TASK 1

DC Motor control Open Loop

Objective:

To control the direction (forward, backward, stop) of a DC motor using:

- PWM (Pulse Width Modulation) technique for speed control.
- L298N motor driver for interfacing.
- ATmega328P microcontroller for logic and control.
- UART communication for serial monitoring and debugging.

Circuit diagram:

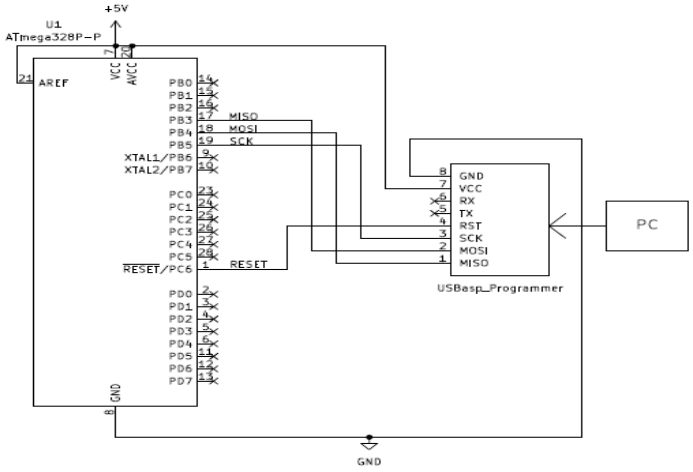


Figure 1: Connections for uploading code

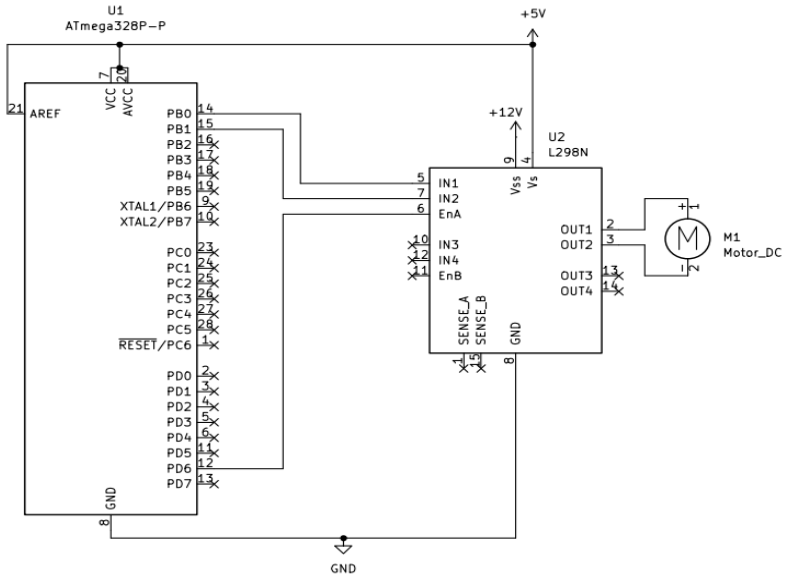
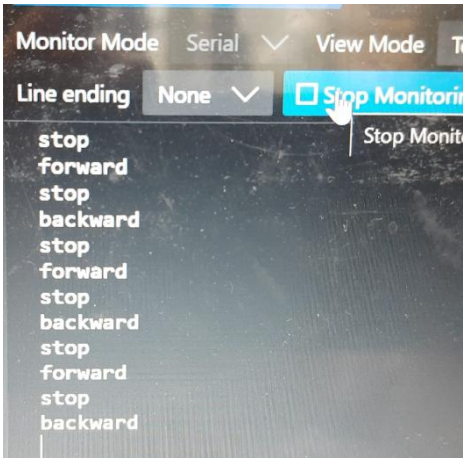


Figure 2: DC Motor

Result:

Action	PWM Duty	Motor State
Forward	50%	Rotates CW
Stop	0%	No motion
Backward	50%	Rotates CCW
Stop	0%	No motion



Conclusion:

- By interfacing with the L298N motor driver, the microcontroller was able to control both the direction and speed of the DC motor using **PWM** signals effectively.
- UART communication was utilized to monitor the motor's status, such as direction (forward, backward and stop) in real-time, enabling validation and debugging during the experiment.

Board Schematic: