FACULTY/COLLEGE	College of Business and Economics
SCHOOL	School of Consumer Intelligence and Information Systems
DEPARTMENT	Applied Information Systems
CAMPUS(ES)	APB
MODULE NAME	Information Systems 3A
MODULE CODE	ILS3A01
SEMESTER	First
ASSESSMENT OPPORTUNITY, MONTH AND YEAR	Semester Test 2

ASSESSMENT DATE	11 May 2022	**SESSION**	08:00 – 10:00
ASSESSOR(S)	Dr. Lucas Khoza		
MODERATOR(S)			
DURATION	2 hours (120 min)	**TOTAL MARKS**	90

NUMBER OF PAGES OF QUESTION PAPER (Including cover page)	7

INFORMATION/INSTRUCTIONS:

- This is an **OPEN-BOOK** assessment.
- Read the questions carefully and answer only what is required.
- Number your answers clearly and correctly as per the question paper.
- **The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.**

SPECIAL INSTRUCTIONS

1. Please save your program regularly. Power failures may occur due to load shedding.

2. Marks are allocated ONLY for working code.
3. Please use good programming practice and comments in your code.
4. Include screenshots to show your output.
5. Once you have finished this assessment, copy all your correct numbered questions into a word document.
6. Save your word document as a pdf.
7. **Make sure you submit the assessment (in pdf format) via ULINK and not email.**

Open the preload using notepad and execute the SQL code to create the database and tables and insert values to the tables required to complete this assessment.

This assessment is based on records for a company called LgCorporation. Using the preload, create the company database and tables with information about the brands, products, vendors, departments, employees, salary_history, customers, invoices and invoice lines. Once this is done, answer the questions below.

QUESTION 1----------(2)
Write a query to count the number of invoices.

```
SELECT COUNT✓ (*) as 'Number of invoices'
FROM lginvoice; ✓
```

	Number of invoices
1	32

QUESTION 2----------(3)
Write a query to count the number of customers with a customer balance over R500.

```
SELECT      COUNT✓ (*) as 'Customers Balance'
FROM lgcustomer✓
WHERE       cust_balance >500; ✓
```

	Customers Balance
1	28

QUESTION 3----------(10)

Write a query to display the listing of customer purchases, including the subtotals for each of the invoice line numbers. Display the customer code, univoice number, product description, numbe rof units bought, price of each unit and the subtotal

```
SELECT      i.cust_code, i.inv_num, p.prod_descript, l.line_qty AS [Units Bought],
l.line_price AS [Unit Price] ✓, l.line_qty *l.line_price✓✓ AS Subtotal
```

```
FROM lgcustomer c, lginvoice i, lgline l, lgproduct p✓
WHERE       c.cust_code = i.cust_code✓
AND   i.INV_NUM = l.INV_NUM ✓
AND   p.prod_sku = l.prod_sku✓
ORDER BY    i.cust_code, i.inv_num, p.prod_descript; ✓
```

	cust_code	inv_num	prod_descript	Units Bought	Unit Price	Subtotal
1	88	104	Primer, Alkyd, Quick Dry, for Metal	3	3.29	9.87
2	89	105	Fire Retardant Coating, Latex, Interior, Flat (ULC...	1	35.49	35.49
3	90	106	Floor Paint, Latex, Low Gloss	1	8.99	8.99
4	91	107	Primer Sealer, Low Permeability, Latex, Interior	3	6.59	19.77
5	92	108	Varnish, Interior, Polyurethane, Oil Modified, Gloss	4	14.99	59.96
6	101	117	Acrylic Coating, High Build, for Pavement Marking	4	29.99	119.96
7	102	118	Fire Retardant Sealer, Alkyd, Interior (ULC Appr...	1	5.59	5.59
8	103	119	Primer, Alkyd, Anti-Corrosive for Metal	4	14.99	59.96
9	104	120	Fire Retardant Coating, Alkyd, Interior, Flat (ULC...	1	12.99	12.99

✓✓

QUESTION 4----------(10)

Write a query to display the current salary for each employee in department 300. Assume that only current employees are kept in the system, and therefore the most current salary for each employee is the entry in the salary history without a NULL end date. Sort the output in descending order by salary amount.

```
SELECT e.emp_num, emp_lname, emp_fname, sal_amount✓
FROM lgemployee e ✓
JOIN lgsalary_history s ✓
ON e.emp_num = s.emp_num✓
WHERE sal_end IS not NULL✓✓
AND dept_num = 300✓
ORDER BY sal_amount DESC; ✓
```

	emp_num	emp_lname	emp_fname	sal_amount
1	83312	BAKER	ROSALBA	21800.00
2	83433	NORWOOD	RONNA	21770.00

✓✓

QUESTION 5----------(10)

