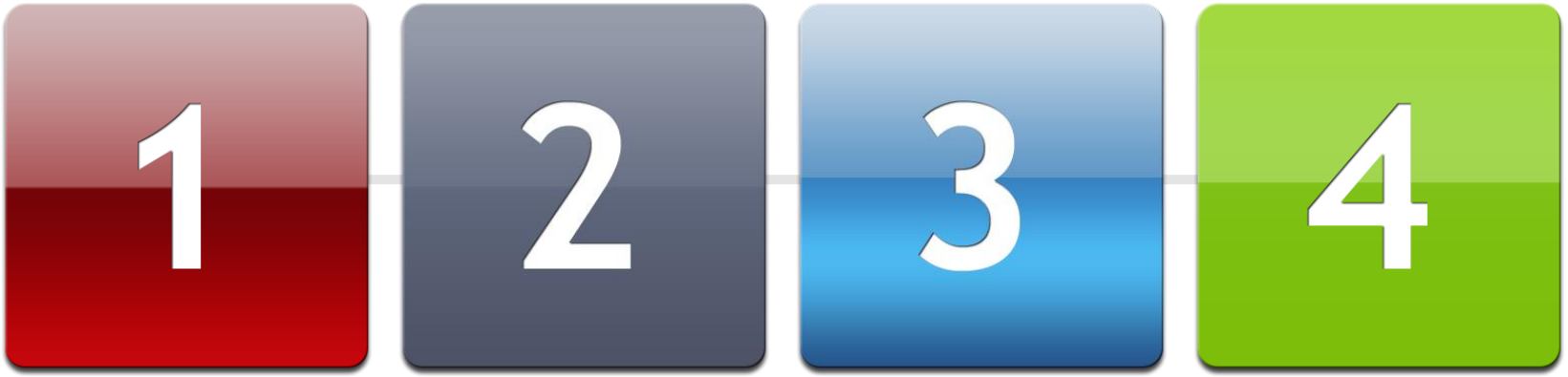
A tour into our exciting Project Development

CEN 305 – Microprocessors and Firmware Programming

# PROJECT PRESENTATION

# **Overview** of Presentation

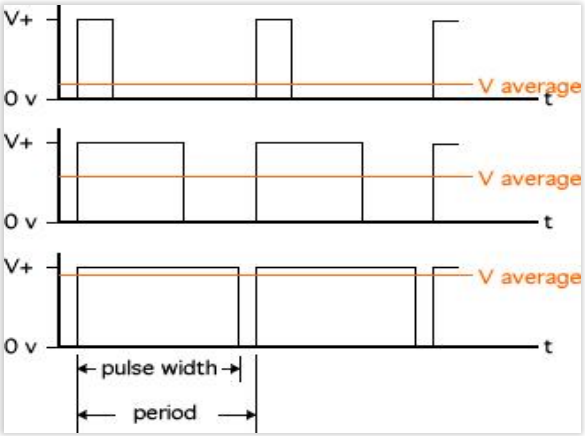



**Introduction** **Problems** **Solutions** **Conclusion**

**We have features for every step of the way**


# INTRODUCTION

# Objectives

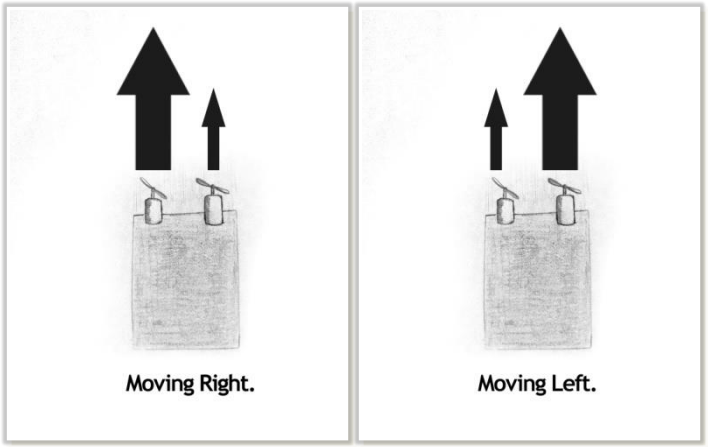



✓ To achieve control over motors using Pulse Width Modulation.


✓ To get the percentage speed value from the keypad and display it nicely.

