

Assessment Details and Submission Guidelines	
Trimester	T1 2020
Unit Code	MN405
Unit Title	Data and Information Management
Assessment Author	Deepani Guruge
Assessment Type	Assignment 1 (Individual)
Assessment Title	Data Modelling and Data Managing
Purpose of the assessment (with ULO Mapping)	<p>The purpose of this assignment is to develop skills in managing data in databases and to gain understanding of data model development and implementation using a commercially available database management system development tool.</p> <p>On completion of this assignment students will be able to:</p> <ol style="list-style-type: none"> Model organisational information requirements using conceptual data modelling techniques. Convert the conceptual data models into relational data model and verify their structural characteristics with normalisation techniques.
Weight	(Part A 5%+ Part B 15%)=20% of total assessment for the unit
Total Marks	Part A 25 marks Part B 50 marks Final mark for Part B= [Part B] * % Factor for Part C Final mark for Part B is calculated based on % of the scores obtained for Part C (performance evaluation)
Word limit	No specific word limit
Due Date	Part A 25 marks –WEEK 3 -12 th April 2020 before 5:00 PM Part B 50 marks- WEEK 8 – 10 th May 2020
Description of this assignment:	This assignment consists of three parts: Part A: Submit database and MS word document with answers to SQL queries Part B: Submit MS word document with answers to B1,B2, B3 Part C: Performance demonstration (10 marks). During week 7 or week 8 lab classes
Submission Guidelines	<ul style="list-style-type: none"> Part A – Submit on Moodle WEEK 3 Part B – Submit on Moodle WEEK 8 save as “MN405_T3_2019_Assignment1_your_name.doc” The assignment must be in MS Word format, 1.5 spacing, 11-pt Calibri (Body) font and 2.5 cm margins on all four sides of your page with appropriate section headings. Reference sources must be cited in the text of the report, and listed appropriately at the end in a reference list using IEEE referencing style.
Extension	<ul style="list-style-type: none"> If an extension of time to submit work is required, a Special Consideration Application must be submitted directly to the School's Administration Officer, in Melbourne on Level 6 or in Sydney on Level 7. You must submit this application three working days prior to the due date of the assignment. Further information is available at: http://www.mit.edu.au/about-mit/institute-publications/policies-procedures-and-guidelines/specialconsiderationdeferral

Academic Misconduct	<ul style="list-style-type: none">• Academic Misconduct is a serious offence. Depending on the seriousness of the case, penalties can vary from a written warning or zero marks to exclusion from the course or rescinding the degree. Students should make themselves familiar with the full policy and procedure available at: http://www.mit.edu.au/about-mit/institute-publications/policies-procedures-and-guidelines/Plagiarism-Academic-Misconduct-Policy-Procedure. For further information, please refer to the Academic Integrity Section in your Unit Description.
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Assignment Description

Part A: Data Modelling (25 marks)

Question A1 - Create the Database

(10 Marks)

The snapshot of **Party_BookingDB** database structure is given below. Party_BookingDB is a database that keeps track of information about the Bookings, Staff, Menus and Customers registered in the system.

Assume that, you are working as an IT specialist in an organisation and are required to extract information from this database by building the database and executing SQL queries according to the instructions given below.

The primary keys and foreign keys are marked and entered in the database structure as shown in Figure1.