Write a query to display the invoice number, line numbers, product SKUs, product descriptions, and brand ID for sales of primer products of the same brand on the same invoice.

```
SELECT l.inv_num, l.line_num, p.prod_sku, p.prod_descript, l2.line_num, p2.prod_sku,
p2.prod_descript, p.brand_id✓
```

```
FROM (lgline l inner join lgproduct p ✓
        ON l.prod_sku = p.prod_sku)
        inner join (lgline l2 ✓
        inner join lgproduct p2
        ON l2.prod_sku = p2.prod_sku) ✓
    ON l.inv_num = l2.inv_num✓
WHERE p.brand_id = p2.brand_id ✓
        AND p2.prod_category = 'Primer'✓
ORDER BY l.inv_num, l.line_num; ✓
```

	inv_num	line_num	prod_sku	prod_descript	line_num	prod_sku	prod_descript	brand_id
1	104	6	1150-MMR	Primer, Alkyd, Quick Dry, for Metal	6	1150-MMR	Primer, Alkyd, Quick Dry, for Metal	35
2	107	3	2200-DAI	Primer Sealer, Low Permeability, Latex, Interior	3	2200-DAI	Primer Sealer, Low Permeability, Latex, Interior	31
3	111	8	3061-DOI	Primer, Bonding, Solvent Based	8	3061-DOI	Primer, Bonding, Solvent Based	33
4	113	10	3503-FGI	Primer, Bonding, Solvent Based	10	3503-FGI	Primer, Bonding, Solvent Based	33
5	119	112	5445-XOY	Primer, Alkyd, Anti-Corrosive for Metal	112	5445-XOY	Primer, Alkyd, Anti-Corrosive for Metal	31

✓✓

QUESTION 6----------(10)

Write a query to display the customer code, first name, and last name of all customers who have had at least one invoice completed by employee 83304. Sort the output by customer last name and then first name.

```
SELECT c.cust_code, cust_fname, cust_lname ✓
FROM lgcustomer c ✓
INNER JOIN lginvoice i ✓✓
ON c.cust_code = i.cust_code✓
WHERE employee_id = 83304✓✓
ORDER BY cust_lname, cust_fname; ✓
```

	cust_code	cust_fname	cust_lname
1	89	GISELE	HUBBARD
2	88	DENNY	WATERS

✓✓

QUESTION 7----------(10)

The purchasing manager is still concerned about the impact of price on sales. Write a query to display the brand name, brand type, product SKU, product description, and price of any products that are not a premium brand, but that cost more than the most expensive premium brand products.

```
SELECT brand_name, brand_type, prod_sku, prod_descript, prod_price✓
FROM lgproduct p ✓
INNER JOIN lgbrand b ON p.brand_id = b.brand_id✓
WHERE brand_type <> 'PREMIUM'✓
    AND prod_price > (SELECT Max(prod_price) ✓
            FROM lgproduct p ✓
```

```
INNER JOIN lgbrand b ON p.brand_id = b.brand_id ✓
WHERE brand_type = 'PREMIUM'); ✓
```

	brand_name	brand_type	prod_sku	prod_descript	prod_price
1	FORESTERS BEST	VALUE	3716-WZD	Acrylic Coating, High Build, for Pavement Marking	36.99
2	BUSTERS	VALUE	5220-JDO	Acrylic Coating, High Build, for Pavement Marking	36.99

✓✓

QUESTION 8----------(10)

One of the purchasing managers is interested in the impact of product prices on the sale of products of each brand. Write a query to display the brand name, brand type, average price of products of each brand, and total units sold of products of each brand. Even if a product has been sold more than once, its price should only be included once in the calculation of the average price. However, you must be careful because multiple products of the same brand can have the same price, and each of those products must be included in the calculation of the brand's average price.

```
SELECT brand_name, brand_type, Round✓ (avgprice,2) AS "Average Price", "Units
Sold"
FROM lgbrand b ✓
INNER JOIN (SELECT brand_id, Avg✓ (prod_price) AS avgprice
                    FROM lgproduct
                    GROUP BY brand_id) sub1
        ON b.brand_id = sub1.brand_id✓
        INNER JOIN (SELECT brand_id, Sum✓ (line_qty) AS "Units Sold"
                FROM lgproduct p JOIN lgline l ON p.prod_sku = l.prod_sku
        GROUP BY brand_id) sub2✓
        ON b.brand_id = sub2.brand_id✓
ORDER BY brand_name; ✓
```

	brand_name	brand_type	Average Price	Units Sold
1	BINDER PRIME	PREMIUM	13.490000	15
2	BUSTERS	VALUE	31.990000	10
3	FORESTERS BEST	VALUE	21.290000	3
4	HOME COMFORT	CONTRACTOR	19.970000	15
5	LE MODE	PREMIUM	24.710000	10
6	LONG HAUL	CONTRACTOR	12.120000	9
7	STUTTENFURST	CONTRACTOR	11.040000	4
8	VALU-MATTE	VALUE	13.520000	7

