

Credit Name: CSE3910 - Project D
Assignment Name: Move

How has your program changed from planning to coding to now? Please explain?

At first, the program was planned to make the wireless rover move forward at full speed, then move backward, and finally stop. The initial implementation included motor initialization, setting velocities, and using `Thread.sleep()` to control movement duration.

1. Motor Speed Calibration

Problem: Setting the motor speed to 1.0 for forward and -1.0 for backward caused the rover to move too fast, leading to instability and slight drifting.

Fix: I reduced the motor speed to 0.8 for both forward and backward motion, making the movements smoother and more controlled.

```
//Before  
leftMotors.setTargetVelocity(1.0);  
rightMotors.setTargetVelocity(1.0);
```

```
//After  
leftMotors.setTargetVelocity(0.8);  
rightMotors.setTargetVelocity(0.8);
```

2. Ground Surface Impact

Problem: On uneven or dusty surfaces, the wheels slipped, causing inconsistent movement and reducing the accuracy of the rover's motion.

Fix: I tested the rover on a smoother, cleaner surface to improve traction and ensure consistent performance.

3. Stopping Motors Smoothly

Problem: The motors did not stop immediately after the backward movement, which caused the rover to drift slightly before coming to a halt.

Fix: I added a small delay after setting the motor velocity to 0 to ensure the motors completely stopped.

```
//Before
leftMotors.setTargetVelocity(0);
rightMotors.setTargetVelocity(0);

//After
leftMotors.setTargetVelocity(0);
rightMotors.setTargetVelocity(0);
Thread.sleep(500);
```

By adjusting the motor speeds, testing on a smooth surface, and ensuring synchronized motor control, the movements became smoother and more accurate. This project demonstrated the importance of testing hardware on real surfaces and fine-tuning motor controls to achieve consistent results.