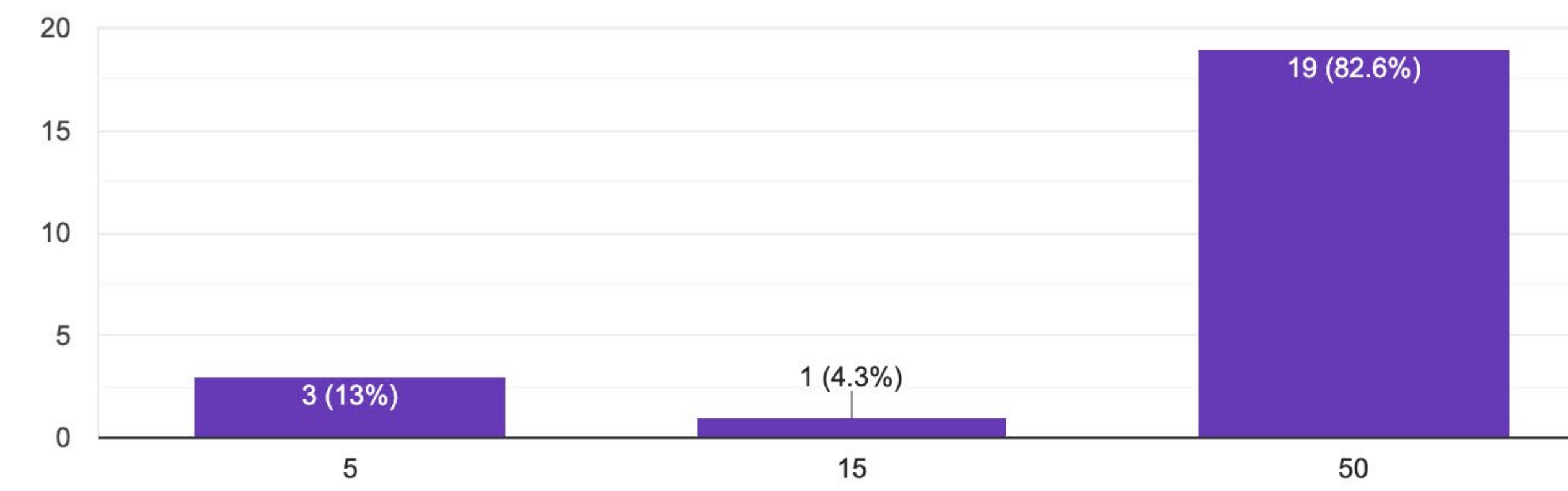
Arrays are a type of data structure

24 responses



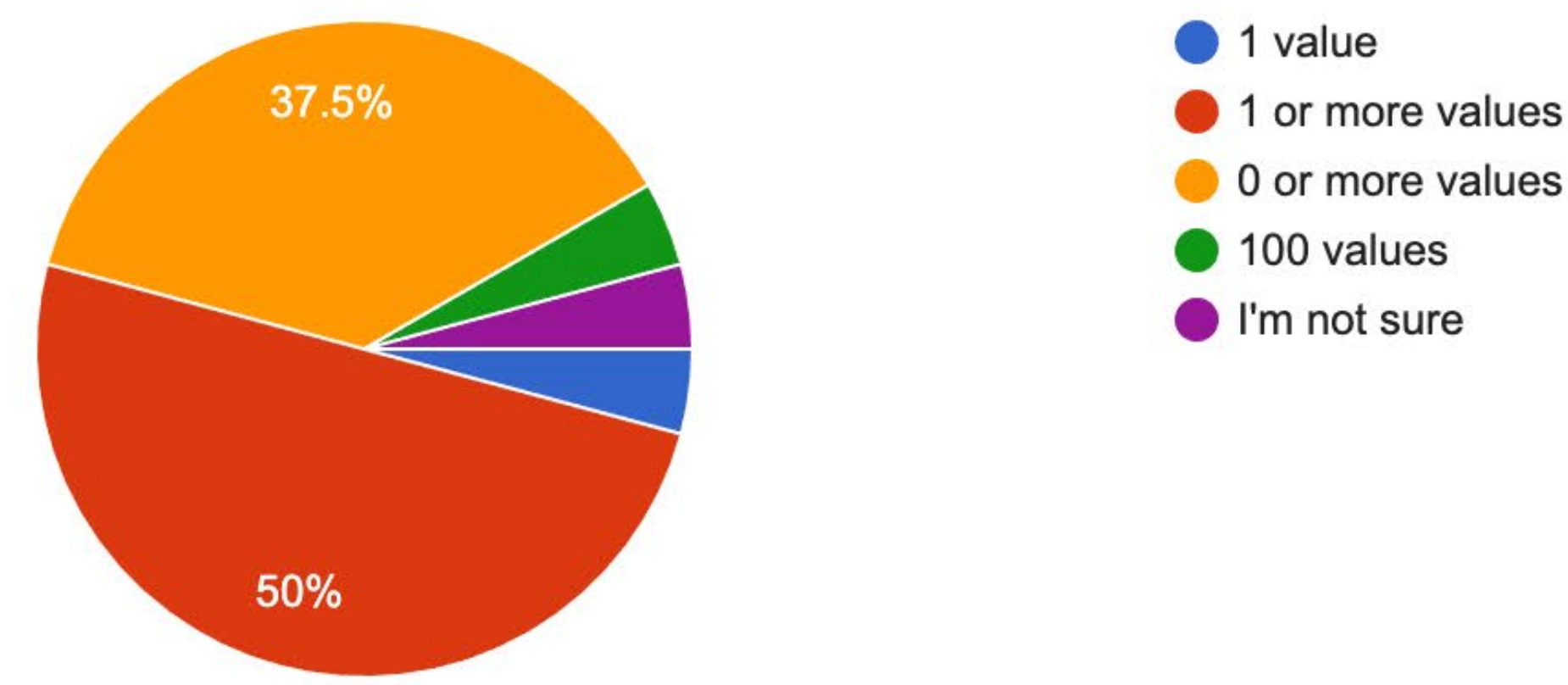
int m = map(5, 0, 10, 0, 100); What is the value of m?