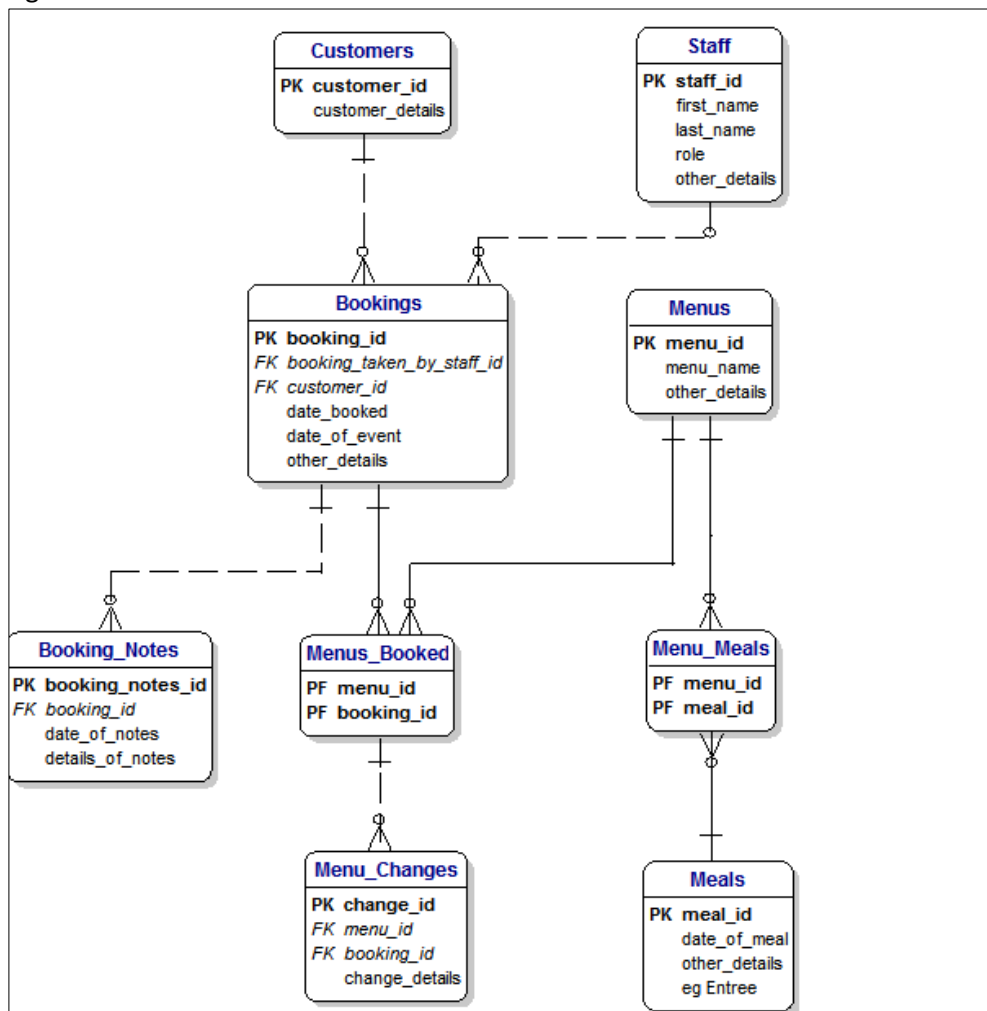


Figure 1: Snapshot of *Party_BookingDB* database © Database Answers Ltd. 2016

- a. First, you need to create the above database in MS Access. Create only 5 tables.
NB: You only have to **create 5 tables for Customers, Bookings, Menus, Menus_Booked, and Staff**. You do not have to create other tables in the ER. **(5 Marks)**
- b. Populate those tables with suitable data (at least 3 records per table).
- i. You can use Datasheet view in MS Access or SQL statement (as given below) to enter suitable data records.
INSERT into *TableName*
VALUES ("..","..",.....)
- ii. Include Proper foreign keys to create relationships in between tables.
Hint: If you want to create a one-to-many relationship in your database, include one side primary key in the many side table as foreign keys. **(5 Marks)**

NB:

You need to **upload your database on submission link** before the due date.

This is an individual assignment; it should be your own individual work (You should not copy Ms Access Database). If not, it is considered as cheating and you will get **zero** marks for the whole assignment.

Question A2 - Write SQL queries –basic skills**(15 Marks)****Write SQL queries for the following questions.**

Execute the following queries on the "**Party_BookingDB**" database you created in MS Access. Include screen shots of the outputs and all SQL statements you used to answer following questions:

(3 marks for each screen shot & remaining marks for the SQL query)

- a. Display details of all Customers recorded in the database. Your result set should be sorted on ascending order of the Customer_id. **(5 Marks)**
- b. Assume you need to find details of the Bookings in the **Bookings** table. **(5 Marks)**
- c. To count how many bookings recorded in the booking table. **(5 Marks)**

Part B: Conceptual data models and SQL Queries (50 marks)

Question B1- Write SQL queries –

(30 Marks)

Write SQL queries for the following questions.

