

Phase II – COMP 4150
Comp 4150: Advanced and Practical Database Systems
University of Windsor, School of Computer Science
Term: Fall 2022

Group Project- Phase II

Total: 100 marks

Weight: 10 %

Hand-out date: Oct 5th, 2022

Due date: Nov.8th, 2022 [11:59 pm]

Objective of Phase II: The goal of this project phase is to be familiar with database application development using PL/SQL Oracle database language.

Project Phase II: Implement components of the Database application using PL/SQL codes exploiting advanced features of the language.

Electronic Assignment Submission: Done through <http://blackboard.uwindsor.ca>

Marking Scheme: The mark for each of the questions is indicated beside each question.

Academic Integrity Statement: Submit only work that is yours and include the following confidentiality agreement and statement at the beginning of your assignment.

IMPORTANT NOTES:

1. Final report should include a separate cover page that will include: The title of the project, the name and id number of the students.
2. Code of all the questions must be written in the report as well.
3. If your solution is based on a particular assumption, please state these assumptions at the beginning of the project or wherever necessary.
4. Submit all solution files and scripts through the blackboard for marking.
5. Late submission of project will carry a 20% per late day penalty, including the weekend days.

Project Submission: Nov.8th, 2022 [11:59 pm]

Project submission must be a zipped file containing following:

- Completely documented report (softcopy – word file). An electronic copy of 10 PL/SQL programs tied specifically to a button click in your database application.
- SQL file
- Phase II grading rubric

Project Presentation: Nov.9th, 2022

COMPANY OVERVIEW

University of Windsor requires you to design a database to assist with the administration of their Hostel Management office. The requirements collection and analysis phase of the database design process has provided the following data requirements specification for the University Hostel Office database.

DATA REQUIREMENTS

Students

The data stored on each full-time student includes: the Grade 12 number, name (first and last name), home address (street, city, postcode), date of birth, gender, category of student (for example, first year undergraduate, postgraduate), nationality, special needs, any additional comments, current status (placed/waiting), and what course the student is studying on. The student information stored relates to those currently renting a room and those on the waiting list. Students may rent a room in a hall of residence or student flat. When a student joins the University, he or she is assigned to a member of staff who acts as his or her Advisor of Studies. The Advisor of Studies is responsible for monitoring the student's welfare and academic progression throughout his or her time at University. The data held on a student's Advisor includes full name, position, name of department, internal telephone number, and room number.

Halls of residence

Each hall of residence has a name, address, telephone number, and a hall manager who supervises the operation of the hall. The halls provide only single rooms, which have a room number, place number, and monthly rent rate. The place number uniquely identifies each room in all halls controlled by the hostel Office and is used when renting a room to a student.

Student flats

The Hostel Office also offers student flats. These flats are fully furnished and provide single-room Hostel for groups of three, four, or five students. The information held on student flats includes a flat number, address, and the number of single bedrooms available in each flat. The flat number uniquely identifies each flat. Each bedroom in a flat has a monthly rent rate, room number, and a place number. The place number uniquely identifies each room available in all student flats and is used when renting a room to a student.

Leases

A student may rent a room in a hall or student flat for various periods of time. New lease agreements are negotiated at the start of each academic year with a minimum rental period of one semester and a maximum rental period of one year, which includes Semesters 1, 2, and the Summer Semester. Each individual lease agreement between a student and the Hostel Office is uniquely identified using a lease number. The data stored on each lease includes the lease number, duration of the lease (given as semesters), name and Grade 12 number of the student, place number, room number, address details of the hall or student flat, and the date the student wishes to enter the room, and the date the student wishes to leave the room (if known).

Invoices

At the start of each semester each student is sent an invoice for the following rental period. Each invoice has a unique invoice number. The data stored on each invoice includes the invoice number, lease number, semester, payment due, student's full name and Grade 12 number, place number, room number, and the address of the hall or flat. Additional data is also held on the payment of the invoice and includes the date the invoice was paid, the method of payment (cheque, cash, Visa, etc.), the date the first and second reminder is sent (if necessary).

Student flat inspections

Student flats are inspected by staff on a regular basis to ensure that the Hostel is well maintained. The information recorded for each inspection is the name of the member of staff who carried out the inspection, the date of inspection, an indication of whether the property was found to be in a satisfactory condition (yes or no), and any additional comments.

Hostel staff

Some information is also held on members of staff of the Hostel Office and includes the staff number, name (first and last name), home address (street, city, postcode), date of birth, gender, position (for example, Hall Manager, Administrative Assistant, Cleaner) and location (for example, Hostel Office or Hall).

PROJECT REQUIREMENTS:

1. Write a PL/SQL code that declares variables of types VARCHAR2, CHAR, NUMBER, DATE, BOOLEAN and uses suitable executable section instructions to implement some actions and print some output. (10 marks)
2. Write a PL/SQL code to declare variables of anchored type belonging to type of at least one or two columns of your database. Your code should also read data from the keyboard and include appropriate executable section instructions to print some values. (10 marks)
3. Write a PL/SQL code that uses nested conditional statement(s) to implement appropriate actions printing some output. (10 marks)
4. Write a PL/SQL code that includes EXCEPTION section and handles an exception using a variable declared in the code. (10 marks)
5. Write a PL/SQL code that declares a cursor and utilizes this cursor in a loop instruction to implement appropriate action. (10 marks)
6. Write a PL/SQL procedure with parameters to perform appropriate action. Also write the anonymous block that calls this procedure. (10 marks)
7. Write a PL/SQL function to perform appropriate action. Also write a block that calls this function. (10 marks)

Phase II – COMP 4150

8. Write a PL/SQL package specification and body to perform appropriate action. Also write a code that calls this procedure. (10 marks)
9. Write a PL/SQL code to create a trigger to perform appropriate action as well as the code to show the effect of this trigger (10 marks)
10. Presentation and viva/voce (10 marks)

Each of the 10 tasks in the Project phase II is assigned 10 marks.