23 responses



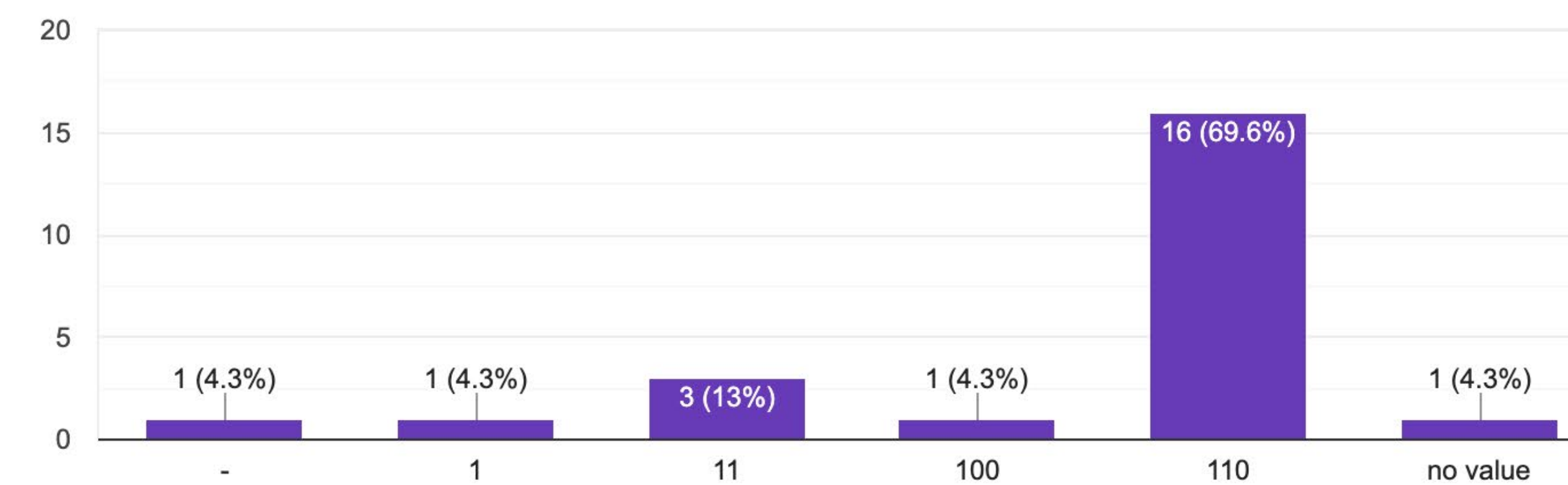
An array can store

24 responses



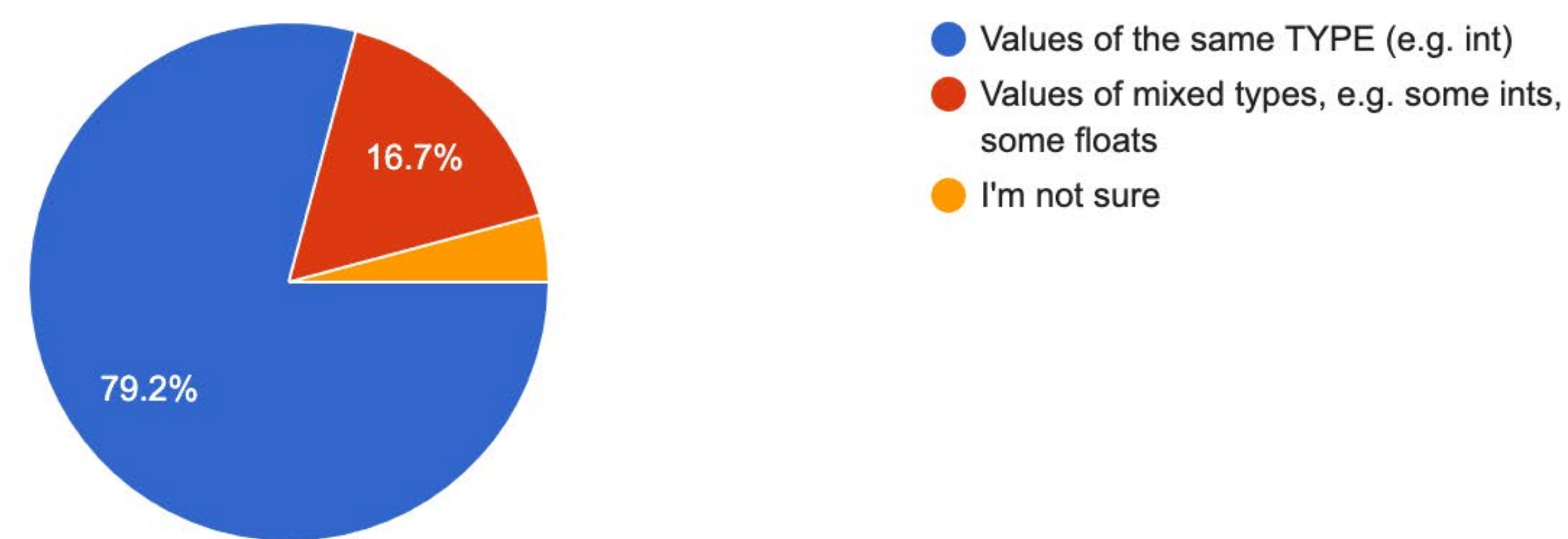
int m = map(11, 0, 10, 0, 100); What is the value of m?

23 responses



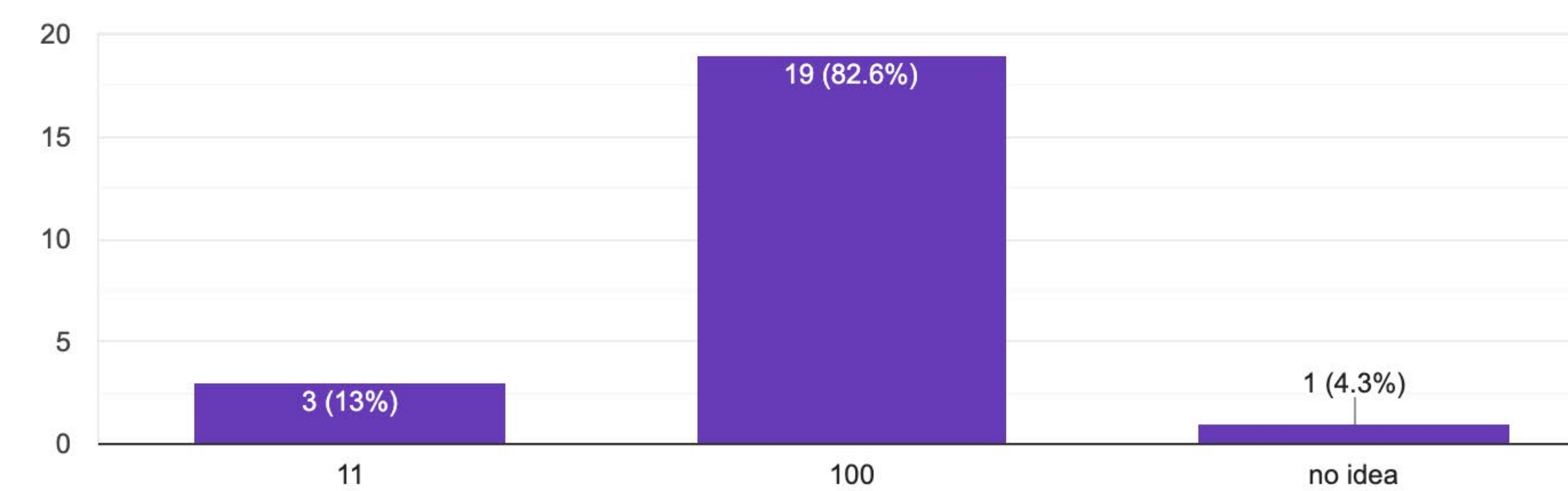
In C# (unity) and C++ (Arduino) a single array can store

24 responses



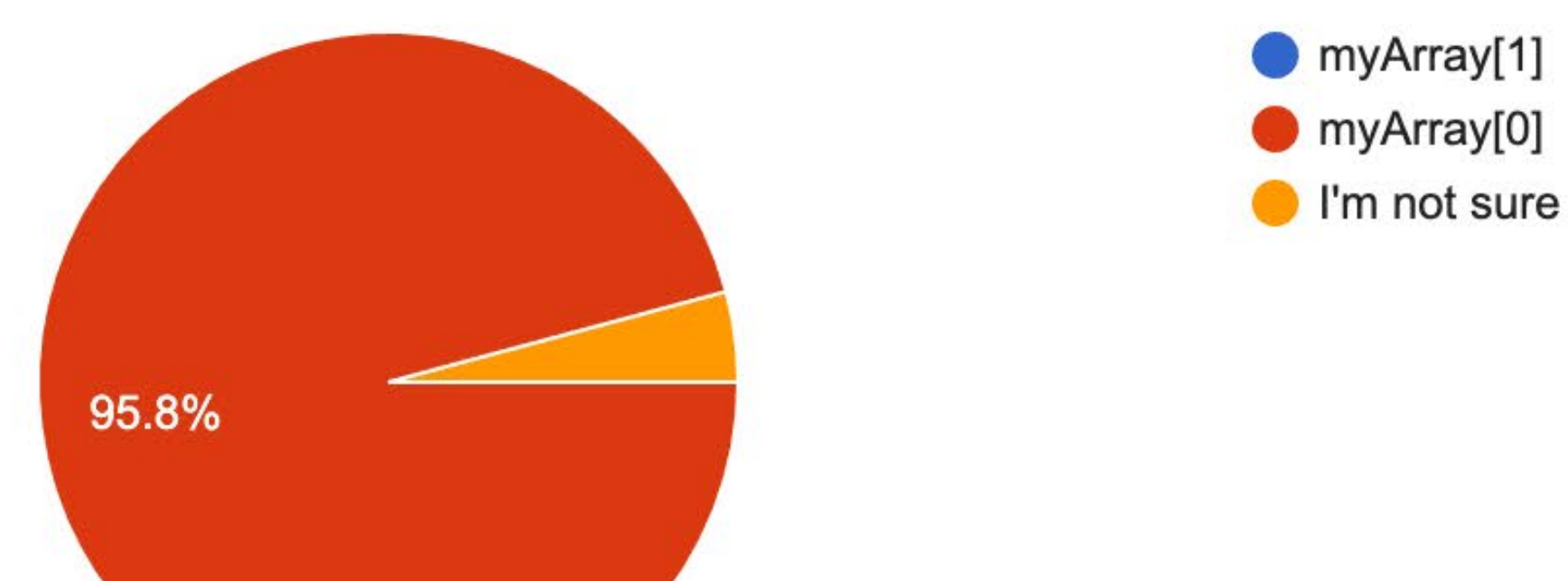
int m = constrain(map(11, 0, 10, 0, 100), 0, 100); What is the value of m?

