EDU-PLAY 4.0 – ARCADE MACHINE DOCUMENTATION

The arcade machine developed in EduPlay Project 4.0 is a collaborative effort aimed at teaching German and Czech students how to work better in teams and communicate in English. This section details the components used, the design and construction process, and provides an overview of the code implemented to bring the machine to life.

Components used + voltage

There are four Wago terminal blocks inside the machine: one for 12V, one for 5V, and two for GND (these two are connected).

Component	Count	Voltage
Arduino MEGA	1x	12V
Arduino MEGA shield	1x	
Power supply	1x	12V OUT
Voltage converter	1x	12V IN, 5V OUT
Stepper motor	2x	12V
Inductive sensor	7x	5V
LED ring	7x	5V
Display	1x	5V
Joystick	2x	5V
Servo motor	1x	5V
Buzzer	1x	5V
Stop button	4x	5V
Button	1x	5V

Arduino pins

The table below details the connections between the Arduino MEGA and the various components of the arcade machine. Each component is connected to specific data pins on the Arduino to enable control and data acquisition.

Pin mapping

Component	Arduino data pin
Left stepper motor	2, 3, 22, 23, 24, 25
Right stepper motor	4, 5, 26, 27, 28, 29
Sensor 1 (lowest)	30
Sensor 2	31
Sensor 3	32
Sensor 4	33
Sensor 5	34
Sensor 6	35
Sensor 7	36
LED ring 1 (lowest)	6
LED ring 2	7
LED ring 3	8
LED ring 4	9
LED ring 5	10
LED ring 6	11
LED ring 7	12
Display	20, 21
Left joystick	A0
Right joystick	A1
Servo motor	13
Start button	37
Stop button – left down	38
Stop button – right down	39
Stop button – left up	40
Stop button – right up	41
Buzzer	42

Code overview

The arcade machine's functionality is controlled by code running on the Arduino MEGA. The code handles input from the joysticks, buttons, and sensors, and controls the output to the LED rings, display, stepper motors, servo motor, and buzzer.

Key Functions

1. **Initialization:** Setting up pin modes and initializing components.
2. **Input Handling:** Reading inputs from joysticks, buttons, and sensors.
3. **Control Logic:** Implementing the logic for game mechanics and interactions.
4. **Output Control:** Managing outputs to the LED rings, display, motors, and buzzer.

You can view the code and this documentation online using this QR code containing a link to a GitHub repository.

https://github.com/stefccc/EDU-PLAY-4.0/ 1