Execute the following queries on the “*Party_BookingDB*” database you created in MS Access. Include screen shots of the outputs and all SQL statements you used to answer following questions:

(3 marks for each screen shot & remaining marks for the SQL query)

- a. Prepare a list of all the records in the “Booking” table where date_of_event is on 4th June 2020 which are booked on 2nd February 2020. **(5 Marks)**
- b. Assume you need to find out BookingID, CustomerID, date_booked and menu_id of all bookings. (Hint: Here you need to join two tables Bookings and Menus_Booked) **(10 Marks)**
- c. Assume that you want to count how many bookings are there in the “Bookings” table for the customer with customer_id =124. Write a query to find the number. **(5 Marks)**
- d. Staff at “Party_Booking” needs to prepare a report with CustomerID, StaffID(Booking taken by), first_name(staff) and date_booked of all events scheduled for 24th August 2020. (Hint: Join Bookings and staff) **(10 Marks)**

Question B2 - ER-to-Relational Mapping

(10 Marks)

This question is on “ER-to-Relational Mapping”. Figure 2 shows the ER diagram that captures important information about customer and loans.

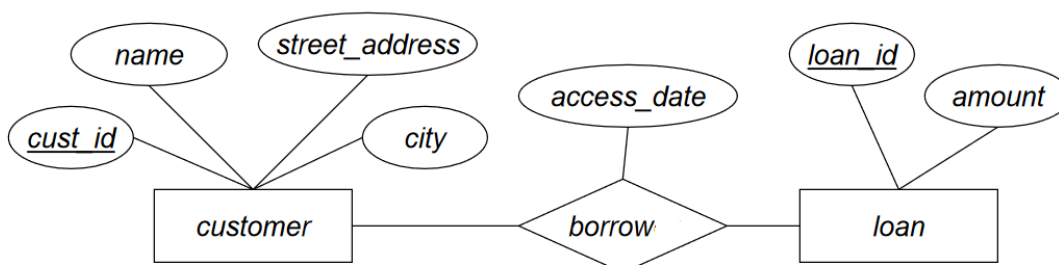


Figure 2: Data Model for a bank loan1

- a. You are required to mark cardinality according to the following statements.
 - I. Customer can borrow one or more loans
 - II. One loan belongs to only one customer.

(5 Marks)

- b. Convert the ER diagram into a relational database schema. Be certain to indicate primary keys (underline). For example, Customer entity can be mapped to relational database schema as given below. **(5 Marks)**

Eg. Customer (Cust_ID:text; name:....)

Borrower (cust_id, loan_id, access_date)

Customer (cust_id, name, street_address, city)

Loan (loan_id, amount, cust_id)

Question B3

Research and trends

(10 Marks)

- a. Refer to the paper “Visualizing Big Data with augmented and virtual reality: challenges and research agenda”, which is accessible through this URL: <https://link.springer.com/article/10.1186/s40537-015-0031-2> , write a paragraph explaining the usage of AR and VR in Big Data visualization with proper references. **(4 Marks)**
- b. Create 2 data visualisations using **Tableau**. Tableau (www.tableau.com) is a data visualization software. Use data provided in “Resources/ Sample Data (<https://public.tableau.com/en-us/s/resources>)” section in the Tableau. **(6 Marks)**

First you need to install Tableau App. Instructions are given below.

Tableau (www.tableau.com) is a data visualization tool. Tableau can help anyone see and understand their data. Connect to almost any database, drag and drop to create visualizations. Install Tableau Public (<https://public.tableau.com/s/>) on your laptop / computer and create any 2 visualisations.

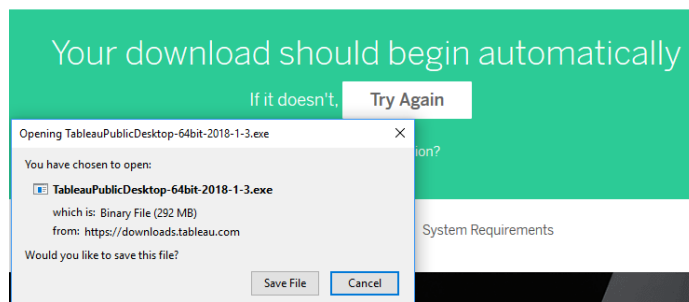
Follow the following instructions:

- i. First go to Tableau Public <https://public.tableau.com/s/> and enter your email address and select “Download the App”



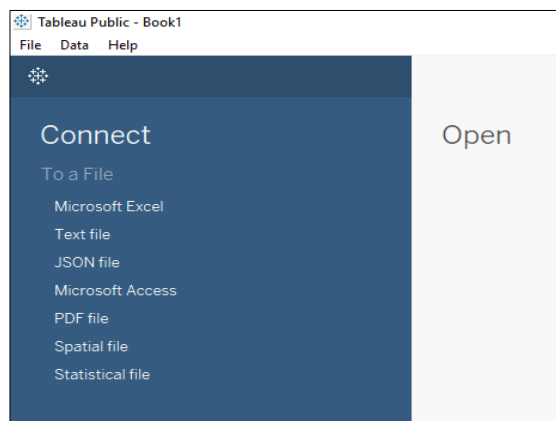
The image shows a screenshot of the Tableau Public website. It features a white input field with the placeholder text "Enter your email address" and an orange button labeled "Download the App".