23 responses



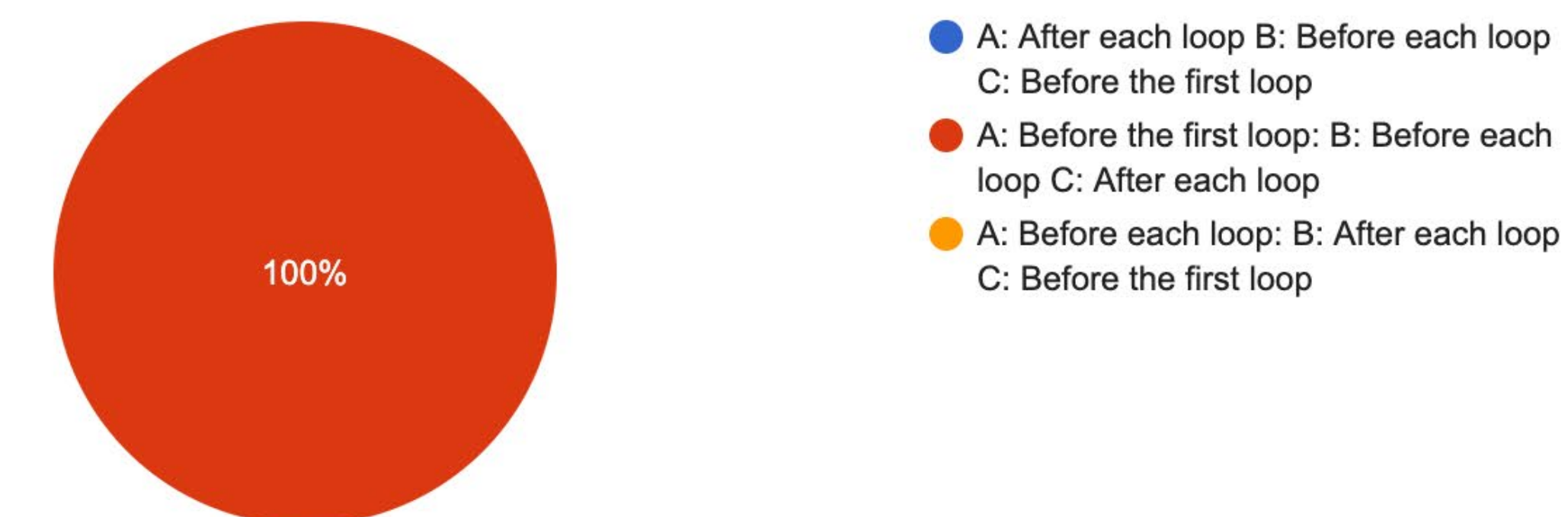
To access the first item in an array we use

