CS477 – Spring 2003
Homework 1

A. Generate an object model representing an automobile. Your model should include at least the engine, gas pedal, brake pedal, gear stick, steering wheel, radio, and seat.

B. Generate a finite state machine model for the cruise control system specified below. Use the technique discussed in class on January 30.

Cruise Control System Specification

1. You may assume an automatic transmission vehicle.
2. You may assume a flat, straight road.
3. For any of the cruise control (CC) functions to take effect, CC must be turned on first.
4. CC can be in the following states: off, enabled (i.e., on and cruising), and disabled (on, but not cruising).
5. The CC system should be automatically disabled below 30mph and above 90mph.
6. Four actions are permitted during CC: set speed, accelerate, decelerate, and resume speed.
7. When the system is under CC and the brake is pressed, CC is disabled. When the resume button is pressed, the system resumes at the last set CC speed.
8. When the system is under CC and the accelerator pedal is pressed, CC is disabled and the speed increases correspondingly. When the accelerator is released, the CC resumes at its last set CC speed. If at any point of time during acceleration the CC speed is set, CC replaces the old set speed with the new speed.