



Task 8: Design of a given ES with Raspberry Pi Pico in Arduino IDE

Individual variant: a given ES chosen based on the number of student

Directions:

- Choose the most appropriate peripherals within the Starter Kit to supplement given peripherals
- 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

References: Lectures on IES

Supplemental materials: Freenove Tutorial for RP Pico with Arduino IDE

Task variant:

Implement a given embedded system:

Student number	Embedded System
1	Climate control: Switch on motor (of ventilator) on high temperature (threshold preset) and indicate temperature on Display.
2	Airplane stabilization: Switch on servo on tilts in one direction and indicate the tilt with RGBLED.
3	Climate control: Switch on buzz on high humidity (threshold preset) and indicate humidity level with LED bar.
4	Secure perimeter: Switch on alarm sound and blinking on approaching objects.
5	Climate control: Close shutters on bright light and switch on light when it is getting dark.
6	ATM machine: Input PIN and amount of cash prompted on Display, indicate number of delivered coins with 4-digit 7-segment display.
7	Ticket machine: input zone and duration; use Display and touchpad, imitate payment

	with RFID
8	Microwave: Input mode and time, indicate mode with LED of different color, switch on sound when time expires
9	Washing machine: repeat a sequence of actions indicated with display and imitated with motor (wash, rinse, spin)
10	Self-driving vehicle – follow the leading car: speed-up or break motor based on the distance, indicate distance with RGBLED