24 responses



When do parts A, B, and C run in a for loop? for(A; B; C) { }

23 responses

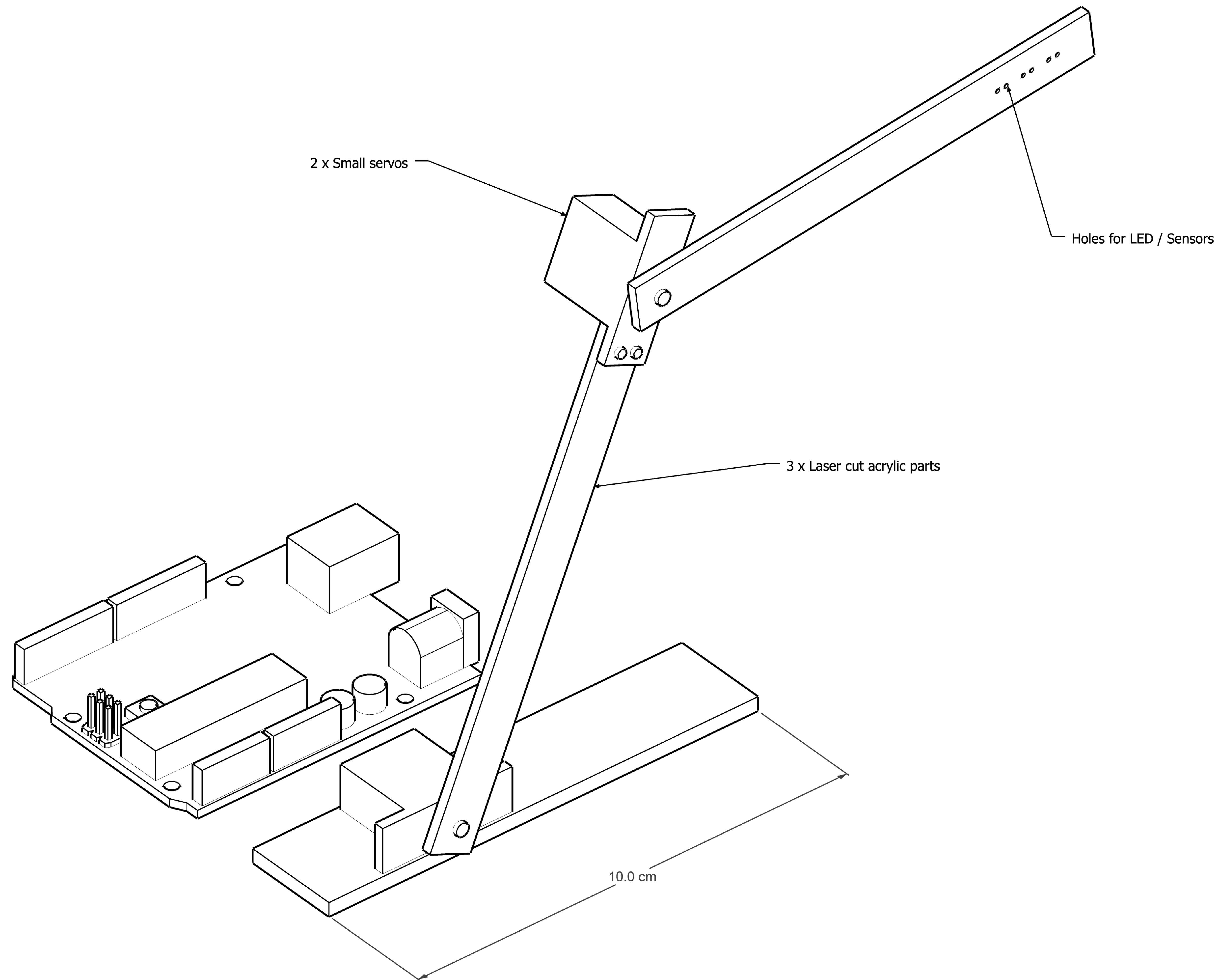


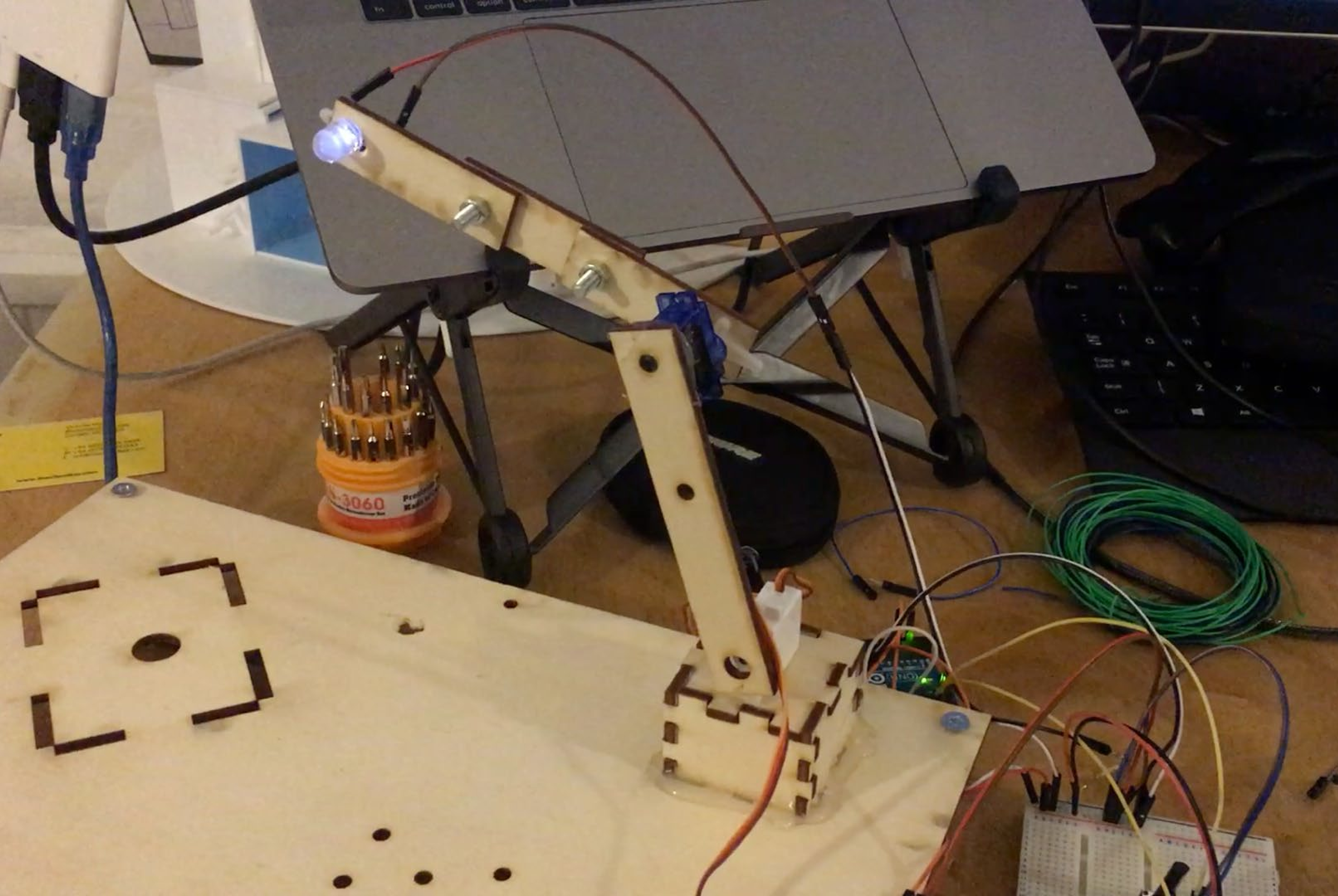
## INTENTIONAL INTERACTIONS

Extract from a morning assessment result sheet (using Google Forms). They proved very useful to identify concepts that would require extra attention from us

# INTENTIONAL INTERACTIONS

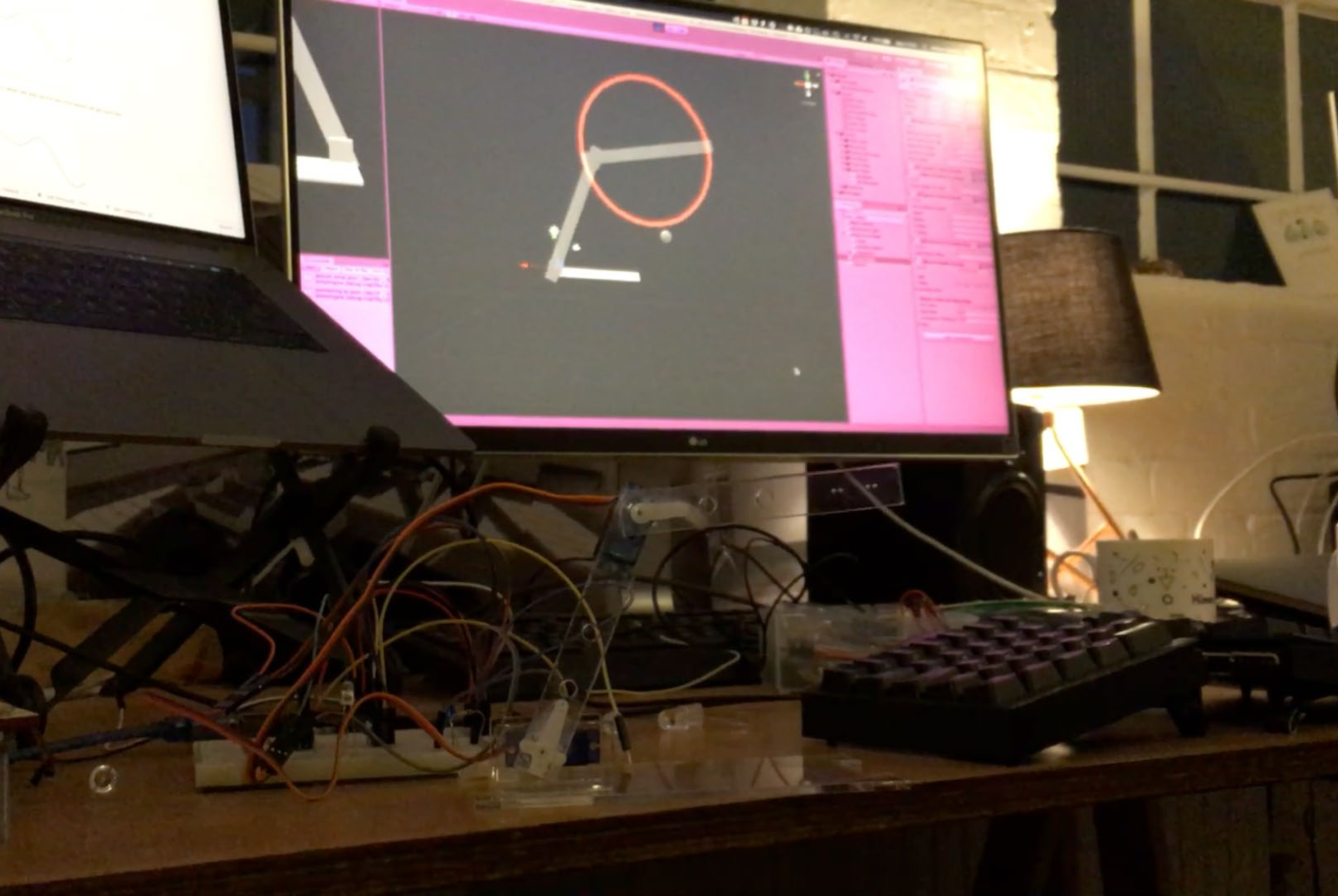
*First draft 3D model of the robot arm idea*