# Objectives

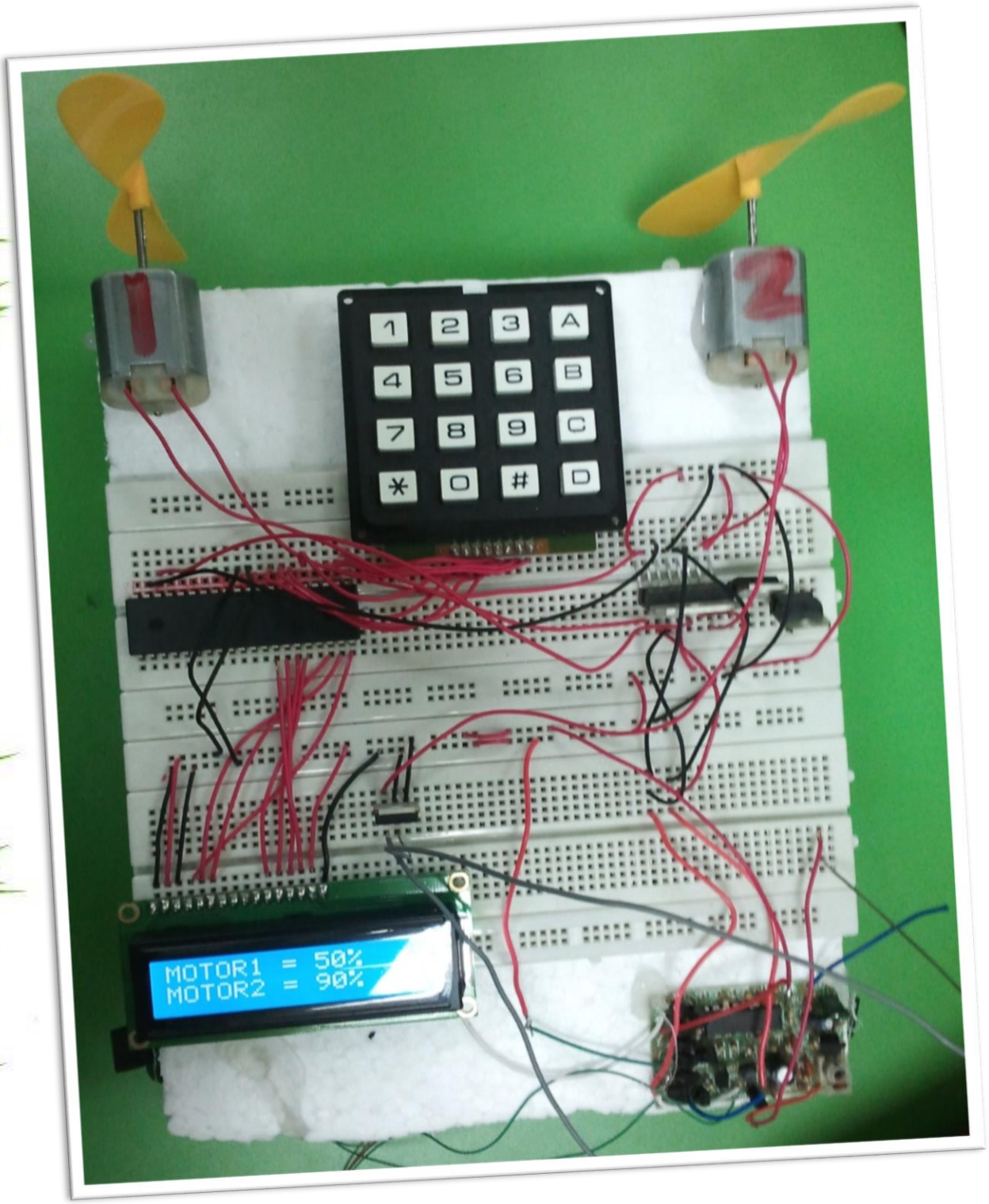
✓ Make something move using these motors.