✓✓

QUESTION 9----------(10)

Create a stored procedure named 'FindEmployee' that will display the departments that a specific employee has worked in including the salary amount. Test the stored procedure using '83312

```
CREATE PROCEDURE FindEmployee @FindEmployee ✓NVARCHAR(5) AS
SELECT emp_lname, emp_fname,emp_title,dept_name, sal_amount✓
FROM lgemployee E,lgdepartment D, lgsalary_history H✓
WHERE E.dept_num = D.dept_num✓
AND H.emp_num = E.emp_num✓
AND E.emp_num = @FindEmployee✓
ORDER BY sal_amount DESC✓
```

```
EXEC FindEmployee @FindEmployee  = '83312'✓
```

	emp_lname	emp_fname	emp_title	dept_name	sal_amount
1	BAKER	ROSALBA	ASSOCIATE	PURCHASING	21800.00

✓✓

QUESTION 10 ---------- (15)

Write a query that will create a new table named '*EmployeeStatus*' with the employee number, name, surname, employee hire date, age and status as columns and its data. The age column must be calculated. The status column must be printed based on the condition in the table below.

Age	**Status**
30 and above	Retired Employee
20 and above	Experienced Employee
Below 20	Graduate Employee

```
CREATE VIEW EmployeeStatus✓
As
Select E.emp_num, E.emp_lname, E.emp_fname, E.emp_hiredate, Datediff✓
(Year,E.emp_hiredate, GetDate())✓ As 'Age',
CASE✓✓
        WHEN  DateDiff(Year, E.emp_hiredate, GetDate()) >= 30 Then 'Retired
Employee' ✓✓
        WHEN DateDiff(Year, E.emp_hiredate, GetDate()) >= 20 Then 'Experienced
Employee' ✓✓
        ELSE 'Graduate Employee' ✓
        END AS 'Employee Status✓'
FROM lgemployee E✓

        Select * From EmployeeStatus✓
```

	emp_num	emp_lname	emp_fname	emp_hiredate	Age	Employee Status
1	83304	MCDONALD	TAMARA	2008-10-20	13	Graduate Employee
2	83308	LOVE	CONNIE	1982-12-15	39	Retired Employee
3	83312	BAKER	ROSALBA	2014-12-12	7	Graduate Employee
4	83314	DAVID	CHAROLETTE	1989-02-17	32	Retired Employee
5	83318	PECK	DARCIE	2009-05-03	12	Graduate Employee
6	83321	FARMER	ANGELINA	1991-09-08	30	Retired Employee
7	83332	LONG	WILLARD	2006-03-08	15	Graduate Employee
8	83341	CORTEZ	CHRISTINE	1990-07-28	31	Retired Employee
9	83347	WINN	QUINTIN	1987-08-25	34	Retired Employee
10	83349	SINGH	JENNIFFER	1992-01-07	29	Experienced Employee
11	83359	WATTS	MERLE	1995-10-22	26	Experienced Employee
12	83366	BLEDSOE	PHOEBE	2004-08-14	17	Graduate Employee
13	83371	MATHEWS	ROXANE	1999-08-08	22	Experienced Employee
14	83372	DAHL	CLAUDINE	1995-10-29	26	Experienced Employee
15	83374	TILLEY	DARRON	2006-10-04	15	Graduate Employee
16	83378	DUNHAM	FELICIA	2010-12-31	11	Graduate Employee
17	83382	CONKLIN	STELLA	1985-03-28	36	Retired Employee
18	83385	COLBERT	BRODERICK	1996-11-25	25	Experienced Employee
19	83398	GILES	ZACK	2014-08-12	7	Graduate Employee
20	83403	PONCE	FELICITA	1984-12-05	37	Retired Employee
21	83404	FENTON	LIZ	2005-04-10	16	Graduate Employee
22	83411	REDMOND	ROGELIO	1980-02-19	41	Retired Employee
23	83413	MARINO	KYRA	1981-06-06	40	Retired Employee
24	83415	WHALEN	CHASITY	2010-04-12	11	Graduate Employee
25	83419	SNEED	EUGENE	1993-10-22	28	Experienced Employee
26	83423	GOOD	LINDSAY	1998-01-11	23	Experienced Employee
27	83428	CRUM	SHERRILL	1989-10-12	32	Retired Employee
28	83432	BENAVIDES	SAL	1987-09-13	34	Retired Employee
29	83433	NORWOOD	RONNA	1995-05-30	26	Experienced Employee
30	83434	WHALEY	GERALD	2012-07-25	9	Graduate Employee
31	83437	SWANSON	JUNE	2004-07-29	17	Graduate Employee
32	83445	STAHL	QUINTIN	1994-03-13	27	Experienced Employee
33	83446	CRAFT	CHARLINE	1996-11-13	25	Experienced Employee
34	83451	ELLIS	ROSALIE	1986-09-15	35	Retired Employee

✓✓