

```

173 //*****
174 //*****
175
176 int packVoltage(){
177     int Voltage = analogRead(PwrIn);
178     delay(ADC_DELAY);
179     if(Voltage < minPackVoltage) {
180         while(1){
181             //Infinite Loop Halting all other processes other than indicating low voltage (LED Blinks)
182             digitalWrite(LED_Pwr, HIGH);
183             delay(500);
184             digitalWrite(LED_Pwr, LOW);
185             delay(500);
186         }
187     }
188 }
189
190 //*****
191 //*****
192
193 void differential(int Steering, int throttle){
194     //UNFINISHED, NEED TO WORK OUT EQUATIONS FOR  $R_i$  AND THEN WORK OUT GOOD CODE FOR DIFFERENTIAL
195     //THESE EQUATIONS ARE EXTREMELY RUDIMENTARY AND NEED TUNING BUT THEY SHOULD "WORK"...
196     double IV, OV, Ri;
197     double idealDiff;
198     double steerDifference = Steering - steeringMidpt;
199     double controlApplied;
200     double rpmDifference;
201
202     if(((steerDifference >= 0) && (steerLast <= 0)) || ((steerDifference <= 0) && (steerLast >= 0))){
203         control = 0; //This is the "passed through zero" check and resets control to accomodate that
204     }
205
206     if(steerDifference < leftSteerBuffer){
207         Ri = minTurnRadiusLeft*((steeringMidpt - steeringMin)/(steeringMidpt - Steering));
208         if((RPM_1 == 0)){
209             rpmDifference = 0;
210         } else {
211             rpmDifference = ((RPM_1) - (RPM_0))/(RPM_1); //Outer wheel minus inner wheel
212         }
213     } else if(steerDifference > rightSteerBuffer){
214         Ri = minTurnRadiusRight*((steeringMax - steeringMidpt)/(steeringMax - Steering));
215         rpmDifference = ((RPM_0) - (RPM_1))/(RPM_0); //Outer wheel minus inner wheel
216         if((RPM_0 == 0)){
217             rpmDifference = 0;
218         } else {
219             rpmDifference = ((RPM_0) - (RPM_1))/(RPM_0); //Outer wheel minus inner wheel
220         }
221     } else {
222         Ri = 35000; // This value is "infinity" because the radius of curvature for a straight line is infinity
223     }
224
225     #if DEBUG
226         Serial.print("rpmDifference = ");
227         Serial.println(rpmDifference);
228         Serial.print(" $R_i$  = ");
229         Serial.println(Ri);
230     #endif
231 }

```