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| Assignment 02Third SemesterSession 1443/1444 AH |

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| Student Name | | : |  | | | | |
| Student ID | | : |  | | | | |
| Student Signature | | : |  | | | | |
|  | **Department** | : | Department of Information Systems |  | Total Marks | | |
| **Course Code** | : | COIS 342 |
|  | **Course Name** | : | Databases |  |  |  |  |
|  | **Submission Date** | : | Wednesday, May 31, 2023 |  |  |  |  |
|  | **Time** | : | 15:00 - 16:00 |  | 10 | | |
|  | **Number of Exam Page (s)** | : | 4 |  |

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|  | **Marks** | |
|  | **Outcome 1  (5 Marks)** | **/****5** |
| **Outcome 2  (5 Marks)** | **/****5** |
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| **Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |  |  |
| **Name of the Examiner : Mr. Tabrej Khan** | **Total Marks**  **(In Figure)** | / **10 Marks** |
|  | **Total Marks**  **(In Words)** |  |
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**Assignment Task and direction:**

1. Use the cover and questions page of this assignment and put into your doc/docx assignment file, and don’t forget to fill/write your name and ID in the cover page.
2. After you finish the assignment, save and give the name of your file using this name format: AssignmentCOIS342-ID-Name.
3. Submit your assignment through Blackboard and you can submit in pdf/doc format.
4. Kindly submit one Hard Copy to instructor.

**Outcome 1**

***Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.***

**Question 1. [12] [5 Marks]**

Given the following relational DB:

**EMP (EMPNO, ENAME, JOB, MGR#, SAL, COMM, DEPTNO#)**

**DEPT (DEPTNO, DNAME, LOC)**

**USAGE (DEPTNO#, PARTNO#)**

**SUPPLY (SUPPLIERNO#, PARTNO#)**

**PART (PARTNO, PNAME….)**

**SUPPLIER (SUPPLIERNO, SNAME …)**

USAGE relation models a many-to-many association between parts and departments: Parts used by each department. The SUPPLY relation models a many-to-many association between suppliers and parts.

Write a **Relational Algebra (RA) Query** for each of the following requirements:

1. List all employees **[12] [1 Marks]**

Answer :

EMP

1. List empno and ename for all employees **[12] [1 Marks]**

Answer:

π EMPNO, ENAME (EMP)

1. List names and jobs of employees **[12] [1 Marks]**

Answer:

π ENAME, JOB (EMP)

1. List employees working in departments 25, 47 or 55. **[12] [1 Marks]**

Answer:

σ DEPTNO =25 ∨ DEPTNO =47 ∨ DEPTNO =55 (EMP)

1. List all department numbers **[12] [1 Marks]**
   1. From DEPT.

Answer:

π DEPTNO (DEPT)

* 1. From EMP.

Answer:

π DEPTNO (EMP)

* 1. Deduct the **departments that have no employees**.

Answer:

π DEPTNO (DEPT) - π DEPTNO (EMP)

**Outcome 2**

***Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.***

**Question 2 [21] [5 Marks]**

1. **List name of employees** those are **working in departments located in JEDDAH**. **[22] [1 Marks]**

Answer:

π EMP.ENAME σ DEPT.LOC = 'JEDDAH' ( EMP ⨝ EMP.DEPTNO = DEPT.DEPTNO DEPT)

1. Find **suppliers** who supply **unused parts [22] [2 Marks]**

Answer:

We have to add another column in PART table which define a part is used or unused is PSTATUS.

π SUPPLIER.SNAME, SUPPLIER.SUPPLIERNO σ PART.PSTATUS = 'UNUSED' ( ( SUPPLIER ⨝ SUPPLIER.SUPPLIERNO = SUPPLY.SUPPLIERNO SUPPLY) ⨝ PART.PARTNO = SUPPLY.PARTNO PART )

1. Given: **[22] [2 Marks]**

Customer(id, name)

Branch(bid, district)

Account(cid, bid)

**Query**: **"*Find the names of all customers who have an account in every branch located in Rabigh area*"**

**Answer:**

π Customer.name (σ ¬ (∃ Branch.bid (σ Branch.district='Rabigh' ∧ NOT (∃ Account.bid (σ Account.cid=Customer.id ∧ Account.bid=Branch.bid) Account))) (Customer × Branch))