Final Project
MSCS502

Business Overview

A new gym 'Red Fox Fitness Club (RFFC)' is opening up in the Hudson Valley and has hired your team as an IT consultant to design their information system. Along with access to regular fitness equipment, it plans to launch group fitness classes for Zumba, Yoga, Cardio, and personal 'one-to-one' classes. The gym will have 2 membership plans.

- Basic Plan – $9.99/month
    - Equipment.
    - Guests - $10 per session – only equipment.
    - Group fitness class - $5 per session; additional $5 for each guest per session.
- Fox Plan - $19.99/month
    - Equipment.
    - Guest Privileges.
    - Free group fitness classes.

Personal 'One-to-One' classes will need to be scheduled at least '24 hours' ahead and will cost an additional $10 per session for members of both plans.

New members can sign up online and any member may switch between the plans and they can cancel anytime without any penalties.

Every month, the gym will release schedules for the Group Fitness Classes (Zumba, Yoga, and Cardio) and allow members to sign up for classes online. The system should prompt Basic Plan members to buy a session pass online or in person.

The gym will also sell various drinks and supplements along with merchandise like t-shirts, gym bags, water bottles, gloves, sweat shirts, etc. As per Gym's policy, they will be sold in store only, not online.

To further motivate its members, the gym would like you to set up a point system. The members can earn 10 points for each check in and redeem them for any purchase in the gym. 100 points equals $1 in merchandise discounts.

Business Requirements

Here are the initial requirements for the system. Develop the system with features that will allow you to

- Manage membership sales and membership dues.
- Keep track of members, their accumulated points and their guests.
    - How often do they use the gym?
    - Do they bring their guests? If yes, how often?
    - How many classes do they enroll in?
- Manage and keep track of sales for both drinks and merchandise.
- Manage inventory.
- Keep track of the number of members who enrolled for classes vs how many actually attended. This report will be used to evaluate the group fitness trainers.
- Generate monthly group fitness class schedules and allow members to register online. (Please see the example schedule below).
- Allow members to request and schedule personal ’One-to-One’ training online.

Assignment Instructions

Create an object oriented Java package that can satisfy the business requirements of RFFC that also satisfy the following structural programming requirements.

- Create a UML diagram of your solution.
- The program should be object based with classes.
- At least one user defined exception that is handled or thrown at least once.
- At least one example of inheritance, that is one set of super and subclass related classes.
- At least a class that implements an interface such as comparable or serializable.
- Define at least one abstract class with classes that extend it.
- Each class must have the following.
    - At least 3 private attributes/variables.
    - Accessor getter and setter methods for each attribute/variable.
    - A default and overloaded constructor.
    - An overridden toString method.
- Create at least 15 JUnit tests that pass.
- There should be two text based interfaces.
    - One for gym workers to do things like sell items, track inventory, check in members, and view reports.
    - The second for “online” users to do things like sign up for the gym, view class schedules, and register for classes.
- Utilize a Maven build setup to generate a Jar file.
- Generate documentation using Javadoc based on your Javadoc comments.

Extra Credit

Implement the serializable interface on all classes and have it so that you can save the state of the system and restore it from files. For instance, I would be able to input a bunch of members and fitness class data then save it to a set of files.

September 2022 schedule (max. class size 25)

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
8:00 am – 9:00 am	Zumba (Ashley)	Yoga (Chris)	Yoga (Chris)	Yoga (Chris)	Zumba (Ashley)	Yoga (Chris)	Yoga (Chris)
9:00 am – 10:00 am			Cardio (Albert)	Cardio (Albert)	Cardio (Albert)	Zumba (Ashley)	Zumba (Ashley)
11:00 am – 12:00 pm	Zumba (Elena)	Zumba (Elena)	Zumba (Elena)	Yoga (Dipti)	Yoga (Dipti)	Cardio (John)	Yoga (Dipti)
2:00 pm – 3:00 pm	Cardio (John)	Cardio (John)	Cardio (John)	Zumba (Elena)	Cardio (Mark)	Yoga (Dipti)	Cardio (Mark)
5:00 pm – 6:00 pm	Yoga (Sara)	Yoga (Sara)	Yoga (Sara)	Yoga (Sara)	Yoga (Sara)	Zumba (Laurie)	Zumba (Laurie)
7:00 pm – 8:00 pm	Zumba (Simon)	Zumba (Simon)	Cardio (Mark)	Zumba (Laurie)	Zumba (Laurie)		
8:00 pm – 9:00 pm	Cardio (Mark)	Cardio (Cat)	Zumba (Simon)	Cardio (Cat)	Cardio (Cat)		