

Group 12

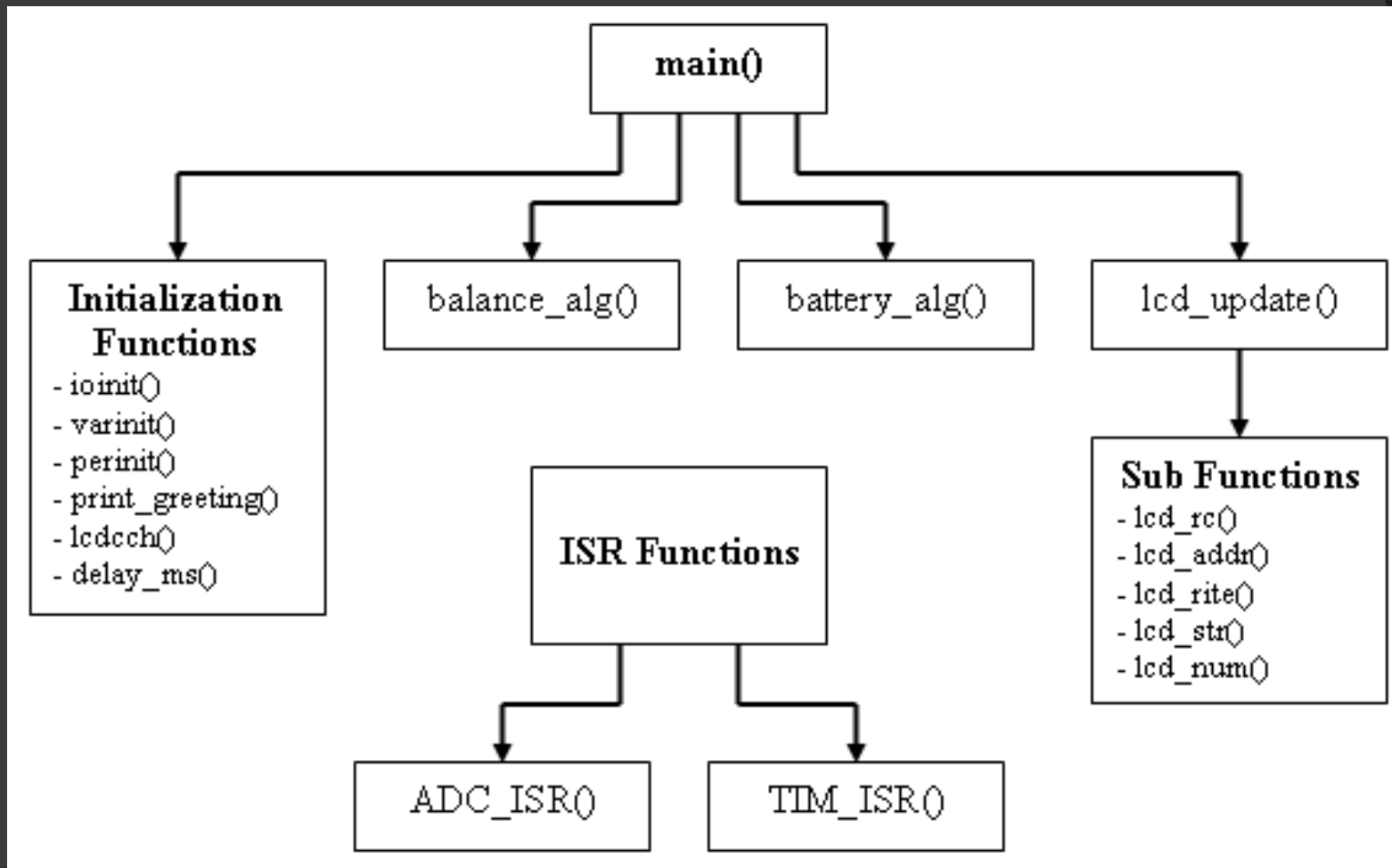
THE TWO WHEEL DEAL

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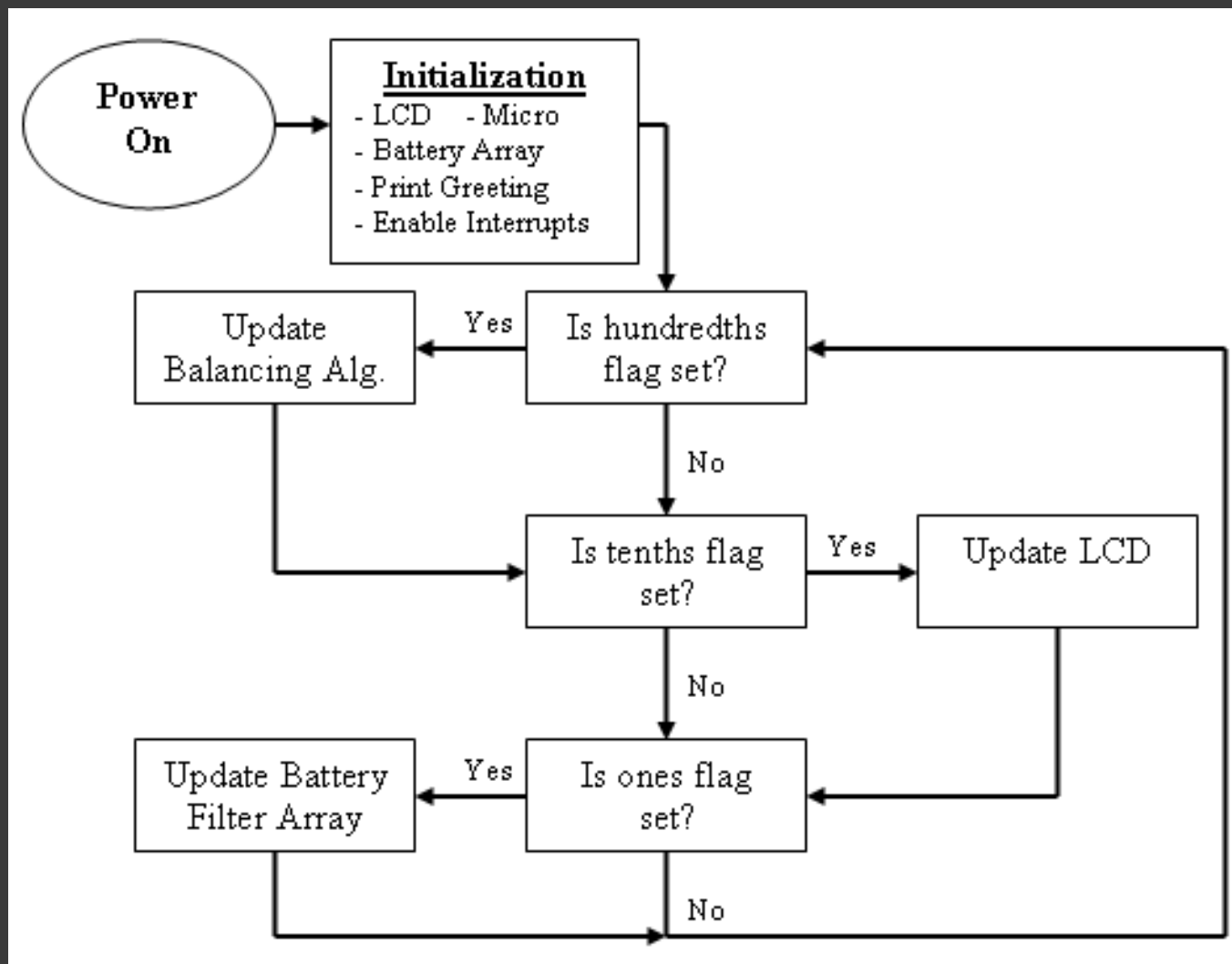
Software Design Considerations

- ⦿ Correctly read sensor output values at a constant rate.
- ⦿ Accurately determine angle of tilt as well as the needed motor torque.
- ⦿ Create PD Controller that quickly maintains stability without overshoot.
- ⦿ Display crucial battery and operating data to the rider.

