Interface with Switches

Target:

Learn about:

- Interface electrical switches with the microcontroller.
- Write a structured and editable driver for switch input handling.
- Control and read input signals through proper switching techniques.
- Integrate transistors, relays, and opto-couplers in driver design.

Resources:

1. Embedded Systems Diploma from #016 - #017
2. Hardware Peripherals FWD 03 DIO Programming (from 19 till end)

How to submit your task:

- Push your task on GitHub on your repository named IEEE-ZSB RAS-Embeddded 2025.
- Watch video-1 or video-2 to know how to do this.
- Create a folder named Task14 contains your task and the video.

Evaluation:

- Code (15 points)
- Schematic (5 points)
- Video (5 points)

Deadline:

5 Days #Thursday 7 August at 23:59

What To Do:

1. Design and simulate a complete circuit in Proteus to control two DC motors using 5 switches representing:

- **Stop**
- **Go Forward**
- **Go Backward**
- **Turn Left**
- **Turn Right**

2. Driver Development:

-Develop custom drivers from scratch for:

- **GPIO (for switches and motor control)**
- **Motor driver (to abstract direction logic)**

-Organize each driver in separate .c/.h files for modularity.

-Use macros for pin definitions and motor directions for clarity.

3. Integrate your custom drivers in a Proteus simulation and validate that each switch produces the intended motion behavior.

What You Should Submit:

- **Code Files: Include all source and header files**
- **Proteus Simulation file**
- **2-3 minutes video demonstrating and explaining your project, include working simulation and the structure of your code.**

Create your TASK based on your Thinking & Creativity and you will have 5 bonus