School of Computing

ST1501 Data Engineering CA1 AY2024/2025 Semester 1

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| Class | DAAA/FT/2A/03 |

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| a) Database Design (Enhanced Enty Relationship Diagram) | 40% |
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| b) Database Design (Database Diagram) | 15% |
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| c) Database Creaon | 10% |
| Submit all your table creation SQL codes in a single file named "create\_tables.sql" |  |

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| d) Queries |  |  |
| Remember to submit all your SQL queries in a single file named "queries.sql" as well | |  |
| Q1 |  | 4% |
| SQL Statement:  SELECT  (SELECT COUNT(\*) FROM Model WHERE Parent\_Model\_ID IS NULL) AS FreshModel,  (SELECT COUNT(\*) FROM Model WHERE Parent\_Model\_ID IS NOT NULL) AS FineTunedModel; | |  |
| Results: | |  |

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| Q2 | 5% |
| SQL Statement:  SELECT  ModelType,  COUNT(\*) AS NumberUnassigned,  CAST(ROUND(AVG(Accuracy), 1) AS DECIMAL(5,1)) AS MeanAccuracy, -- Round the average accuracy to 1 decimal place and cast to remove trailing zeros  ROUND(MAX(Accuracy), 1) AS MaxAccuracy  FROM  (  SELECT  Model\_Type AS ModelType,  Accuracy  FROM  Model  WHERE  Model\_ID NOT IN (SELECT DISTINCT Model\_ID FROM Solution)  ) AS Subquery  GROUP BY  ModelType  HAVING  COUNT(\*) >= 1  ORDER BY  ModelType; |  |
| Results: |  |

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| Q3 | 4% |
| SQL Statement:  SELECT  e.First\_Name + ' ' + e.Last\_Name AS FullName,  e.Contact,  e.Gender  FROM  employee e  JOIN  (  SELECT  Employee\_ID,  Order\_ID  FROM  solution  GROUP BY  Employee\_ID,  Order\_ID  HAVING  COUNT(\*) > 1  ) AS subquery ON e.Employee\_ID = subquery.Employee\_ID  ORDER BY  FullName; |  |
| Results: |  |

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| Q4 | 7% |
| SQL Statement:  SELECT  COUNT (\*) AS NumberAccepted  FROM  (  SELECT  s.Order\_ID,  s.Date\_Assigned,  co.Completion\_Date,  co.Model\_Type AS Customer\_Model\_Type,  s.Model\_ID,  m.Model\_Type AS Model\_Type,  m.Accuracy AS Model\_Accuracy,  co.Accuracy AS Customer\_Accuracy  FROM  customer\_order co  INNER JOIN  solution s ON s.Order\_ID = co.Order\_ID  INNER JOIN  model m ON s.Model\_ID = m.Model\_ID  WHERE  s.Date\_Assigned <= co.Completion\_Date  AND (co.Model\_Type = m.Model\_Type OR co.Model\_Type IS NULL)  AND m.Accuracy >= co.Accuracy  ) AS subquery; |  |
| Results: |  |