Dart Practice Questions – Object Oriented for practice

1. (The Person, Student, Employee, Faculty, and Staff classes)
   Design a class named Person and its two subclasses named Student and Employee. Make Faculty and Staff subclasses of Employee.

   A person has a name, address (Address), phone number, and email address.
   A student has a status(String)
   An employee has an office, salary, and date hired. Use the Date class defined earlier to create an object for date hired.
   A faculty member has office hours and a rank.
   A staff member has a title.

   Create display function only in faculty and Staff class only.
   Keep Data members **private**.

2. Create an Encapsulated class Student with following:
   Data Members:
   a. String Name
   b. Int [] Result_array[5] // Result array contains the marks for 5 subjects
   Methods:
   a. Default constructor
   b. One- argument constructor (for Name)
   c. two- argument constructor
   d. Average (???) // it returns the average based on the marks in the array.
   e. CompareAverage(?) //compares Average of two students

3. Create a class named Movie that can be used with your video rental business.
   The Movie class should have ID Number, movie title and number of days for which movie is rented. The class should have appropriate accessor and mutator methods and an equals() method that determines whether two movies are equal.
   Next, create three additional classes named Action , Comedy , and
   Drama that are derived from Movie .
   Finally, create an overridden method named calcLateFees that takes as input the number of days a movie is late and returns the late fee for that movie.
   Action movies have a late fee of $3/day, comedies are $2.50/day, and dramas are $2/day.
   Note: Declare calcLateFees() method as abstract in super class
   Call the calcLateFees method polymorphically in main. Reset Id for Action Movies using downcasting.

   Note: Call equals method on objects of Action and comedy objects to verify the concept of type compatibility.

Create an abstract class “Person”, with data member “name”. Create set and get methods, and an abstract Boolean method “isOutstanding()”.
Derive two classes Student and Professor. Student class has data member CGPA. Professor Class has data member numberOfPublications. Provide setters and getters and implementation of abstract function in both classes.
In student class isOutstanding() will return true if CGPA is greater than 3.5. In the Professor class isOutstanding() will return true, if numberOfPublications> 50.

In the main class create an array of Person class and call isOutstanding() function for student and professor. isOutstanding() for professor should be called after setting the publication count to 100.

4. Create a generic class with a type parameter that simulates drawing an item at random out of a box. This class could be used for simulating a random drawing. For example, the box might contain Strings representing names written on a slip of paper, or the box might contain Integers representing a random drawing for a lottery based on numeric lottery picks.
   Create an add method that allows the user of the class to add an object of the specified type along with an isEmpty method that determines whether or not the box is empty. Finally, your class should have a drawItem method that randomly selects an object from the box and returns it.
   If the user attempts to drawn an item out of an empty box, return null . Write a main method that tests your class.
   Note: Create data of the class yourself as per the requirements of the questions.

5. Create a class **Job** with following attributes:

   a. Data Members: Designation, Salary, Id

   b. Create constructors and setters and getters for all

   Modify the Employee class and add a Job Object as data member.

   Modify the constructors and display function of Employee class accordingly

   Create a new method in **Employee** class that checks if Salary of the Employee is greater than 50,000.