**School of Computing**

**ST1501 Data Engineering CA1**

**AY2023/2024 Semester 1**

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| **Class** | **DAAA/FT/2A/01** |

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| **Section A - Database Design (Entity Relationship Diagram)** | 30% |
| **Assumptions:**   * Manager is only considered a manager in the Employee table when he is working at his main store, the one he is managing. * Quantity for Inventory entity is the current quantity the store has for each item. * Quantity for Trans entity is the current quantity of items each checkout has.   **A picture containing text, diagram, plan, schematic  Description automatically generated** | | |

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| **Section B - Database Design (Database Diagram)**   * The database supports the described business scenario. * The chosen table names, field names and attributes are descriptive. * The database is normalized. | 10% |
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| **Section C - Database Creation**   * Attach an SQL file to include create table statements including the primary key and foreign key definition. * Enter the details of each table in the template. | 10% |

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| **List all the relations, PK, FK and all non-key attributes for the database relation diagram. Attach an SQL file to show the create table SQL script to implement the database design, including the primary key and foreign key definition.** | | | | | |
| **No** | **Relation Name** | **Primary Key** | **Non-key Attribute(s)** | **Foreign Key(s)** | **Referenced Relation(Referenced Column)** |
| 1 | Store | Store\_ID | Address | Manager | Employee(Employee\_ID) |
| 2 | Employee | Employee\_ID | Employee\_Name | Store\_ID | Store(Store\_ID) |
| SSN |  |  |
| Phone |  |  |
| Address |
| PayType |
| Email |
| Password |
| Date\_hired |
| Date\_Start |
| Date\_end |
| Manager |
| PwdChange\_Date |
| Annual\_Pay |
| Hourly\_Pay |
| 3 | Depends | Employee\_ID | Relationship | Employee\_ID | Employee(Employee\_ID) |
| Dependent\_Name | Email |
|  | Date\_Created |
| 4 | Checkout | Checkout\_ID | Trans\_Date | Employee\_ID | Employee(Employee\_ID) |
| Cust\_ID | Customer(Cust\_ID) |
| Store\_ID | Store(Store\_ID) |
| 5 | Trans | Checkout\_ID | Quantity | Checkout\_ID | Checkout(Checkout\_ID) |
| Item\_ID | Item\_ID | Item\_Info(Item\_ID) |
| 6 | Item\_Info | Item\_ID | Brand |  |  |
| Item\_Description |
| Cost |
| Shape |
| Size |
| UPC |
| Weight |
| Taxable |
| Price |
| 7 | Inventory | Store\_ID | Quantity | Store\_ID | Store(Store\_ID) |
| Item\_ID | Item\_ID | Item\_Info(Item\_ID) |
| 8 | Customer | Cust\_ID | Cust\_Name |  |  |
| Phone |
| Email |
| Date\_Joined |
| DateLastTrans |

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| **Section D - The Query Statements 35%** |
| Query 1  SELECT cu.Cust\_Name, s.Store\_ID, s.Address as 'Store Address',  er.Employee\_Name as 'Manager of the Store', ch.Trans\_Date as 'Transaction Date', it.Brand,  it.Item\_Description, t.Quantity as 'Quantity Purchased', e.Employee\_Name as 'Served By'  FROM Customer cu, Checkout ch, Store s, Trans t, Item\_Info it, Employee e, Employee er  WHERE cu.Cust\_ID = ch.Cust\_ID AND ch.Store\_ID = s.Store\_ID AND s.Store\_ID = e.Store\_ID  AND ch.Checkout\_ID = t.Checkout\_ID AND it.Item\_ID=t.Item\_ID AND s.Manager = er.Employee\_ID  AND ch.Employee\_ID = e.Employee\_ID  ORDER BY 1, 6 |
| Query 1 results  A screenshot of a computer  Description automatically generated |
| Query 2  SELECT s.Manager as 'Store Manage ID', e.Employee\_Name as 'Name of Manager',  s.Store\_ID as 'Store managed', it.Item\_ID as 'Item', i.Quantity as 'Quantity on inventory'  FROM Employee e, Store s, Inventory i, Item\_Info it  WHERE s.Manager = e.Employee\_ID AND i.Store\_ID = s.Store\_ID AND it.Item\_ID = i.Item\_ID  ORDER BY 3, 4 DESC |
| Query 2 results  A screenshot of a computer  Description automatically generated with low confidence |
| Query 3  SELECT c.Cust\_Name as 'Customer Name', COUNT(t.Quantity) as 'Number of Items Bought'  FROM Customer c, Checkout ch, Trans t  WHERE c.Cust\_ID = ch.Cust\_ID AND ch.Checkout\_ID = t.Checkout\_ID  GROUP BY t.Checkout\_ID, c.Cust\_Name  HAVING COUNT(t.Quantity)<=2  ORDER BY 1 |
| Query 3 results  A picture containing text, screenshot, font, number  Description automatically generated |
| Query 4  SELECT it.Item\_ID, it.Item\_Description, SUM(it.Price \* i.Quantity ) as 'Retail', SUM(it.Cost \* i.Quantity) as 'Wholesale'  FROM Item\_Info it, Inventory i  WHERE it.Item\_ID = i.Item\_ID  GROUP BY it.Item\_ID, it.Item\_Description  HAVING COUNT(i.Store\_ID) >= 2  ORDER BY 1 |
| Query 4 results  A picture containing text, screenshot, font, number  Description automatically generated |
| Query 5  SELECT e.Employee\_ID as 'Employee ID', e.Employee\_Name as 'Employee Name', e.Manager as 'Manager ID', er.Employee\_Name as 'Manager Name'  FROM Employee e, Employee er  WHERE er.Employee\_ID = e.Manager  ORDER BY 1,3 |
| Query 5 results  A screenshot of a computer  Description automatically generated with low confidence |
| Query 6  SELECT e.Employee\_ID, e.Employee\_Name, er.Employee\_ID, er.Employee\_Name, s.Store\_ID, s.Address  FROM Employee e, Employee er, Store s  WHERE e.Store\_ID = s.Store\_ID AND er.Store\_ID = e.Store\_ID AND er.Employee\_ID = e.Manager AND er.Manager IS NULL |
| Query 6 results |