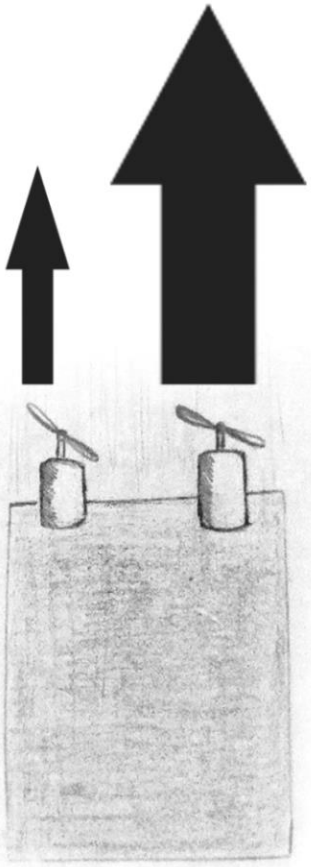



✓ Control the orientation using the speed control of the body.

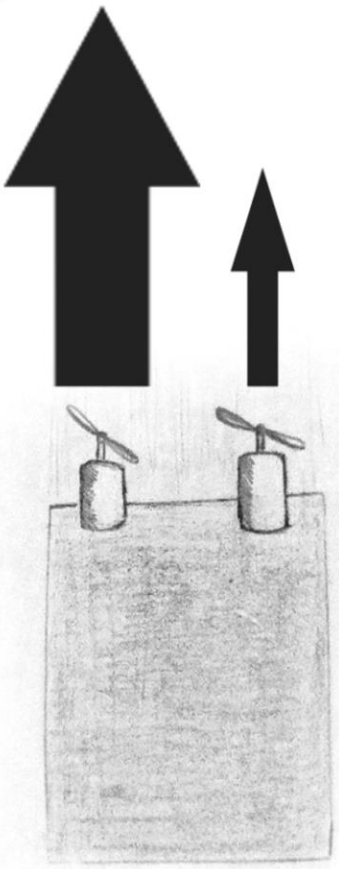
And we came up with…

# DRAG CAR


1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D
MOTOR1 = 50%
MOTOR2 = 90%



Moving Left.

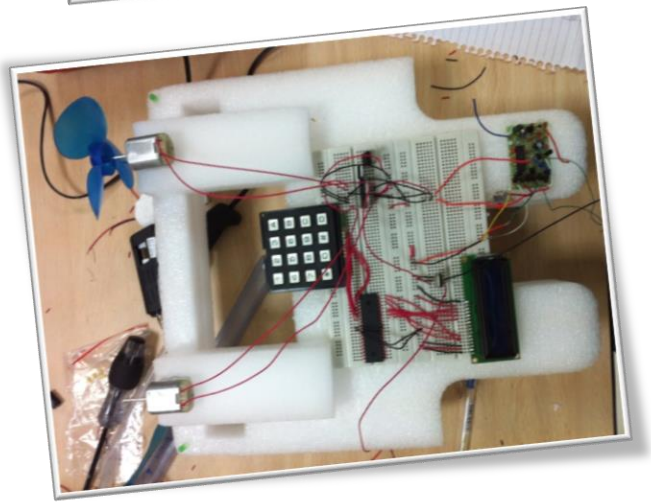


Moving Right.


# PROBLEMS

# Problems

✓ The initial design had too much weight on it, Thus car did not move.



✓ The Duty cycle should not go below 10% or else the Motor wont move at all. The motors have the rating of 12 V.

# Problems

✓ The battery pack which provides enough current and voltage is too heavy for the car to pick.

✓ The tires are not smooth enough to provide minimal friction.

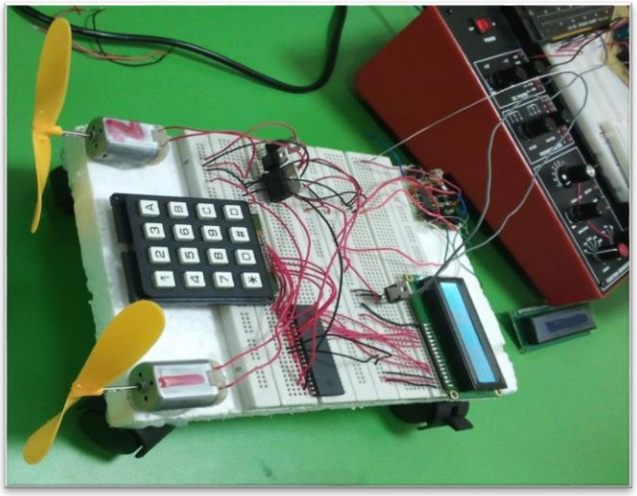
# Problems

✓ Motors used did not provide enough R.P.M. to pull large amount of air.

