EECS486 Object-Oriented Methodology

Homework 3

Assigned: 07FE03
Due: 18FE03, by 8:40am
Points Possible: 40 points

- Students may work in groups of two to complete this homework. However, each listed author of a homework package is responsible for all content in the submitted homework.
- All diagrams must be drawn in the latest version of MS-Visio that is available on CAEN machines.

Homework Goals and Content

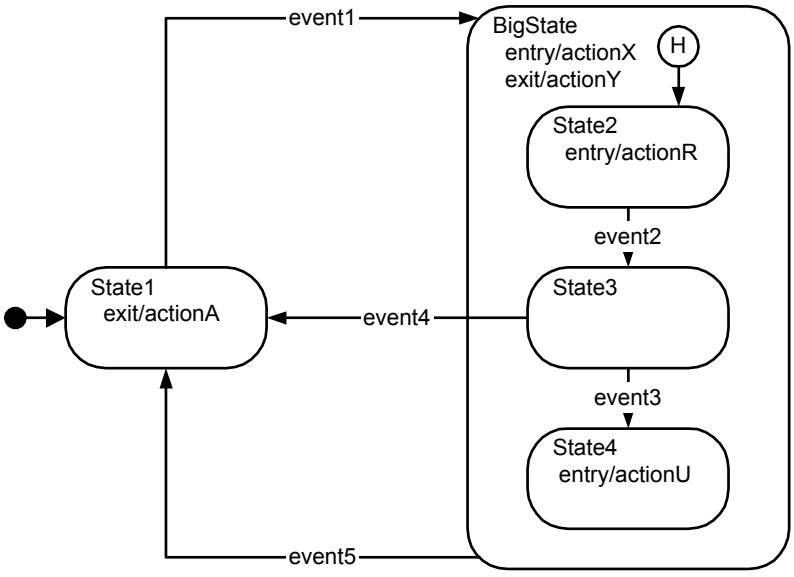
- Increased understanding of the following UML diagrams:
  - Statechart Diagrams;
  - Object Diagrams.
- Increased understanding of the interplay between the above diagram types.
- Generation of study guide for midterm exam.

Questions

Statechart Diagram (10 pts)

1. Given the following Statechart diagram and sequence of events, list the resulting sequence of actions.

   event1, event2, event5, event1, event4, event1, event2, event3, event 4, event5



Object Diagram (10 pts)

2. A. (3 points) Given the class diagram for the car radio (attachment 2 on page 3), draw the object diagram for the system when the radio is tuned to FM 91.7. Include all active classes and relevant attributes in the object diagram.

   B. (2 points) Does your diagram indicate the need for any modifications to the class diagram?

3. A. (3 points) Draw the object diagram reflecting the transition and steady state of the system when a cassette tape is placed in the radio. That is, include operations active during the transition and relevant attributes during and after the transition.

   B. (2 points) Give a textual description of the solution from problem 3A.

Comprehensive Question (10 pts)

