

Course Work

ITS1155 – ORM Concepts

BSc (Hons.) in Computing via GDSE



Final Examination

Total Marks: 100

Objectives

- Understand what ORM is and utilize the concept to develop applications.
- Understand Entity mapping and create relations with each entity.
- Understand the difference between Native Hibernate, and JPA hibernates with methods and their usage.
- Understand how Hibernate entities work in the application context.
- Understand the Object's life cycle when using objects for the persistence process

Coursework Requirements and Instructions

- You have to fixate on how to implement this system utilizing your erudition of Hibernate, and JavaFX.
- You must implement all the layers given in the application architecture. (Refer to Appendix)
- This coursework consists of 2 parts, Part A and Part B.
- Both components carry marks and you are required to endeavor both components to be able to face the viva-voce at the end of this coursework. Sample questions are given to you in Part B to prepare yourself for the viva.
- Refer to the Coursework Guidelines at the end of each part to understand the specific guidelines to be followed.

Submission

- You should submit the deliverables of the coursework on or before the due date designated. If not, you will be not eligible for the viva.
- Your work is compulsory to initiate with git and it should be pushed onto the GitHub. Eventually, you should submit the GitHub repository link to the google classroom.

Hostel Management System

The D24 Hostel is a prominent hostel accommodation located in the Colombo area. It could reserve rooms for all university students who are studying on Colombo campuses. This Hostel gives room facilities for both boys and girls. At a time, almost 125 students can get hostel accommodation from here.

Since its establishment, all the student, and student fees payment management processes was done manually so far keeping records on physical files. However, time by time increasing the spacing of the Hostel and increasing students' hostel needs, this management is facing more and more problems in keeping records of the students and employees.

Thus, taking the exhortation of a consultant to the manager, the hostel accommodation decided to ask you to bring out a system for the student registration and fee payment process.

The above-mentioned process is as follows:

1. The student visits the hostel to reserve a room for a specific time period and has to face a simple interview conducted by the one of employees there.
2. After the interview and gathering of all details about the student, the employee checks the availability of rooms. If rooms are available, the employee starts the registration process for the student.
3. During the registration process, details about the student, the date of registration, and the kind of room he/she registered for are recorded in the files.
4. On registration, the student has to make a key money payment for the respective room or they can promise to pay that key money later.
5. Every student must register under their campus student ID.

The rooms facilities offered by the D24 Hostel are as follows:

Room Type ID	Type	Key Money (LKR)	Rooms QTY
RM-1324	Non-AC	3100.00	35
RM-5467	Non-AC / Food	6500.00	20
RM-7896	AC	8900.00	14
RM-0093	AC / Food	16000.00	10

For this system, the hostel accommodation insists that you provide the following functionalities:

1. To manage (CRUD operations) students.
2. To manage (CRUD operations) rooms.
3. All entities must include cascade types (Research on how to set cascades and how they work)
4. To view the details of the student who reserved the room.

Part A

1. Implement the above system using hibernate framework.
2. Write a join query of students who haven't paid key money yet. (Research on how to write this query using HQL)

Part B

You should have a thorough knowledge of the following questions.

What is JPA?
What is Hibernate?
What is the difference between JPA and Hibernate?
What is RDBMS?
What is the difference between RDBMS and Hibernate?
What are the advantages and disadvantages of Hibernate?
Draw the object/entity state diagram and explain how to change the state by methods.

What is ORM?
Explain the implementation of Hibernate and its methods.
What is lazy and eager fetching?
What are the methods that are used in eager and lazy fetching?
What are the two types of configuration in hibernate sessionFactory?
Explain 3 types of relationships using “inverse and owning”.
Which side is the “mappedBy” attribute added?
What are the cascade types that can be used in hibernate? And why do we use it?
What are the query types used in hibernate?
What are the differences between HQL and Native SQL?
Explain first-level cache and second-level cache.

NOTE: Research about second-level cache on your own. It will be evaluated in the VIVA.

COMPLETE THE GIVEN APPLICATION AND PRESENT IT IN THE VIVA AND COVER THE GIVEN AREAS IN “PART B”.

EXACT DATE OF THE VIVA WILL BE INFORMED TO YOU VIA CLASSROOM.

Guidelines

1. Users should be able to login into the proposed system using their username and password.
2. The user should be able to change his/her username and password after logging in.
3. The user should be able to view the password on the login screen.
4. All the fields should be validated using RegEx. Click [here](#) to know more about RegEx.
5. Use hibernate in your application.
6. Use layered architecture and appropriate design patterns. (Singleton/Facade/Factory)
7. You are not allowed to use MYSQL clients or similar clients to implement the database.
8. You are not allowed to use JDBC in your application.
9. Use property file configuration for “hibernate”. Click [here](#) for references.
10. Use cascade types in your database. Follow the two references given below.
 - a. [Reference 1](#)
 - b. [Reference 2](#)

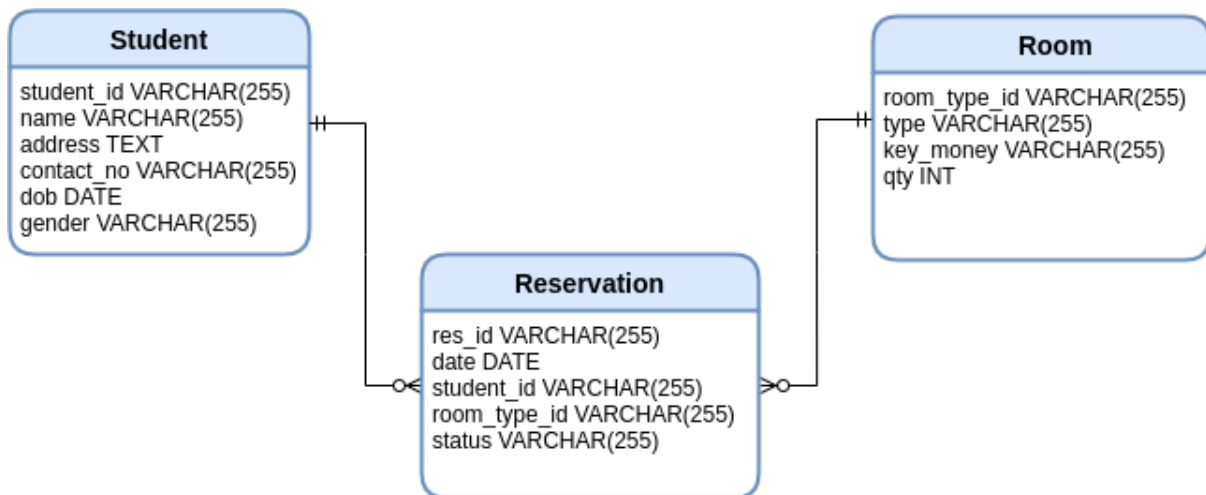
Evaluation Criteria

Methods	Marks
Application	40%
Home work	10%
Individual VIVA	50%

Pass Mark is 50%

Appendix

A. Database Design



B. Use-case Diagram

