**SENG300 Assignment 2**

**Design Justification**

**Group 9**

In implementing the new requirements for the second iteration of the vending machine, our group chose to dedicate individual classes to listen for events from a given piece of hardware; since this is an event based system. The decision to implement it this way was also based off feedback some of our group members received in the previous iteration. This way also prevents any mixed communication among the listeners and keeps classes from becoming too large by giving each class a dedicated function. When handling the event log an event writer class was created and initialized in each listener to a corresponding hardware that have visible actions a user can observe. This event writer records the time and action that a user observes. We implemented a logic class to interconnect all the listener classes and handle the decision making for the vending machine. The decision making in its current state is around, determining if a customer has put in enough money to make a purchase, vending a pop, determining change to be returned and determining when the ‘out of order light’ and ‘exact change’ light need to be turned on. Each listener takes the logic class as a parameter in its constructor. This is done to “install” the logic onto the hardware.

The main class is used to initialize the vending machine to default values for prices, accepted coin kinds and cost of each pop type. After the vending machine is initialized the ‘Hi there!’ message is displayed and recurs in a loop until a coin is inserted. The coin slot listener determines if a valid coin has been inserted, if a valid coin has been inserted it proceeds to change display from ‘Hi there!’ to displaying the current credit balance. If the customer presses one of the pop buttons, the logic checks the current credit that has been inputted by the customer against the pop they have selected to determine if there is enough credit inputted. The logic then determines whether a pop can be vended based of the customer credit and either a pop is vended, or a message is displayed stating whether there is not enough credit or if the machine is out of that particular pop type. The change to be returned is determined by the coin rack listener, checking from highest denomination to lowest. If unable to return coins in this check the ‘Exact Change’ light is turned on. Tell the customer to use exact change when trying to make a purchase. The ‘Out of Order’ light is turned on when the pop racks are empty, coin racks are full. This is done using the pop can rack listener and coin rack listeners to check each time a pop can is removed as well as whenever coins are added. These events are also connected to the event writer to log the time when each event occurs.