## INTENTIONAL INTERACTIONS

*First robot arm prototype and proof of concept*

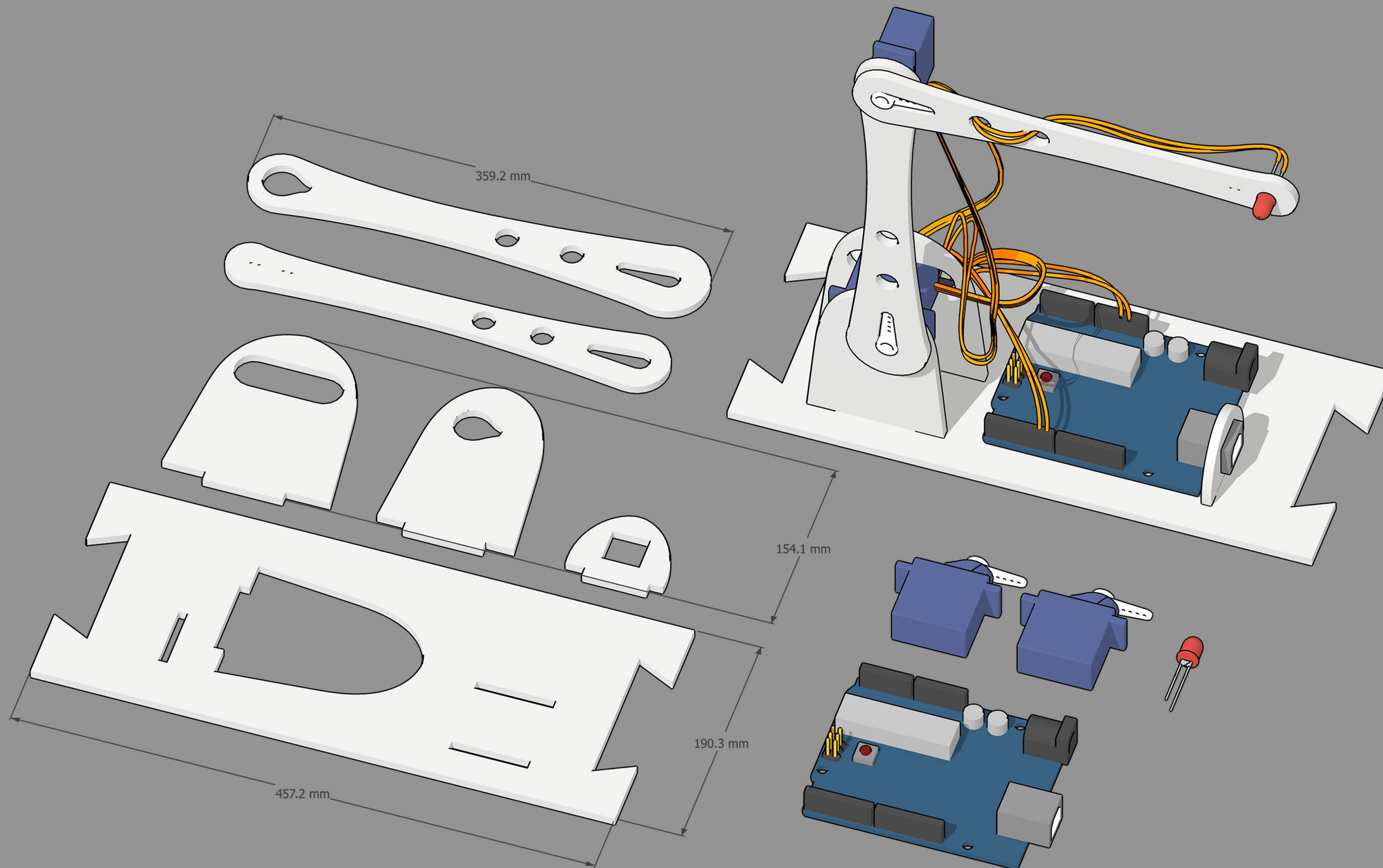


## INTENTIONAL INTERACTIONS

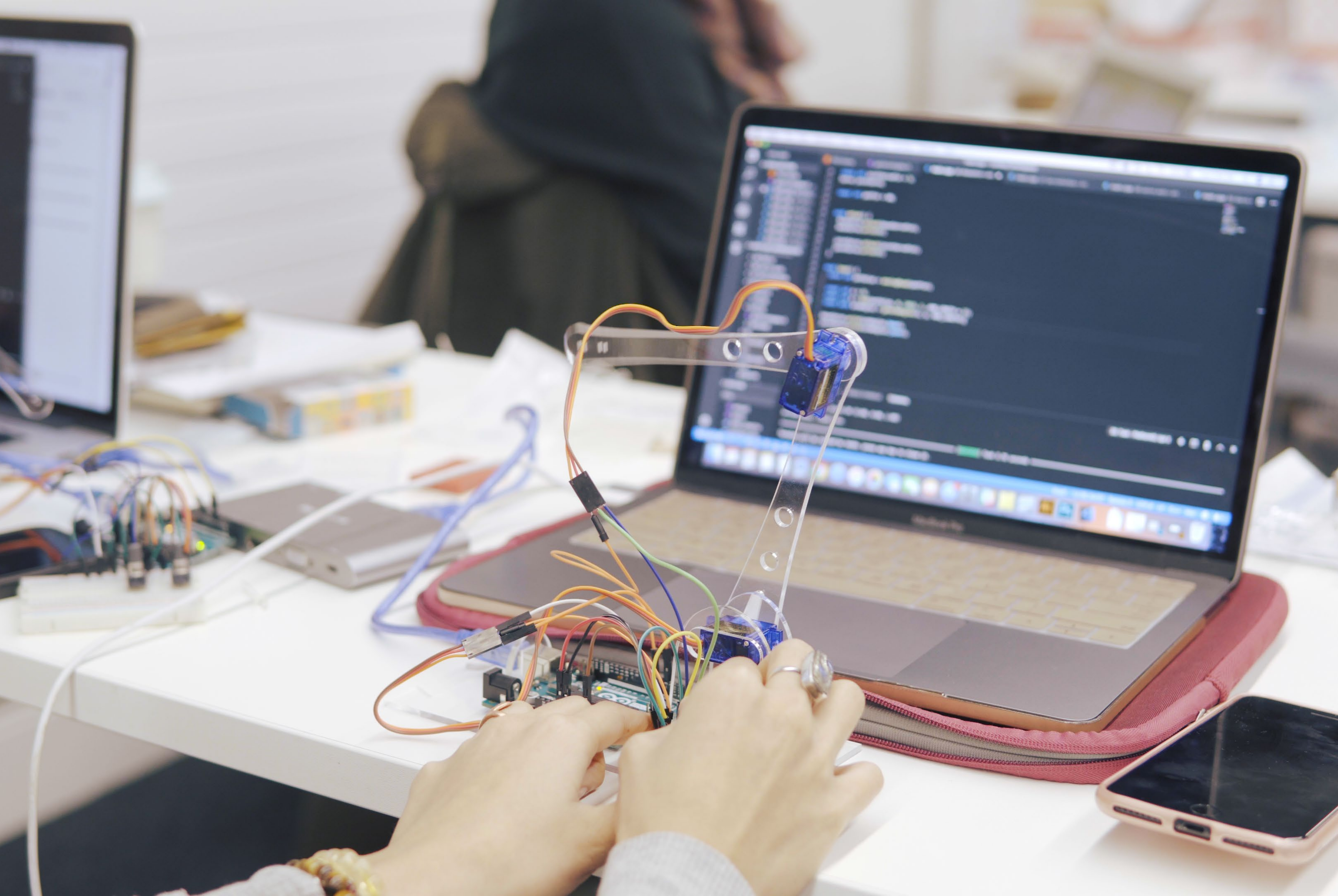
*Second robot arm prototype and synchronisation with Unity proof of concept*

