Assignment 2

Database ICt285

yin zhanpeng

34742217

2023

# ICT285 Databases

# Assignment 2

***Check the LMS for the Due Date***

Some important points worth noting:

* This assignment **is worth 20% of** your final mark for the unit.
* This assignment consists of 100 marks. Marks are allocated as described in the assignment. Late submissions will be penalised at the rate of 5 marks per day late or part thereof **after the due date.** Assignments will not be accepted more than 7 days after the submission date as assignment return will have commenced.
* **If you have questions about** the assignment, you can ask your tutor, the unit coordinator, or post a question on the LMS discussion board (preferred). Please check the discussion board before asking to make sure that your question has not already been answered.
* The University treats plagiarism, collusion, theft of other students’ work and other forms of dishonesty in assessment seriously. **This is an INDIVIDUAL assignment**. Any instances of dishonesty in this assessment will be immediately forwarded for investigation.
* Marks may be deducted based on the **overall organisation and presentation** of the document -up to 5marks (Standard Font Size and Colour i.e., Arial/12, double line spacing, page number, separate sections, aligning paragraphs. Title page and table of contents. Good technical style, avoiding excessive jargon. Correct use of equations, footers, and headers).
* The University **takes academic integrity very seriously**. Instances of academic misconduct include Submitting work that has been produced by someone else or either in part of whole using Artificial Intelligence tools. More information about academic integrity is contained within the Murdoch Academic Passport (MAP) unit <https://www.murdoch.edu.au/mymurdoch/support-advice/learning-study/murdoch-academic-passport>

**In Assignment 01**, you designed a database for “OWE Transport”. You are now expected to implement the database. There have been some minor changes in the requirements from Assignment 01 needed to support the transactions and views listed below. You will need to incorporate these changes and any changes you have made because of the feedback you received on Assignment 01.

**What you need to do:**

1. Create an ERD for this database that you use as the basis of your implementation. **(15 marks)**   
   
2. A one or two paragraph explanation as to the changes you have made to the ERD based on your feedback from Assignment 1 or because of having to support the transactions and views below. **(5 marks)**  
   Based on the feedback from Assignment 1 I have realised that I have left out the Staff Assign entity, as well as the attributes the new ERD diagram will include this entity and the attribute types.   
   I have removed the relationship between staff and journey so that it can accommodate to the new staff assign entity.

The table journey, service record and table bus are also modified to support the views and transactions below. I have added actual departure and arrival time to journey, supervisor name and contact for service record and role for staffAssign

1. Create a **data dictionary** that lists **at least** each of the tables, the columns, their domains, and any other constraints that apply. **(15 marks)**  
   Table: Route

|  |  |  |
| --- | --- | --- |
| COLUMN | DOMAIN | CONSTRAINT |
| RouteNumber | VARCHAR(10) | Primary Key |
| Origin | VARCHAR(50) | Not Null |
| Destination | VARCHAR(50) | Not Null |
| EstimatedDepartureTime | Time |  |
| EstimatedArrivalTime | Time |  |

Table: Journey

|  |  |  |
| --- | --- | --- |
| COLUMN | DOMAIN | CONSTRAINT |
| JourneyID | VARCHAR(10) | Primary Key |
| Date | DATE | Not Null |
| RemainingCapacity | INT |  |
| RouteNumber | VARCHAR(10) | Foreign Key |
| BusID | VARCHAR(10) | Foreign Key |
| ActualDepartureTime | TIME |  |
| ActualArrivalTime | TIME |  |

Table: Bus

|  |  |  |
| --- | --- | --- |
| COLUMN | DOMAIN | CONSTRAINT |
| BusID | VARCHAR(10) | Primary Key |
| RegistrationNumber | VARCHAR(20) | Not Null |
| Make | VARCHAR(50) | Not Null |
| Model | VARCHAR(50) |  |
| Year | INT |  |
| Capacity | INT |  |
| ScheduledServiceDate | DATE |  |

Table: ServiceRecord

|  |  |  |
| --- | --- | --- |
| Column | Domain | Constraints |
| ServiceNumber | VARCHAR(10) | Primary Key |
| RegistrationNumber | VARCHAR(20) | Foreign Key |
| StaffID | VARCHAR(10) | Foreign Key |
| ServiceRecordDate | DATE | Not Null |
| Description | VARCHAR(100) |  |
| Scheduled | VARCHAR(10) |  |
| Location | VARCHAR(50) |  |
| SupervisorFullName | VARCHAR(100) |  |
| SupervisorContactPhone | VARCHAR(20) |  |

Table: Staff

|  |  |  |
| --- | --- | --- |
| Column | Domain | Constraints |
| StaffID | VARCHAR(10) | Primary Key |
| FullName | VARCHAR(100) | Not Null |
| ContactPhone | VARCHAR(20) | Not Null |
| Role | VARCHAR(50) |  |

Table: StaffAssign

|  |  |  |
| --- | --- | --- |
| Column | Domain | Constraints |
| StaffAssignID | VARCHAR(10) | Primary Key |
| JourneyID | VARCHAR(10) | Foreign Key |
| StaffID | VARCHAR(10) | Foreign Key |
| Role | VARCHAR(50) |  |

Table: Customer

|  |  |  |
| --- | --- | --- |
| Column | Domain | Constraints |
| CustomerID | VARCHAR(10) | Primary Key |
| ContactPhone | VARCHAR(20) | Not Null |
| Name | VARCHAR(100) |  |

