**WORKLOAD MODULE OBJECT ORIENTED DESIGN**

**1. Farmer Class**  
Purpose: A single farmer in the system.  
  
Attributes:  
  
name: The farmer's name.  
  
id: The farmer's unique identifier.  
  
geolocation: The location where the farmer is located.  
  
phone: The farmer's phone number.  
  
Methods:  
  
Constructor to make a farmer with needed details.  
  
Getters to retrieve the farmer's details (name, id, phone).  
  
**2. Collector Class**  
Purpose: A milk collector who has to collect milk from provided farmers.  
  
Attributes:  
  
name: The collector's name.  
  
collection Point: Where the milk is collected.  
  
assigned Farmers: List of assigned farmers for this collector.  
  
Methods:  
  
Constructor to create the collector with a name and collection point.  
  
Method to add an assigned farmer to the collector.  
  
Method to print the list of assigned farmers along with their details.  
  
**3. Farmer Group Class**Purpose: Collects farmers as a group so that they can be coordinated and managed more easily.  
  
Attributes:  
group Name: The name of the farmer group.  
  
milk Quantity: The expected amount of milk which the group should contribute collectively.  
  
farmers: An array of farmers in the group.  
  
Constructors:  
  
Constructor to create a farmer group by name and expected milk amount.  
  
Method to include a farmer in the group.  
  
Method to print the details of the group, i.e., name of the group, expected milk amount, and array of farmers.  
  
**4. Farmer Yield Class**  
Purpose: Stores the milk yield history of all farmers.  
  
Attributes:  
  
farmer Id: The unique farmer's ID.  
  
yield History: A map to store the yield history data, whose key is the date and value is the amount of milk yielded on the date.  
  
Methods:  
  
Constructor to instantiate an object for farmer yield with a farmer's ID.  
  
Method to tag the farmer's milk yield for a specific date.  
  
Method to display the yield history of a farmer.  
  
Method to save the yield data to Firebase for archival purposes.  
  
**5. Notification Class**  
Purpose: Controls the notification system, which provides SMS notifications to farmers regarding collection schedules or updates.  
  
Attributes:  
  
None, as this class uses static data (e.g., Twilio credentials).  
  
Methods:  
  
Method to send an SMS notification to a specific phone number via Twilio's API.  
  
Helper method to encode Twilio credentials for HTTP authentication.  
  
**6. Milk Processing System Class**  
Purpose: The main system that integrates and controls all the modules.  
  
Attributes:  
  
No specific attributes; the entry point to run the entire system.  
  
Methods:  
  
The main method that integrates all the components:  
  
Creates instances of farmers, collectors, and farmer groups.  
  
Assigns farmers to collectors and adds them to groups.  
  
Tracks and prints milk yields.  
  
Saves the yield records in Firebase.  
  
Sends notifications (SMS) to farmers regarding collection schedules.  
  
System Overview:  
Farmers are the main players in the system, each giving milk and receiving notifications about collection times.  
  
Collectors manage collections of farmers and collecting the milk from a designated collection point.  
  
FarmerGroups make it easy to group farmers, and hence their overall yield can be managed easily.  
  
Farmer Yield stores historical milk yield data for every farmer and has functionality to store the data in Firebase.  
  
Farmers are also notified via SMS (using Twilio) to alert them of collection events.  
  
The Milk Processing System class ties everything together, booting up the system by organizing and overseeing the various components.