# INTENTIONAL INTERACTIONS

*Module robot  
starter kit assembly  
instructions (final  
design)*







## INTENTIONAL INTERACTIONS

*Student following the workshop with her robot on the second day*

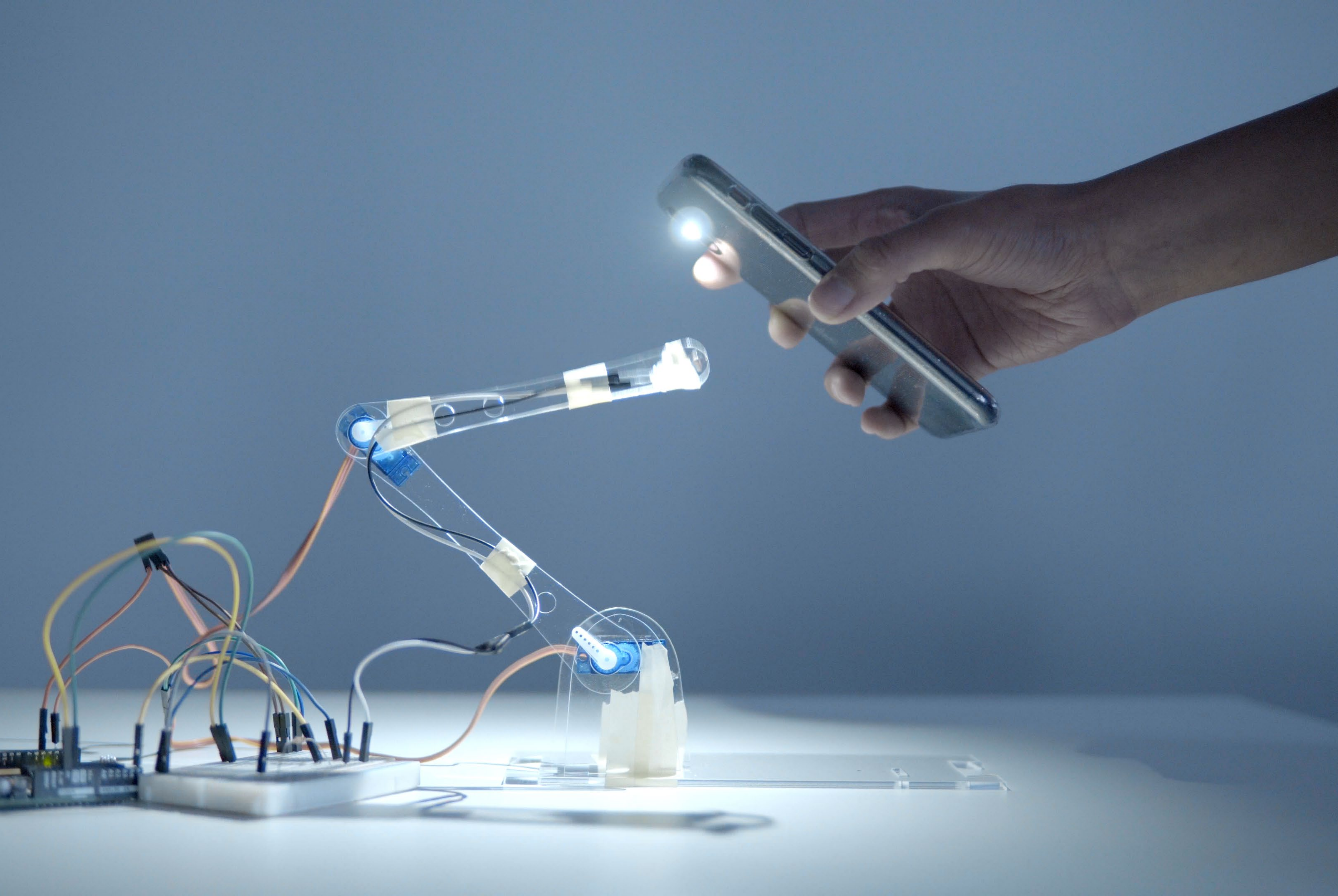


## INTENTIONAL INTERACTIONS

*Students following the workshop*

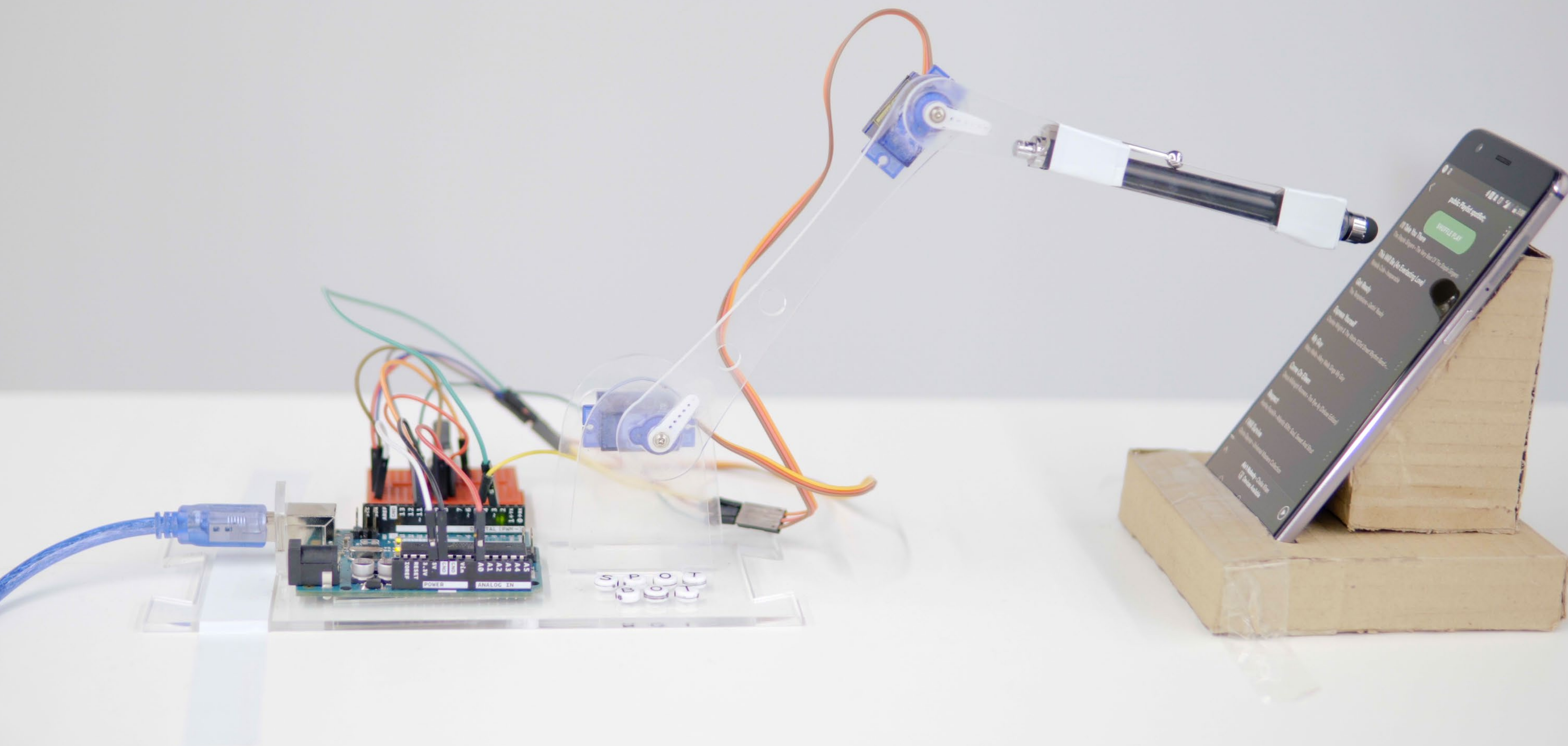
# INTENTIONAL INTERACTIONS

*Student's solo project:  
Robot Reacting to  
Light*



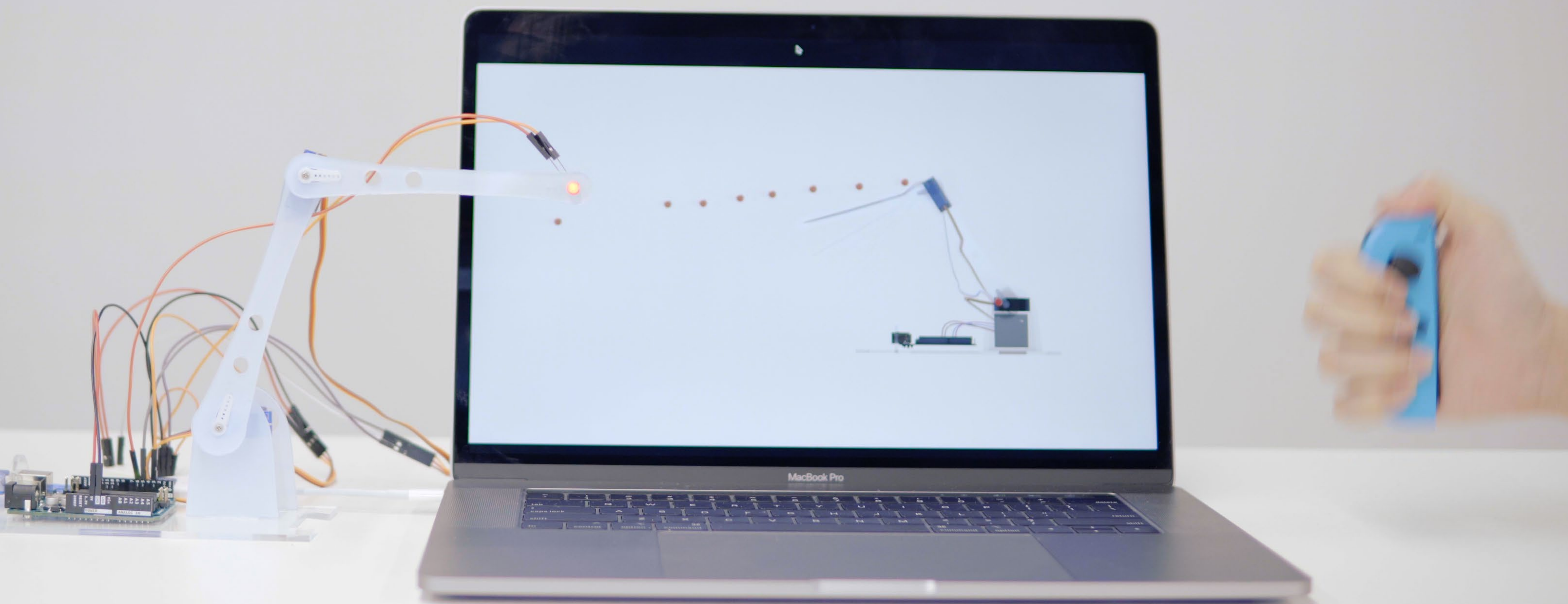
# INTENTIONAL INTERACTIONS

*Student's solo project:  
