COMPUTER SCIENCE CS202

2022

PRACTICAL ASSIGNMENT INSTRUCTION SHEET

Module Name: Databases

Practical Number: 001/2022

Practical Information

Hand in:

All work is to be submitted on RUConnected by Friday the 30th of September at midnight. If you fail to submit your work by the deadline, you will automatically be assigned a mark of 0. You will not be able to submit your work at a later date on RUConnected, and you are not allowed to email your work to your tutor after the deadline. If you are worried that you won’t be able to submit your work in time, submit what little you have so that you at least get a mark. You are also encouraged to save your work repeatedly in draft form on RUConnected before submitting the final version.

Plagiarism:

By submitting this practical, you agree that the work submitted is your own and agree to abide by the Rhodes University Plagiarism Policy (available at http://tinyurl.com/cq9ahtq). Please see your Computer Science departmental handbook for a friendlier version of this document. Only submit work that is your own, even if you worked as a group. Don’t give your work to another student to copy. Don’t copy answers word for word from books, notes or internet sources either. Always put things in your own words. Marks:

The total mark for this practical is: PRACTICAL 1 (65 Marks)

1. In PostgreSQL, create a table called Employees that has the following attributes:

[8 Marks]

1. Employee Number (integer) – Primary key
2. Employee Name (variable character)
3. Employee Surname (variable character)
4. Employee Grade (integer)
5. Employee Department (char)
6. Employee Date of Birth (Date)
7. Gender (F/M)
8. Monthly Salary (Decimal (6,2))

-- Table: Prac1.Employees

-- DROP TABLE IF EXISTS "Prac1"."Employees";

CREATE TABLE IF NOT EXISTS "Prac1"."Employees"

(

"Employee\_Number" integer NOT NULL,

"Employee\_Name" character varying(255) COLLATE pg\_catalog."default" NOT NULL,

"Employee\_Surname" character varying(255) COLLATE pg\_catalog."default" NOT NULL,

"Employee\_Department" character(255) COLLATE pg\_catalog."default" NOT NULL,

"Employee\_Date\_Of\_Birth" date NOT NULL,

"Gender" character(1) COLLATE pg\_catalog."default",

"Monthly\_Salary" double precision NOT NULL

)

TABLESPACE pg\_default;

ALTER TABLE IF EXISTS "Prac1"."Employees"

OWNER to postgres;

1. Insert two (2) records into the table Employees [ 2 Marks]

INSERT INTO "Prac1"."Employees"(

"Employee\_Number", "Employee\_Name", "Employee\_Surname", "Employee\_Department", "Employee\_Date\_Of\_Birth", "Gender", "Monthly\_Salary")

VALUES (001, 'Victor', 'Phoswa', 'Engineering', '1999-01-26', 'M', 100000),

(002, 'Nombuso', 'Masimola', 'Finance', '1999-11-29', 'F', 110000);

1. Create a query to find the details of employees whose salaries are more than R20000 and they are employed in the Marketing Department. Store the details as Employee Details. [5 Marks]
2. Create a query to find details of employees whose Date of Birth is between 1 January 1958 and 30 December 1974. Save this query as DueForRetirement. [5 Marks]
3. Add a column called incentive-bonus to the Employee table and allocate 10% of the monthly salary to each Employee. [3 Marks]
4. Update the value of the column incentive\_bonus to R3000 for each employee if the incentive bonus that is reflecting is less than R500. [2 Marks]
5. Define the following: [3 Marks]
6. Primary key
7. Secondary key
8. Composite key
9. Show the differences between the inner join and the right outer join through the following: (i) Write two SQL queries each representing the inner join and the right outer join to bring together the table Employees, and the table MedicalAid which has the fields medical aid number, medical aid name and medical aid address. [6 Marks]
10. From the results produced, explain the differences between the two. [6 Marks]
11. A university has a number of departments. Each department in turn hosts a number of students and lecturers. Each department specialises in a particular field. A number of departments constitute a faculty.
12. Identify the entities, attributes and relationships to this scenario and draw a related Entity-Relationship Diagram (ERD). Each entity or relationship should have at least 2 attributes [13 Marks]
13. Identify the tables (relations) that emanate from the ERD. [12 Marks]