- ii. Then you can download the software and run the .exe file to install.



- iii. Now you will get the following starting screen. Here you can upload MS Excel or MS Access file. Watch this video to find more details on “How to”.

<https://public.tableau.com/en-us/s/resources>



- iv. You can use any data set in available in Resource section of Tableau (<https://public.tableau.com/en-us/s/resources>) to create 2 visualisations. It should be your own individual work.

Part C: (10 marks)

c. Performance Evaluation

Demonstrate your progress to your tutor in week 7 or week 8 lab classes.

This will allow students to demonstrate their understandings and skills (to their teacher) as they perform these activities. The teacher evaluates you on the quality of your ability to perform specific tasks and the products you created in the process. Your final mark for Part B of the assignment will be calculated based on this evaluation as describe below.

(10 Marks)

Example for calculation of final marks for Assignment 1

Example 1: If a student obtained

Part A -	15/25
Part B –	40/50
Part C –Performance Evaluation	10/10
Total Part B(out of 50)	$(40)*10/10$

Example 2: If a student obtained

Part A -	15/30
Part B –	40/60
Part C –Performance Evaluation	0/10
Total Part B(out of 50)	$(40)*0/10$

Other useful Resources

- Getting started -<https://public.tableau.com/en-us/s/resources>
- Data visualization field guide: a definition, examples, and learning resources
<https://www.tableau.com/learn/articles/data-visualization>

Marking Criteria:

Marks are allocated for each part as below.

		Section	Due date	Description of the section	Marks
PART A	Data Modelling		Week 3	Model building: Build and upload your database on the submission link	10
				Submit SQL Queries separately in MS word document	15
PART B	(60 marks)	Question B1	Week 8	SQL query writing	30
		Question B2 ER-to-Relational Mapping	Week 8	Questions on mapping conceptual data models into relational data model/ Issues related to integrity of database.	10
		Question B3	Week 8	Model organisational information requirements	10
				TOTAL marks for the assignment	75
PART C	Performance Evaluation for Part B (%)		Only during week 7 or week 8 lab classes	Demonstrate your progress to your tutor in week 7 or week 8 lab classes. Final mark for part B will be calculated based on this	

Marking Rubric for Assignment 1

	Excellent 100%	Very Good 80%	Good 60%	Satisfactory 40%	Unsatisfactory 0%-20%
PART A Model building (25 marks)	Demonstrated excellent model building ability.	Demonstrated model building ability.	Demonstrated reasonable model building ability.	Demonstrated some model building ability but not complete.	Did not demonstrate the model building ability.
Part B – Question B1 Model organisational information requirements using conceptual data modelling techniques and Query Writing Skills (30 marks)	Evidence of accurate and well-written queries	Evidence of good query writing skills.	Generally relevant.	Demonstrated reasonable query writing skills.	Did not demonstrate evidence of understanding the topic.
Part B – Question B2 -Convert the conceptual data model into relational data model. (10 marks)	Demonstrated excellent ability to think critically.	Demonstrated an ability to think critically.	Demonstrated reasonable ability to think.	Demonstrated some ability to think critically but not complete.	Did not demonstrate ability to think critically.
Part B – Question B3 -Model organisational information (By using online software Tool and Big data technologies) (10 marks)	Demonstrated excellent knowledge on the topic	Demonstrated good knowledge on the topic.	Demonstrated reasonable knowledge on the topic	Demonstrated some knowledge on the topic.	Did not demonstrate any knowledge on the topic.
Q4. Performance Evaluation (10 marks)	Demonstrated excellent knowledge on the topic	Demonstrated good knowledge on the topic.	Demonstrated reasonable knowledge on the topic	Demonstrated some knowledge on the topic.	Did not demonstrate any knowledge on the topic.