Spotify DJ & Dancing  
Robot*



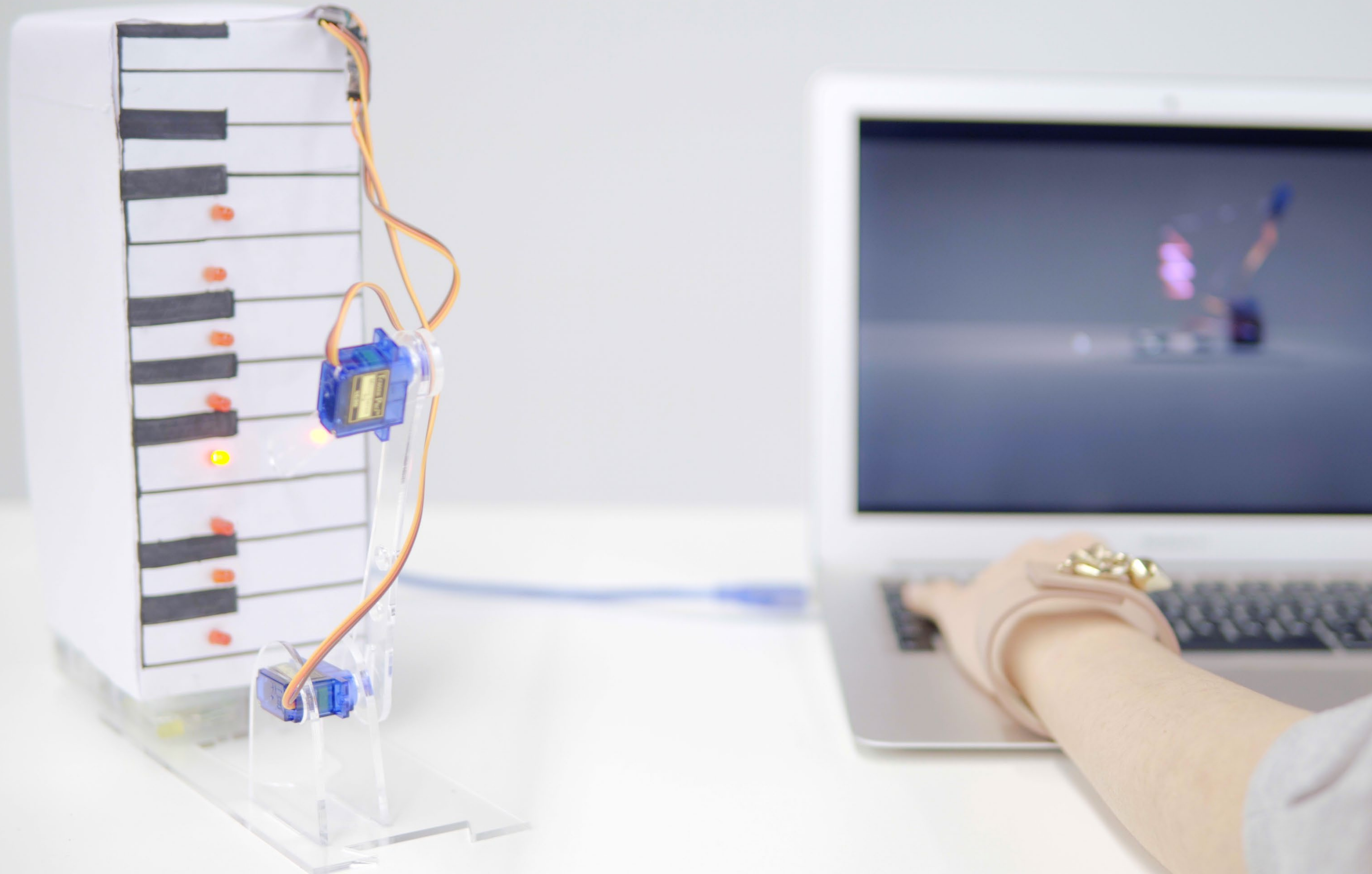
# INTENTIONAL INTERACTIONS

*Student's solo project:  
Physical Machine vs  
Digital Wii Man*



# INTENTIONAL INTERACTIONS

*Student's solo project:  
Light Pianist*



# INTENTIONAL INTERACTIONS

*Student's solo project:  
Dancing Robot*



# INTENTIONAL INTERACTIONS

*Student's solo project:  
Air Radio*

TRACK.

VOL. \_\_\_\_\_





# INTENTIONAL INTERACTIONS

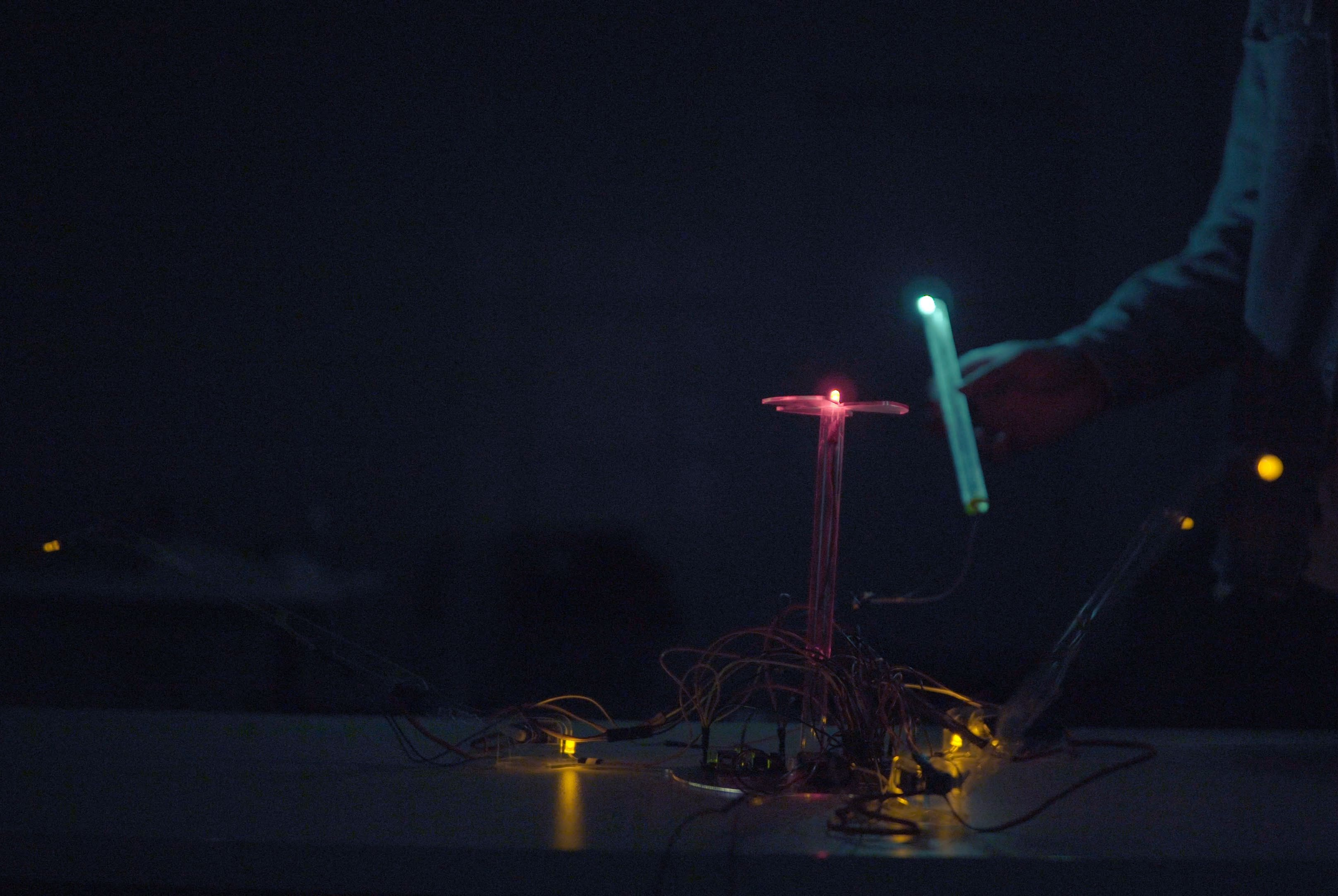
*Student's solo project:  
Complex Platform  
Game*





