**System Architecture**

1. Initialisation
   1. State Initialisation
      1. Initialise state structure including,
         1. Velocity
         2. Velocity setpoint (for PI controller)
         3. Brake state
         4. DMS state
         5. FIQ state
         6. Drive state
   2. Hardware Initialisation
      1. Configure PLL to obtain 60MHz clock.
      2. Configure ADC.
      3. Configure PWM.
      4. Configure SPI.
      5. Configure LCD
         1. Configure SDRAM.
2. Operation
   1. Fast Interrupt Request (20ms cycles, 50Hz)
      1. Detect and update DMS state using rising edge-detection on P0.10.
      2. Detect Brake state by polling state structure and apply brakes if necessary.
      3. Step Proportional-Integral (PI) Controller
         1. Update light rail velocity in state structure using ADC.
         2. Update PWM duty-cycle using PI controller output.
      4. LCD Update Routine
3. Shutdown