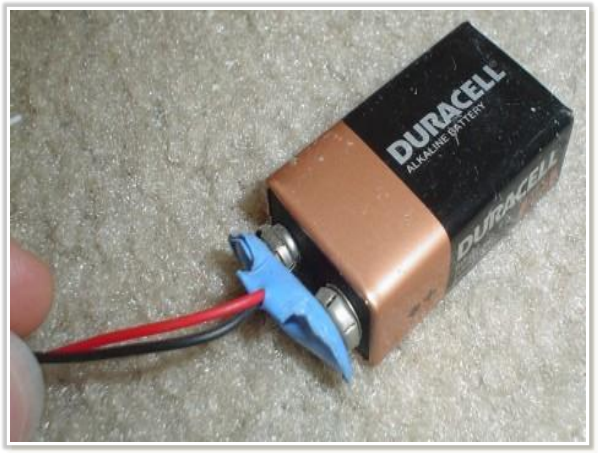
✓ The fans used are designed specifically for a toy plane and have good air flow forwards and medium airflow backwards.


# SOLUTIONS

# Solution



✓ Reduced weight of our car.



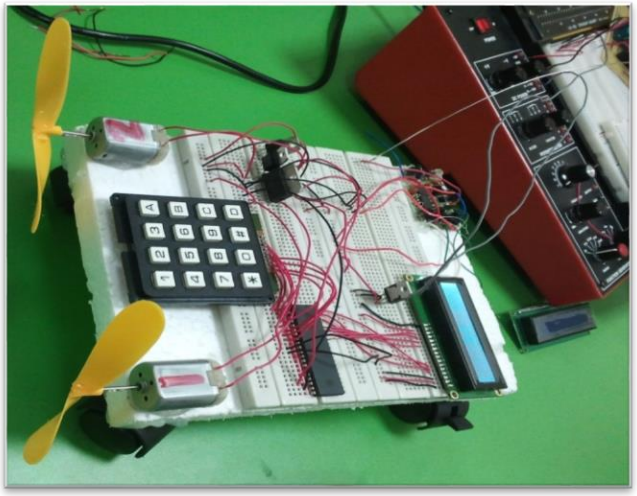

✓ Two 9V batteries connected together in series make a pack.
✓ Three of these packs connected in parallel will provide less weight and more power.

# Solution

- ✓ We used H- Bridge to reverse the polarity of the motors
- ✓ We used the enable pin of the H-Bridge to affect the speed of the motors when moving back and front.


# CONCLUSION

# What did we learn

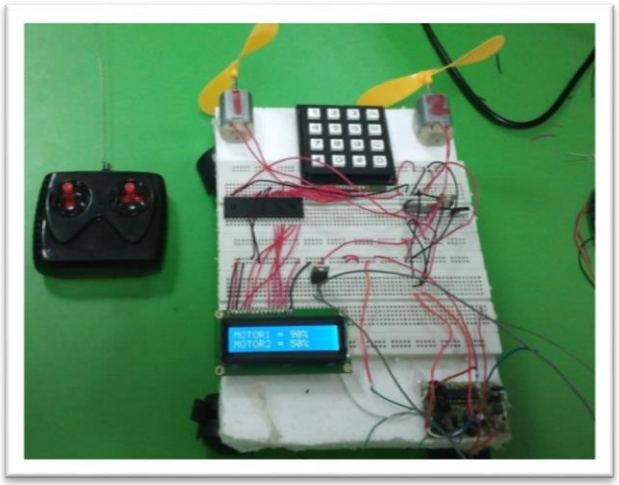


✓ PWM always requires some modifications to the code because the hardware is not always accurate.


✓ Keypad requires a delay before next input is accepted.

# What did we learn

✓ Normal motors are not eligible for lifting up weight because there is much high friction in the mechanics. So as a result we should brushless motors, which will have high R.P.M.



✓ Body is very crucial to any moving vehicle.

# Future Plans


✓ Implement the keypad also in the remote.


✓ Human interaction using Kinect gesture.

# Future Plans

✓ Mount Camera.


✓ Control the car using  WiFi

# In Future…

# THANK YOU

*For listening*