Homework 1
Assigned   10SE01
Due   21SE01

- All work is individual effort.
- At least one diagram must be drawn using Visio.
- Use case diagrams are worth 20 points. The class diagram is worth 10 points.
- Each diagram must be accompanied by a textual description. Point distribution is 70% for the diagram and 30% for the textual description.

Use Case Diagrams

1) Draw and describe the use case diagram for the following system. You are an embedded system architect for small home appliances. Consider a oven/stove combination that is typical in most kitchens. The oven/stove has the following functionality:

   Oven
   - Bake, broil, and clean. Note: oven door must be locked when the oven is cleaned.
   - A light that is turned on by a switch
   - A timer that may be set to work with bake mode (not broil or clean)
   - A clock is present on the oven/stove

   Stove
   - Four burners with individual control knobs

2) Your company specializes in the design and implementation of software controls for amusement park rides. Describe the implementation of a ride that has a single axis of rotation with some altitude adjustment between a minimum and maximum height.

Operator Function
The ride operator has a green button that starts the ride, and a red button in case the ride must come to an emergency stop. In normal mode, the ride times out after a fixed duration after the green button was pressed. The operator also has a physical key that is used to enable the control box (where the red and green buttons are located).

Rider Function
A rider has one control button in her/his car. The control button increases height to some max limit while pressed. Upon release of the button, the car decreases height to a min height (ground level). Note that the cars also decrease height to the min limit when the ride times out or the emergency button is pressed. Initially (upon boarding), the ride height is at ground level (min limit).

Draw and describe a use case diagram for the amusement park ride.

Class Diagrams

On all class diagrams include classes, attributes, operations, and all relationships discussed thus far in class (inheritance, dependency, and associations).   Include all multiplicity and aggregation associations, and where appropriate, include name and role adornments.

3) Prepare a class diagram for the physical context of the EECS 486 classroom.