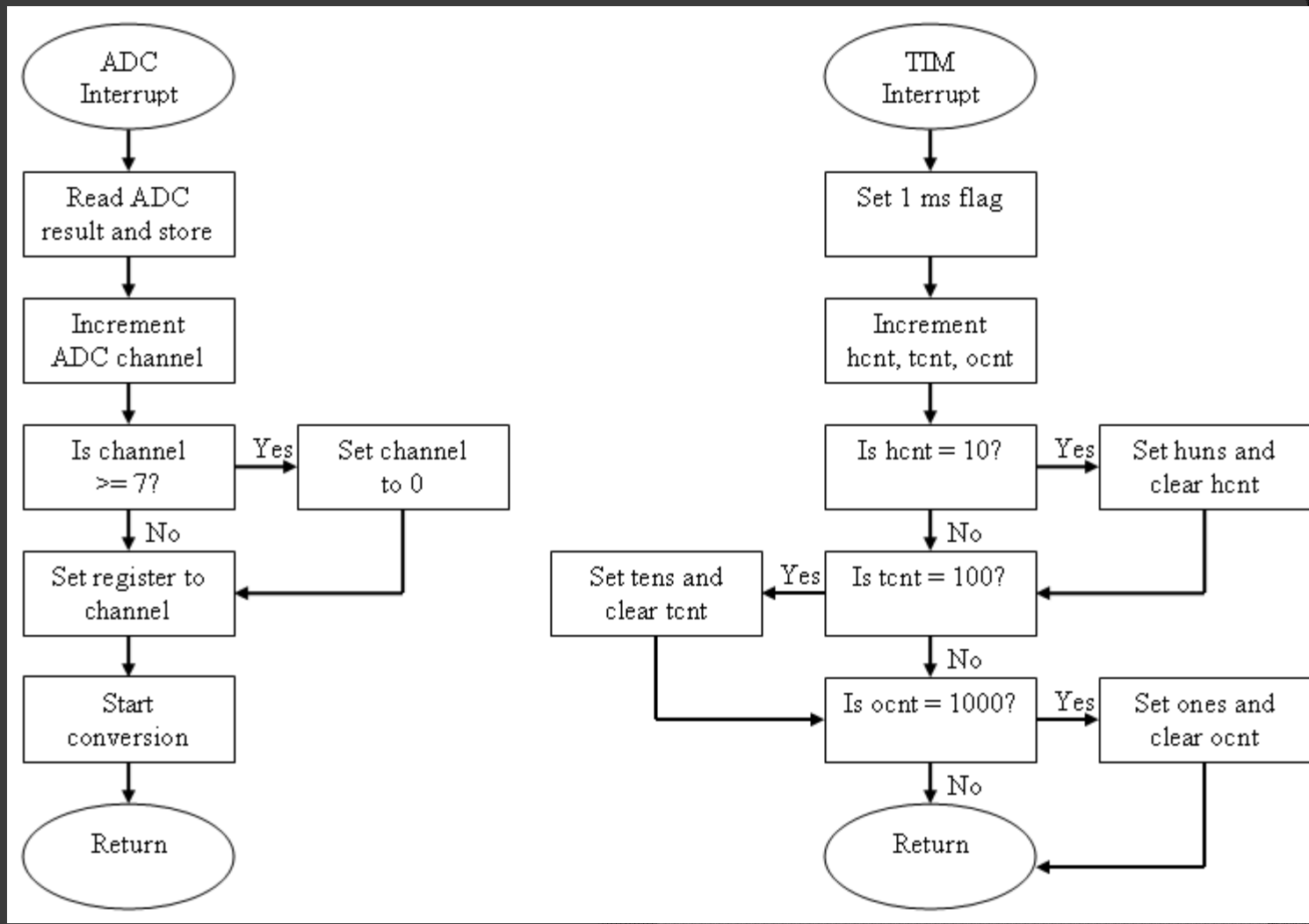
Hierarchical Block Diagram



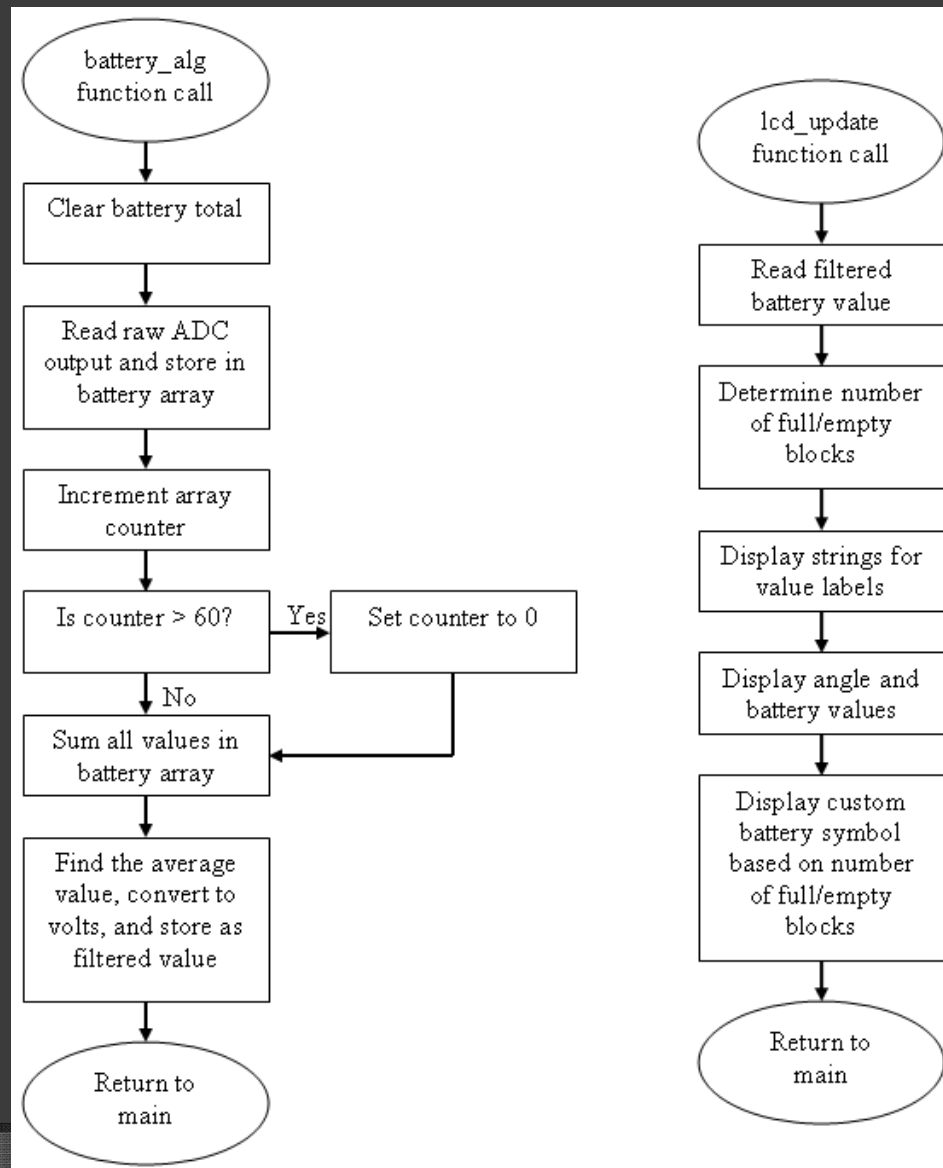
Main Loop Module



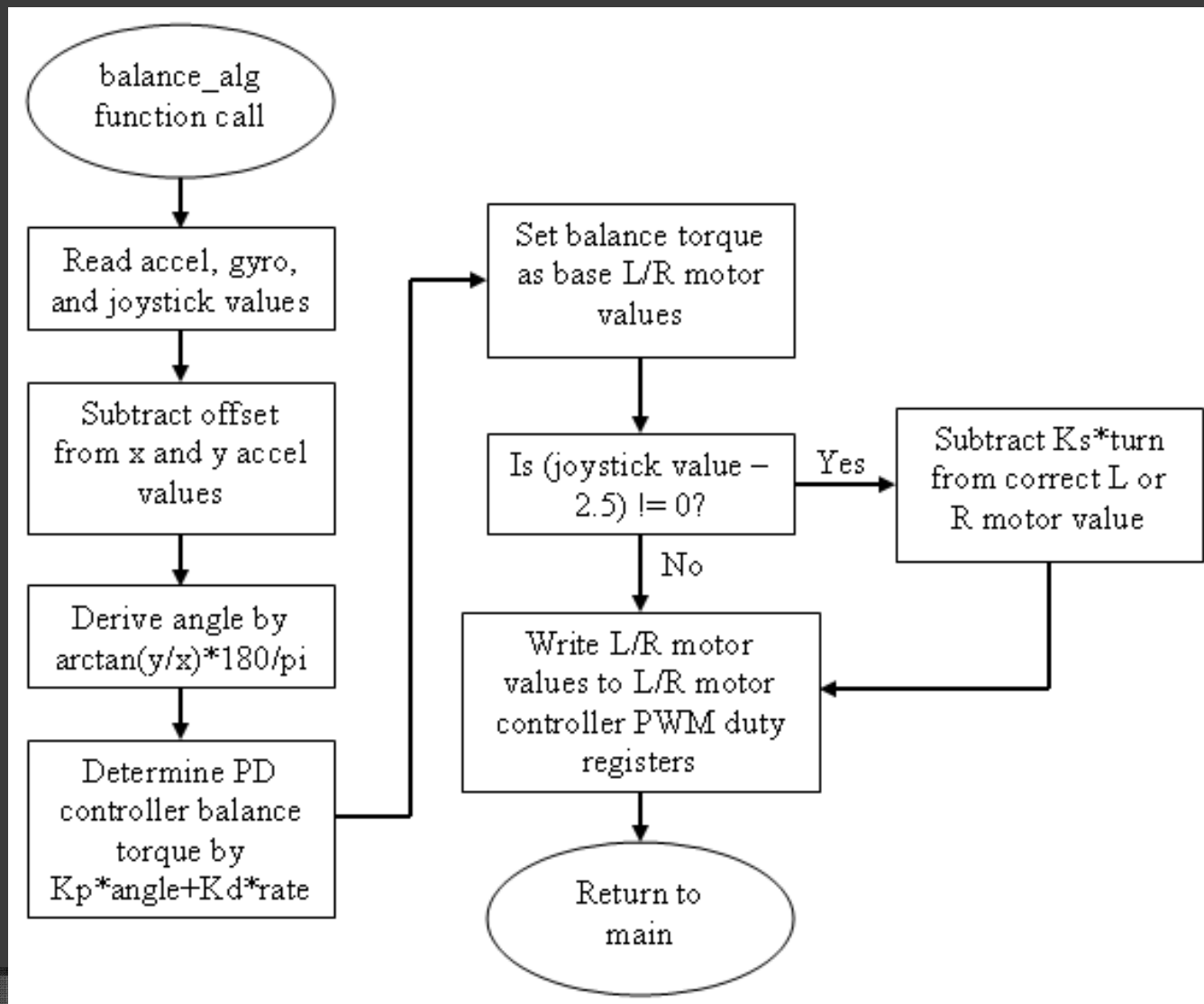
Interrupt Service Routines



Battery Module and LCD Module



Balancing Algorithm Module



Development Status

- Lcd_update(), battery_alg(), and main() have all been written, tested, and completed.
- Balancing_alg() is partially written and will be tested after PCB is completed.
- Without a system model, the PD controller gains will be fine tuned through trial and error.
- Safety routines will be added once vehicle is balancing properly

Questions?