

Item number	Title	Type	Value	Due date*	Return date**
1	Online Quiz 1	Assignment	5%	12-Aug-2016	02-Sep-2016
2	Modelling	Assignment	10%	27-Aug-2016	20-Sep-2016
3	Normalisation	Assignment	15%	09-Sep-2016	05-Oct-2016
4	Online Quiz 2	Assignment	5%	19-Sep-2016	14-Oct-2016
5	SQL Queries	Assignment	15%	03-Oct-2016	26-Oct-2016
6	Final Exam	Exam	50%	To be Advised.	-

* due date is the last date for assessment items to be received at the University

** applies only to assessment items submitted by the due date

Assessment item 1

Online Quiz 1 Value: 5%

Due date: 12-Aug-2016

Return date: 02-Sep-2016

Submission method options

Interact2 Test

Task

Complete online quiz 1 in the Interact Test Centre

Rationale

This assessment provides you the opportunity to self-check your fundamental knowledge. It helps identify any knowledge you may still require.

Marking criteria

This assignment is a series of multiple choice questions. Each correct answer will score 0.35 marks.

Marks will not be deducted for incorrect answers.

Assessment item 2

Modelling Value: 10%

Due date: 27-Aug-2016

Return date: 20-Sep-2016

Submission method options

Alternative submission method

Task

The Fermoy House database

The owners of Fermoy House, a Bed and Breakfast guest house in the Blue Mountains of NSW, have approached you to build them a database to help them run their business.

Fermoy House provides overnight accommodation and breakfast to couples and has four guest bedrooms and a detached private cottage in a private part of the garden. Each bedroom, and the cottage, will accommodate a maximum of 2 guests only.

Task

1. Create an ERD that shows the entities, attributes, relationships, cardinality and optionality that describe the booking of a room by a guest. This ERD is to be labelled ERD 1. (50 marks)

In order to create a point of differentiation from other local bed and breakfast houses, Fermoy House will allow guests to have up to 2 of their dogs stay in the attached kennels. The dog names are normally recorded so that Fermoy House can provide guests with a personalised dog collar for each dog.

Task

2. Add the entities, attributes, relationships, cardinality and optionality that describe the addition of a dog(s) by a guest to their booking. Add these to ERD 1. This new ERD is to be labelled as ERD 2. (20 marks)

Breakfast is provided for all guests as part of their accommodation, and guests can choose from either a Continental or a cooked Irish breakfast. This information is normally recorded at the time of booking the accommodation.

Task

3. Add the entities, attributes, relationships, cardinality and optionality that describe the addition of breakfast by a guest to their booking. Add these to ERD 2. This new ERD is to be labelled as ERD 3. (20 marks)

Bookings are normally taken for up to 12 months in advance and guests who have stayed more than 5 times at Fermoy House receive a gift of wine and chocolates on arrival.

Task

4. Add the entities, attributes, relationships, cardinality and optionality that describe how many times a guest has booked a stay at Fermoy House. Add these to ERD 3. This ERD is to be labelled as ERD 4. (10 marks)

Rationale

This assessment item is designed to test your understanding of the following learning outcomes:

- Basic database design and modelling concepts,
- Identification and interpretation of business rules,
- Creation of an Entity Relationship Diagram from a set of business rules,
- Application of correct relationships, cardinalities, optionality using the Crows Foot modelling notation.

Marking criteria

Task	HD	DI	CR	PS	FL
ERD 1: Booking	Create an ERD that accurately represents all entities, their relationships with both cardinality and optionality correctly described and all Primary Keys and Foreign keys identified	Create an ERD that accurately represents all entities, their relationships with most cardinality and optionality correctly described and all Primary Keys and Foreign keys identified	Create an ERD that represents all entities, their relationships with most cardinality and optionality correctly described and all Primary Keys and most Foreign keys identified	Create an ERD that represents all entities, their relationships with some cardinality and optionality correctly described and all Primary Keys and some Foreign keys identified	Create an ERD that represents some entities, their relationships with little or no cardinality and optionality described and few or no Primary Keys and Foreign keys identified
ERD 2: Dog booking	Correctly add additional entities, relationships, Primary and Foreign keys with all cardinality and optionality correctly described to existing ERD to correctly reflect the additional business rule	Correctly add additional entities and relationships, Primary and Foreign keys with most cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Correctly add additional entities and relationships, Primary and most Foreign keys with most cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Add additional entities and relationships, Primary and some Foreign keys with some cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Add some additional entities and relationships, with few or no Primary and some Foreign keys, and with little or no cardinality and optionality described to existing ERD
ERD 3: Breakfast	Correctly add additional entities, relationships, Primary and Foreign keys with all cardinality and optionality correctly described to existing ERD to correctly reflect the additional business rule	Correctly add additional entities and relationships, Primary and Foreign keys with most cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Correctly add additional entities and relationships, Primary and most Foreign keys with most cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Add additional entities and relationships, Primary and some Foreign keys with some cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Add some additional entities and relationships, with few or no Primary and some Foreign keys, and with little or no cardinality and optionality described to existing ERD
ERD 4: Number of stays	Correctly add additional entities, relationships, Primary and Foreign keys with all cardinality and optionality correctly described to existing ERD to correctly reflect the additional business rule	Correctly add additional entities and relationships, Primary and Foreign keys with most cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Correctly add additional entities and relationships, Primary and most Foreign keys with most cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Add additional entities and relationships, Primary and some Foreign keys with some cardinality and optionality correctly described to existing ERD to reflect the additional business rule	Add some additional entities and relationships, with few or no Primary and some Foreign keys, and with little or no cardinality and optionality described to existing ERD

Marking Guide

Task	Marks	Score	Comments
ERD 1: Booking	50		
ERD 2: Dog Booking	20		
ERD 3: Breakfast ordering	20		
ERD 4: Number of stays	10		
Total	100		
Final mark	15		

Presentation

Assignments are to be submitted as a single document with all ERD drawings embedded in the document. Assignments that are submitted with separate ERD drawings will not be accepted.

