

CSC186 – Object Oriented Programming
Academic Session October 2022 – February 2023
Lab Assignment 3 – Classes and Array of Object

Course Outcomes (CO)	LO1	LO2	LO3
CO1			
CO2	√	√	√
CO3			

Answer ALL questions.

3.1 The class `Cupcake` has the following attributes:

- Name – example: vanilla, red velvet
- Code – example: CV123
- Price per piece

a) Write a complete class called `Cupcake` with the following methods:

- i. Default/Normal/Copy constructors
- ii. Mutator method for all data members
- iii. Accessor methods for all data members
- iv. `toString()` method to return the objects' information.
- v. `priceInDozen()`: a method that will return the price of the cupcake. Discount will be calculated based on the last character of the code. Otherwise, no discount will be given. The discount rate for each code are as follows:

Character	Rate
'1'	5%
'2'	8%
'3'	10%

Example: discount for a dozen of cupcakes with code CV123 is 10%

b) Write an application class called `CupcakeApp` to perform the following:

- i. Declare and create an array of cupcake objects and store the data onto array. The size of array will be entered by the user.
- ii. Calculate and display the net price of cupcakes.
- iii. Calculate and display the total price of all cupcakes.

3.2 Given the `Fruit` class with the following data members attributes):

Class name	: <code>Fruit</code>
Attributes	: <code>String name;</code> //fruit name <code>String type;</code> //local or imported <code>double weight;</code> //in kg <code>double price;</code> //price per kilogram
Method	: constructor, mutator, accessor, processor, printer

- a) Write the definition of the following methods:
- Default/Normal/Copy Constructor.
 - Mutator/Setter for each attribute.
 - Getter/Accessor/Retriever for each attribute.
 - A Processor method named `isLocal()` that returns `true` if it is local fruit or returns `false` otherwise.
 - A processor method named `calcTotalPrice()` calculates and returns the total price of the fruit. In order to encourage the buyers to buy the local fruits, 3% discount is given on the total price.
 - Printer method named `toString()` to return the objects' information.
- b) Write an application program to do the following tasks:
- Declare an array of object named `fruitList` and store some data onto array.
 - Display the name of local fruits which has the highest price.
 - Calculate total sale of the imported fruits.

3.3 Given the following class named Furniture.

Class name	: Furniture
Attributes	: String furnitureType; // e.g. chair, bed, table String material; //e.g. wood, rattan double pricePerUnit; int quantity;
Method	: constructor, mutator, accessor, processor, printer

a) Write the definition of the following methods:

- Default/Normal/Copy Constructor.
- Mutator/Setter for each attribute.
- Getter/Accessor/Retriever for each attribute.
- A Processor method named `calcPriceFurniture()` to calculate and returns the price of furniture. The price is calculated based on the price per unit, quantity and the discount rates depend on the material types as shown in the following table:

Material Type	Discount Rate
Wood	20%
Rattan	15%
Metal	10%
Bamboo	5%

- A printer method named `toString()` to return the objects' information.

b) Write an application program to do the following tasks:

- Declare an array of object named `arrFurniture` and store some data onto array.
- To calculate and display the total price of furniture for each type of material.
- To determine the highest price of wood and display the details of information.