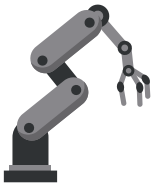
CUBOT Moodle Year Course

LESSON PLAN

TITLE:	**Lesson 6**
LESSON:	**6 / 32**
DURATION:	1h
TOPICS INTRODUCED:	Logic and the Pushbutton



INTRODUCTION:

By the end of this lesson, students will have a fundamental understanding of switches, their types, and how to use a pushbutton as an input device in programming.

Note: This lesson requires an active internet connection for Arduino firmware updates.

RESOURCES REQUIRED:

1. Arduino Uno (or other compatible microcontroller)
2. Breadboard
3. Lead wires
4. Components such as LEDs, resistors, buttons, and ultrasonic (for demonstration purposes)

LESSON STRUCTURE:

1. Introduction – Cubot & Arduino Uno.
2. Switch demonstration & Code

LESSON 6

1. Introduction (5 minutes)
   - Begin the lesson by discussing the concept of switches and their importance in controlling electrical circuits.
   - Explain that switches are devices that can open or close a circuit, affecting the operation of connected devices.

2. Types of Switches (15 minutes)
   - Introduce the three basic types of switches:
     - Toggle Switch: Explain how it clicks into an on or off position with each press, like a light switch.
     - Selector Switch: Describe its function of selecting between two circuits, using a Ferris wheel system as an example.
     - Pushbutton Switch: Emphasize its role in closing a circuit when pressed, with applications in various devices, including keyboards and computers.

3. Focus on Pushbutton Switch (5 minutes)
   - Explain that in this lesson, the focus will be on using the pushbutton switch as an input device in programming.

4. Input Signals (5 minutes)
   - Introduce the concept of input signals in programming, where the signal of a button can be represented as either 1 (on) or 0 (off).

5. Programming Activity (10 minutes)
   - If available, provide students with microcontrollers or computers with programming software.
   - Guide students through a simple programming exercise using a pushbutton as an input device.
   - Have them write code that detects when the button is pressed and responds accordingly (e.g., turning on an LED).

6. Real-World Applications (5 minutes)
   - Discuss how pushbutton switches are used in everyday technology, such as in keyboards, computer screens, cell phones, cars, trains, and airplanes.
   - Highlight the importance of input devices like pushbuttons for human-computer interaction.

7. Conclusion (5 minutes)
   - Summarize the key points of the lesson, including the types of switches and the role of pushbutton switches in programming.
   - Encourage students to explore further applications of switches and input devices.

Homework/Extension Activity:
- Assign a homework project where students identify and document different types of switches used in their homes and explain their functions.