Middle East Technical University
Northern Cyprus Campus

CNG 443: Introduction to Object-Oriented Programming Languages and Systems

Assignment 4: RestManApp with Database and Security Checks

Date handed-out: 4 January, Monday
Date submission due: 17 January, Sunday, 22:55 (Cyprus time)

Learning Outcomes

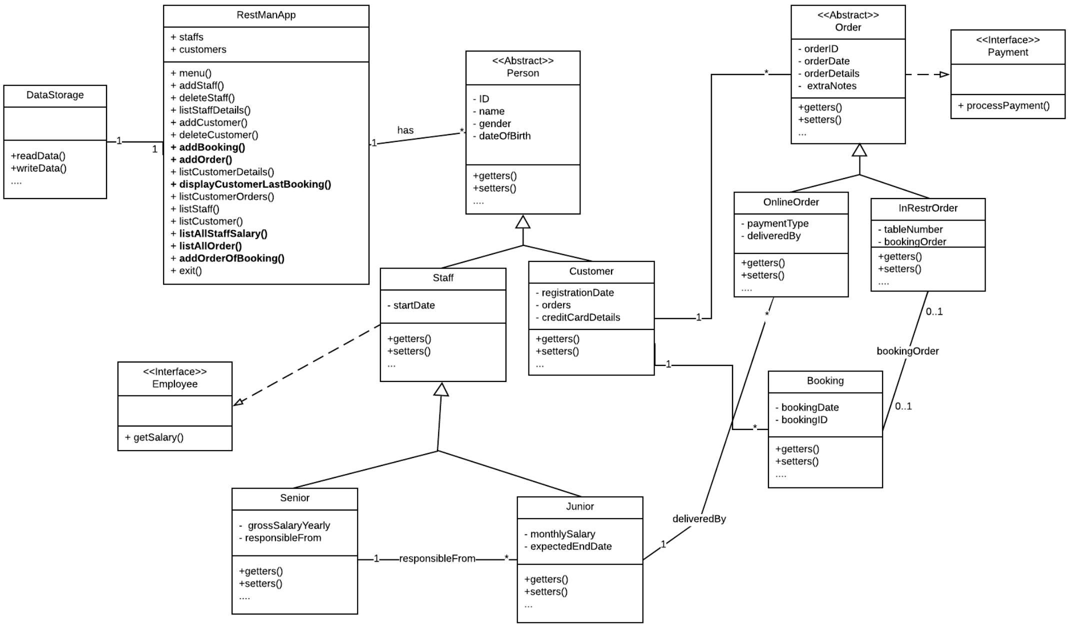
On successful completion of this assignment, a student will:

- Have practiced how to use Java Security API.
- Have practiced JDBC API.
- Have practiced Object serialization API in Java.

This assignment has two aims: (1) to learn how to connect a Java application to a backend database; (2) to learn how to use part of the object serialization and Java Security API. In order to practice these two this assignment is based on the previous assignment. We will improve the third assignment and connect it to a backend database and also use MD5 algorithm to do security checks.

PART1: Database Connection

In the previous assignment, you created a Restaurant Management Application. Figure bellow shows an updated UML diagram of this application with a data storage component.



In the previous assignment, you stored your data in external files, but in this assignment, you need to use the DataStorage class to connect to an external database and store your customer details. You need to store at least three customer with a booking. For this part of the assignment, you need to use Mysql database. Attached to this assignment, you can find an SQL file which can be used to initialize the database.

PART 2: Object Serialization and Security

When the user wants to close the application, besides storing the data to a backend database, you need to also serialize your customer objects into an external file. This will be used to check if somebody is trying to attack your Customer data while the application is not running. You will do this as follows: when user closes the application, you will make your Customer objects persistent to a file, generate an MD5 for that file and write it into another external file. When the application is loaded again, you will read regenerate the MD5 for the serialized objects in your external file and check if it is the same with the MD5 that you stored when the application was closed. If they are the same, that means the serialized objects are not modified, if they are not then you will need to warn the user that the data has been updated.

NOTE: If you have not submitted your previous assignment, then for this assignment you can only work with the Customer data to connect the application to the database and also do the serialization and security part based on the Customer data.

Assessment Criteria

This assignment will be marked as follows:

Aspect	**Marks (Total 100)**
DataStorage implemented	20
Fully working database connection	10
Fully working database read and write	30
Object Serialization	20
MD5 check	20

In order to get full mark, your class should have the following: a constructor with full parameters, at least two constructors with partial parameters, overridden toString method, javadoc. The following grading scheme will also be used for the requested methods.

Fully working	0.2
Appropriate reuse of other code	0.2
Good coding style	0.2
Good Javadoc comments	0.2
Good and neat test results	0.2