## INTENTIONAL INTERACTIONS

*Student's solo project:  
Physical/Digital Paper-  
Stone-Scissors*

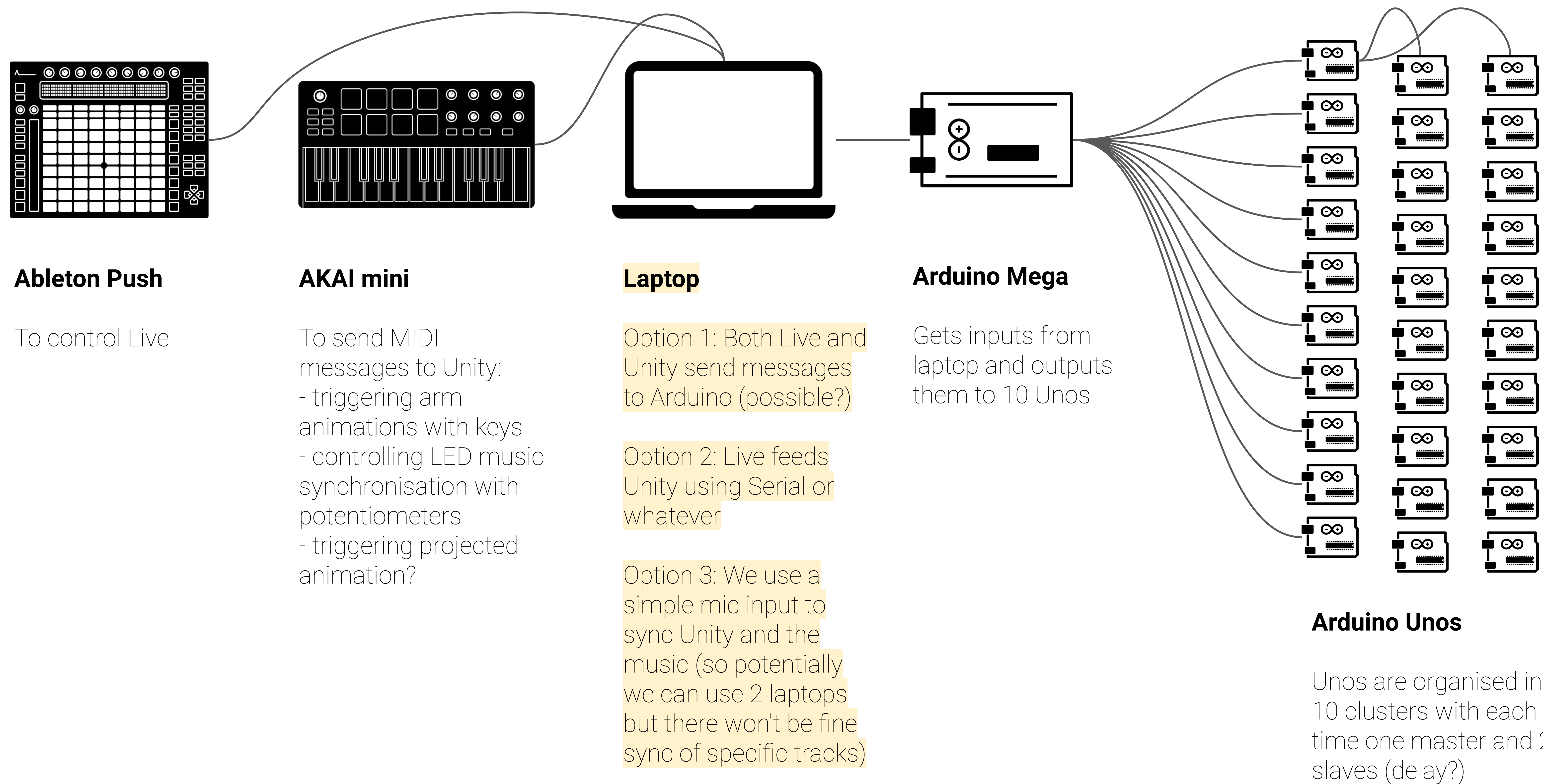


# INTENTIONAL INTERACTIONS

*Student's solo project:  
Kinetic Light Show*

# INTENTIONAL INTERACTIONS

System diagram for the final day surprise light installation



# INTENTIONAL INTERACTIONS

*Unity 3D simulation  
(and driving system)  
for the final day  
surprise light  
installation*



# INTENTIONAL INTERACTIONS

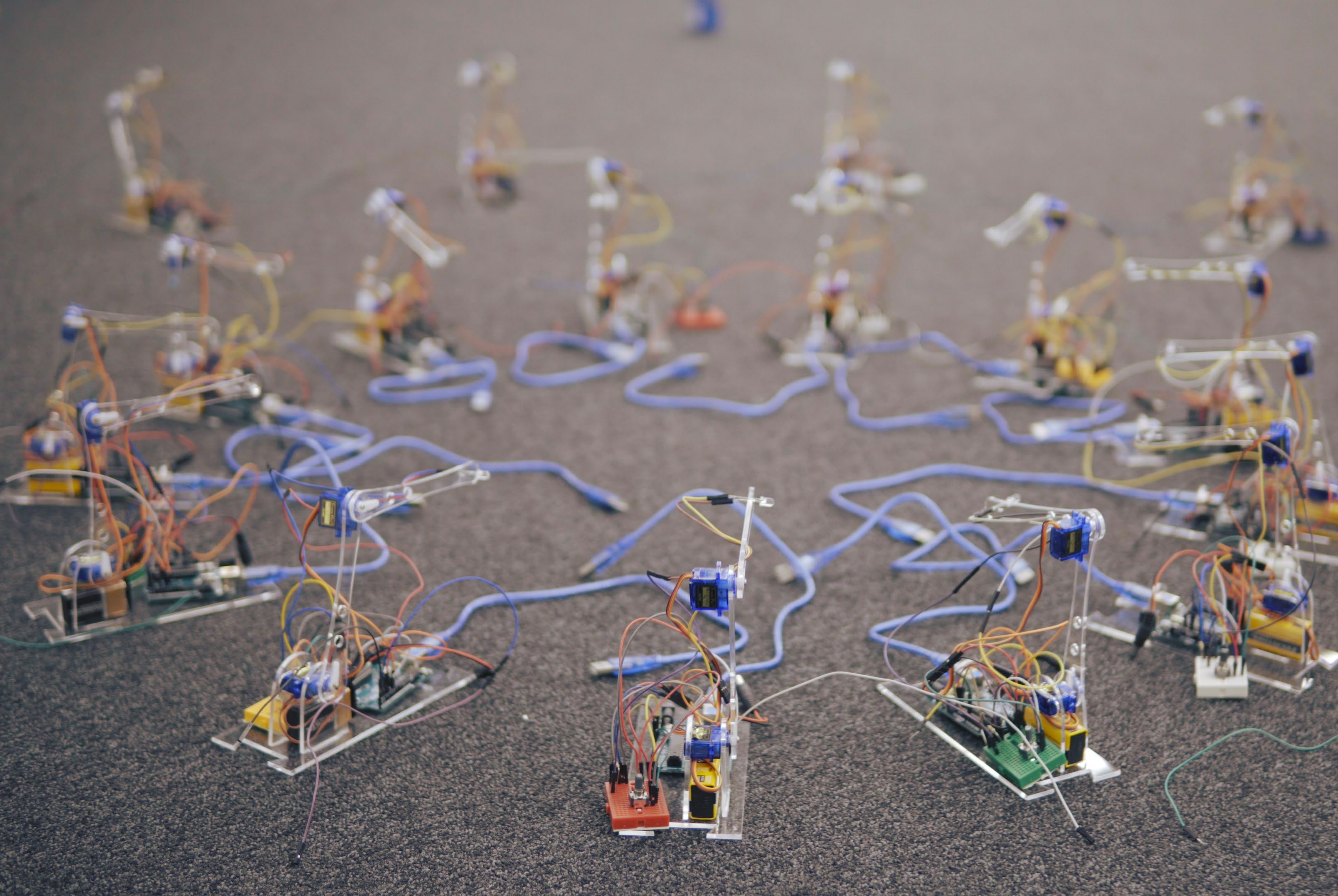
*Unity 3D simulation  
(and driving system)  
for the final day  
surprise light  
installation*



# INTENTIONAL INTERACTIONS

*Unity 3D simulation  
(and driving system)  
for the final day  
surprise light  
installation*





## INTENTIONAL INTERACTIONS

*Final day surprise  
light installation:  
Preparation work*





## INTENTIONAL INTERACTIONS

*Final day surprise  
light installation: Fine  
tuning*