

Github link: https://github.com/chanhengmenh/Robotic_AUPP_G5.git

In the embedded system, Function is useful:

1. Resource Management: this improves the memory efficiency and optimizes the compiling speed. Using functions can reduce the size of the code lines because we don't need to rewrite the code every time that we use it, but we call the function instead. Moreover, a local variable inside a function exists only when the function is running, and once it's stopped, it will be freed up.
2. Abstraction of hardware complexity: instead of using the complex bitwise operations directly, we build the function to make the code more simple and less messy.
3. Maintenance and Debugging: We don't mess up with the whole file, we locate to the function what potentially causes the problem, and debug it.

PWM (Pulse Width Modulation) controls motor speed by quickly turning the power ON and OFF. The duty cycle sets the speed:

- High duty cycle => motor runs fast
- Low duty cycle => motor runs slow

The motor responds to the average voltage rather than each pulse because switching happens so quickly.

Example: With a 12V supply, a PWM value of 127 (out of 255) gives about 6V, so the motor runs at half speed.