



Task 7: ES design for lift control with Raspberry Pi Pico in Arduino IDE

Project: A realistic lift in ten storey building

Individual variant: a set of peripherals chosen based on the number of student

Directions:

- Use sensors and actuators, specified in the task variant, to imitate actual equipment
- Apply polling or interrupt mode on your choice
- Provide the following info within the report:
 - Verbal description
 - Component list
 - Electric circuit layout
 - Hardware connection
 - *Specification of algorithm*
 - Arduino sketch
 - Screen images of compilation and uploading process
 - Scheme explaining ES work
 - Photo of connected hardware
 - Video of ES functioning with the author's interview

Excellence extensions: relay and motor to imitate the lift movements between storeys; buzzer to imitate the moving lift sound; authorization with RFID; "stop" and "move" buttons

References: Lectures on IES

Supplemental materials: Freenove Tutorial for RP Pico with Arduino IDE

A realistic lift required features:

1. Realistic delays at storeys and when moving between storeys
2. Input device for the lift call or destination choice (according to the variant)
3. Indicator of ongoing movement: up or down (according to the variant)
4. Indicator of the current floor (according to the variant)
5. Remember and optimize a sequence of calls

Task variant:

Choose a set of peripherals according to the following table based on the student number i as $11-i$.

Table for peripheral choice

<i>Student Number</i>	1	2	3	4	5	6	7	8	9	10
<i>Peripheral number</i>	1,3,5	2,3,5	1,4,5	2,4,6	1,3,6	2,3,6	1,4,5	2,4,6	1,3,6	2,4,5

Table of peripheral numbers

<i>Peripheral Number</i>	<i>Peripheral Name</i>
1	Matrix Keypad
2	Infrared Remote
3	Display Screen
4	7-segment display
5	LED bar
6	LEDs