Table: Booking

|  |  |  |
| --- | --- | --- |
| Column | Domain | Constraints |
| BookingID | VARCHAR(10) | Primary Key |
| JourneyID | VARCHAR(10) | Foreign Key |
| CustomerID | VARCHAR(10) | Foreign Key |
| BookingDate | DATE |  |
| Fare | FLOAT |  |
| PaymentMethod | VARCHAR(20) |  |
| CreditCardNo | VARCHAR(16) |  |
| ExpirationDate | DATE |  |

1. Implement the database in Oracle SQLPlus on rhea.ad.murdoch.edu.au **(20 marks)**
   1. All tables should be created as per your ERD; the marker will check your ERD against your tables.  
      A screenshot of a computer program

      Description automatically generated  
      A screenshot of a computer program

      Description automatically generated  
      A screenshot of a computer code

      Description automatically generated
   2. All integrity constraints should be created and appropriately named.
   3. All columns should be of an appropriate domain/size.
   4. All tables should be populated with sample data that will allow the marker to test that your database fulfils the application requirements as specified and support the transactions and views listed below.

Assumptions: the sample data is based on the information of the transactions

* 1. **SELECT, UPDATE and DELETE permissions should be GRANTED on all database objects (particularly tables and views) to the user MARKERTL. This is most important. If you do not grant this permission, the marker will not be able to mark all or part of your assignment.**

1. Provide all the SQL statements that are required for the following transactions to be executed **(25 marks)**:

Transaction 01:

* The OWE201 route is from Perth to Albany and has an estimated time of departure of 0700 and estimated time of arrival of 1400. On 29th July 2023, the Bus 133-313 will be covering the route OWE201. It is a 2011 Volvo B11R with a capacity of 55 seats.

A close-up of a computer screen

Description automatically generated



A screenshot of a computer

Description automatically generated

Transaction 02:

* Record the fact that OWE201 on 29th July 2023 will have the following staff:
  + Driver: Brock Lee
  + Assistant: Dinah Soares
  + Technician: Les Moore
  + Attendant: Anna Conda
  + Attendant: Kerry Oki

Step 1 insert the data into the staff

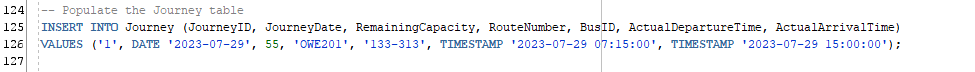
A screenshot of a computer

Description automatically generated

A screenshot of a phone number

Description automatically generated

Step 2 create the journey for OWE201.





Step 3 use the staffassign table to link the staff to the journey

A screen shot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

Transaction 03:

* + Make a booking for Jane Smith on OWE201 on 29th July 2023. OWE201 departs from Perth to Albany and has an estimated time of departure of 0700 and estimated time of arrival of 1400. She pays for her reservation with cash.

Assumption: This booking is only for this Transaction 03 and it will not reflect any changes in the rest of the database, ie the booking capacity

A close-up of a computer code

Description automatically generated

A close up of a number

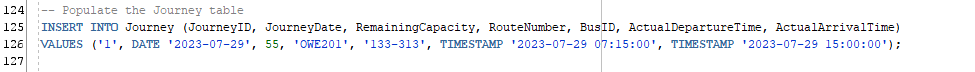
Description automatically generated

A screenshot of a computer

Description automatically generated

Transaction 04:

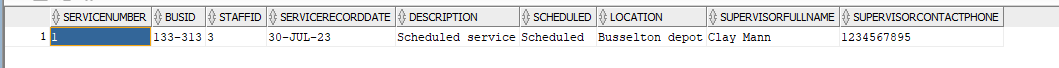
* + Record that OWE201 on 29th July 2023 left Perth at 0715 and arrived in Albany at 1500.



Transaction 05:

* + On 30th July 2023, Bus 133-313 had a scheduled mechanical service at the Busselton depot. The service was supervised by Clay Mann.





1. Provide VIEWS for the following (views should be named as ViewA, ViewB etc) **(20 marks)**:

ViewA:

* + - All journeys’ bookings made by Jane Smith including, for those journeys that have been taken, the duration of the journey.

A computer screen shot of a code

Description automatically generated

A computer screen shot of a number

Description automatically generated

ViewB:

* + - Number of unbooked (i.e., available) seats on OWE201 on 29th July 2023.

A close-up of a text

Description automatically generated

A screenshot of a computer

Description automatically generated

ViewC:

* + - Total hours covered EVER, for staff of the OWE201 on 29th July 2023.

A close-up of a number

Description automatically generated

A screenshot of a computer

Description automatically generated

ViewD:

* + - Total hours driven EVER, for the driver of the OWE201 on 29th July 2023, broken down by that person’s role (i.e., how many hours as driver, how many as assistant driver etc?)

A screen shot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

ViewE:

* + - Maintenance history (service log) for bus 133-313 including the date and location of service episode, whether or not the service was scheduled or not, and the full name and phone number of the supervising staff.

A close-up of a computer screen

Description automatically generated

A screenshot of a computer

Description automatically generated

Please note the following about the marking of this assignment:

1. The marker will view your documentation and then match your documentation to your implementation. This means for example, that tables, columns and constraints should be named in your database as they are in your documentation. Relationships defined in your ERD should be defined in your database.
2. The marker will view the sample data in your tables.
3. The marker will check that the data as per the transactions in 5 above have been included.
4. The marker will execute each of the views created for 6 above.
5. **AGAIN, please ensure that you GRANT the appropriate privileges on all relevant objects (tables and views) to the user MARKERTL. If you do not do this, the marker will not be able to mark part of your assignment (!!and you may be awarded 0 for this section!!).**