**COURSE CODE: REDACTED – MICROCONTROLLERS INTERFACING TECHNIQUES**

**ANTI-LOCK BRAKING SYSTEM**

**PROBLEM STATEMENT:**

To design and model a controlling interface that receives information from wheel speed sensors and limits the braking force according to the requirements.

**OVERVIEW:**

Anti-lock braking system or ABS in short, is a safety anti-lock braking system used in aircrafts and land vehicles such as cars, motorcycles, trucks and buses. ABS prevents the wheels from locking up during braking, maintaining traction with the road surface and giving the driver more control over the vehicle.

**COMPONENTS:**

1. LPC2148 (Electronics Control Unit)

2. 12V Battery

3. 12V compressor

4. Speed and angle sensor

5. Motor Driver

6. Valve

7. Wheels

8. Brakes

9.Piston

**WORKING:**

ABS typically includes a central electronic control unit (ECU), four-wheel speed sensors, and at least two hydraulic valves within the brake hydraulic system. The ECU constantly monitors the speed of each wheel. If it detects that the wheel is spinning significantly slower than the speed of the vehicle, it activates a valve to provide hydraulic pressure to the brakes of the affected wheel when conditions indicate impending wheel lockup. To reduce the braking force for that wheel. Then the wheels will spin faster. Meanwhile, when the ECU detects that one wheel is spinning significantly faster than the other, it increases brake fluid pressure on the wheel and reapplies braking force to slow the wheel. This process repeats constantly and the driver can recognize it by the pulsation of the brake pedal. Some anti-lock braking systems allow him to apply or release brake pressure 15 times per second. Using the Microcontroller LPC2148 from NXP to configure its PINs for application of braking, for the sensing, we use speed and angle sensor. Speed sensors are placed on each wheel, and the information is being relayed and processed by the ARM controller. We achieve this using PWM (Pulse width modulation) in LPC2148 which is based on a standard 32-bit timer counter, ie(PWMTC PWM Timer Counter) using PWM match registers (PWMMR0 – PWMMR06).

**TEAM MEMBERS: (REDACTED: PRIVACY OF OTHERS)**

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