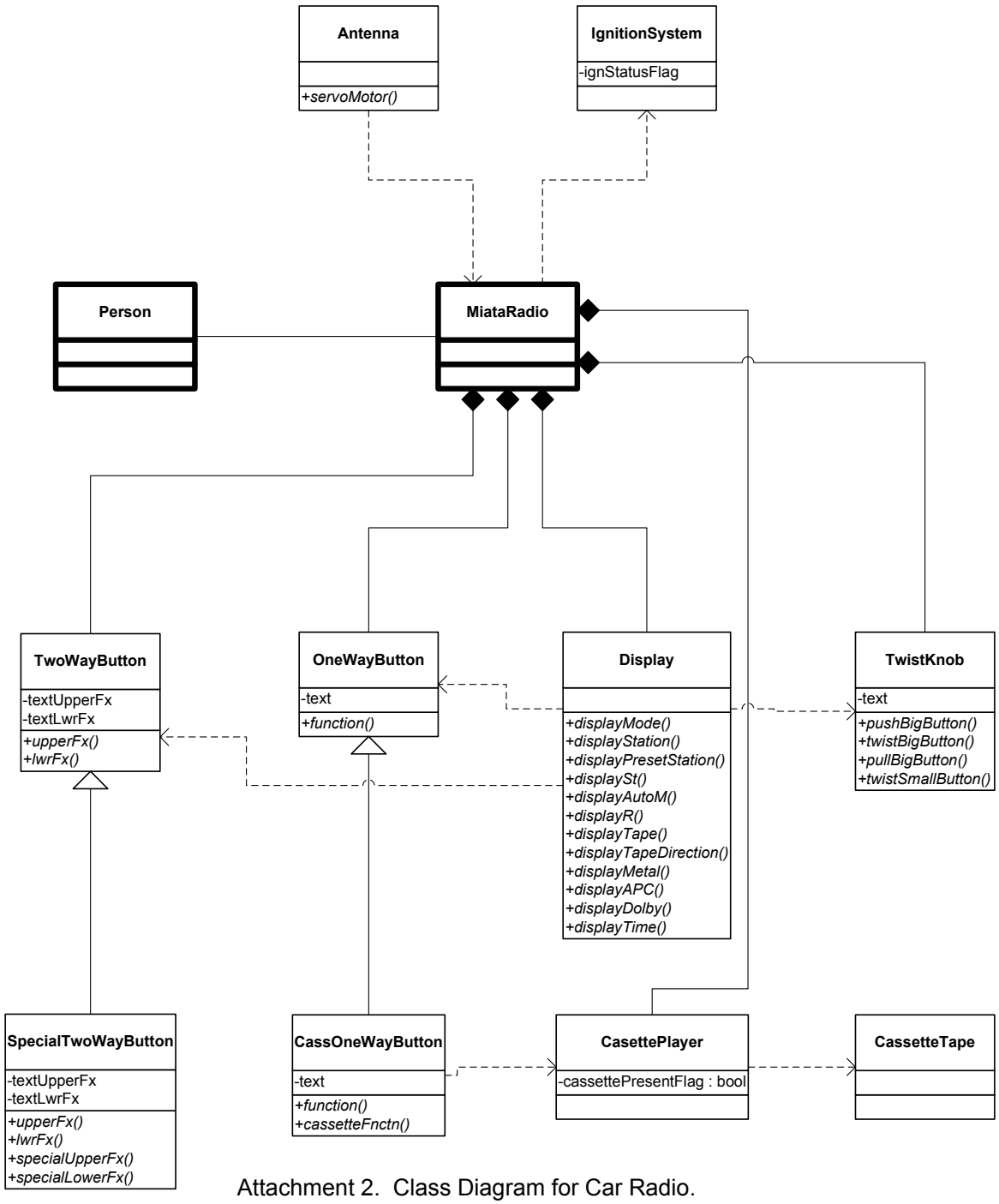
For reference, please refer to the problem description of the amusement park ride (Problem 3 of Homework 2).

4. Describe, using a bulletized list, a possible scenario for the operation of the amusement park ride. Include at least 15 unique, sequential steps in the scenario description.

5. Draw the statechart diagram for the amusement park ride that encompasses all behavior as described. That is, the statechart diagram should include both operator-driven events and actions and rider-driven events and actions.

Midterm Study Guide (10 pts)

6. This problem is submitted individually, separately, and electronically. Formulate a question for the mid-term exam. The question must have two properties: appropriate clarity and appropriate complexity. Clarity means that the description adequately describes the context for the problem. Complexity means that the problem reflects the correct level of difficulty for a senior level, four credit class at the University of Michigan. The set of all problems will be returned ungraded to the students as a study guide for the midterm exam. Up to three questions from the study guide may be included in the midterm exam. Submit to eecs486@umich.edu. The question should be in the form: student name, 2 blank lines, question. Please submit as ASCII characters embedded directly into your email submission. Diagrams, if necessary, may be submitted as attachments.



Attachment 2. Class Diagram for Car Radio.