ERD drawings are to be completed using either mySQL or the Draw.io tool.

Assessment item 3

Normalisation Value: 15%

Due date: 09-Sep-2016

Return date: 05-Oct-2016

Submission method options

Alternative submission method

Task

Home Library

ISBN	Title	Author_LastName	Author_FirstName	Publisher	Date	Edition	Media
369852	Cosmos	Sagan	Carl	Random House	1980	1	Book
741258	No Secrets	Simon	Carly	Elektra	1972	1	CD
654789	Symphony No 3 Dur Eroica Op 55	Beethoven	Ludwig		1805	1	CD
789654	On the Decay of the Art of Lying	Twain	Mark	Project Gutenberg	1880	1	eBook
258963	The Adventures of Sherlock Holmes	Conan Doyle	Arthur	Project Gutenberg		1	eBook
125896	The Divine Comedy	Alighieri	Dante	Project Gutenberg		1	ebbok
357951	The Hitchhikers Guide to the Galaxy	Adams	Douglas	Pan books	1979	1	Book
852369	The Return of the King, Soundtrack	Shore	Howard	Reprise	2003	1	CD
831975	Unseen Academicals	Pratchett	Terry	Doubleday	2009	1	Book

Tasks:

Using the Home library relation above:

1. Draw a dependency diagram to show the functional dependencies that exist in this relation.
2. Decompose the Home Library relation into a set of 3NF relations and draw a dependency diagram for each of the 3NF relations.
3. Develop the Relational Schema for each of these 3NF relations and show the referential integrity constraints that apply.

Rationale

This assessment item is designed to test your ability to

- Gather, analyse and model business requirements using Enhanced Entity Relationship Diagrams (EERD),
- Critically analyse a database design and apply Normalisation Theory and techniques.

Marking criteria

Marking Rubric

Task	HD	DI	CR	PS	FL
Draw a dependency diagram to show the functional dependencies in the Home Library relation	The dependency diagram accurately identifies and correctly shows all PKs and all functional, partial, and transitive dependencies	The dependency diagram accurately identifies and correctly shows all PKs and most functional, partial, and transitive dependencies	The dependency diagram identifies and shows most PKs and some functional, partial, and transitive dependencies	The dependency diagram identifies and shows few PKs and few functional, partial, and transitive dependencies	The dependency diagram identifies and shows few or no PKs and few or no functional, partial, and transitive dependencies
Decompose the Home Library relation into a set of 3NF relations	The set of relations is in 3NF and accurately identifies all PKs and all the relevant attributes	The set of relations is in 3NF and accurately identifies all PKs and most of the relevant attributes	The set of relations is in 3NF identifies most PKs and some of the relevant attributes	The set of relations is mainly in 3NF and identifies some PKs and some of the relevant attributes	The set of relations is not in 3NF and identifies few or no PKs and few or none of the relevant attributes
Draw a relational schema for each of the 3NF relations	The relational schema accurately describes each entity and correctly	The relational schema accurately describes each entity and correctly shows	The relational schema describes each entity and shows some of	The relational schema describes most entities and shows some of	The relational schema describes few entities and shows few or none

and show the referential integrity constraints	shows all of the referential integrity constraints	most of the referential integrity constraints	the referential integrity constraints	the referential integrity constraints	of the referential integrity constraints
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Marking Guide

Task	Marks	Score
Task 1: Dependency diagram	25	
Task 2:		
1. All entities identified	15	
2. PKs identified	10	
3. Attributes identified for each entity	10	
Task 3:		
1. Relational schema for each entity	10	
2. Attributes correctly described	10	
3. PKs correctly described	10	
4. FKs correctly described	10	
Total	100	
Final mark	15	

Assessment item 4

Online Quiz 2 Value: 5%

Due date: 19-Sep-2016

Return date: 14-Oct-2016

Submission method options

Interact2 Test

Task

Complete online quiz 2 in the Interact Test Centre

Rationale

This assignment will assess your knowledge of business requirements, database design and normalisation.

Marking criteria

This assignment is a series of multiple choice questions. Each correct answer will score 0.4 marks.

Marks will not be deducted for incorrect answers.

Assessment item 5

SQL Queries Value: 15%

Due date: 03-Oct-2016

Return date: 26-Oct-2016

Submission method options

Alternative submission method

Task

Notes:

- This assignment requires you to use MySQL to complete the tasks listed below.
- The instructions listed below relate to MySQL.
- Typing the SQL statements or the results is NOT acceptable and will result in 0 marks for the assessment

Your Submission

You are required to submit:

1. The appropriate SQL statements for each query, which should be copied from your SQL code in MySQL and pasted into your submission file, and
2. Screenshots of the resultant tables which are to be pasted into your submission file immediately after the SQL code for that query.
3. Typing or manually drawing the results is NOT acceptable.

Tasks

Part 1

Open the database prime_minister database (prime_minister.sql) from the ITC556 Interact Resources Databases folder. Answer the following queries using this database.

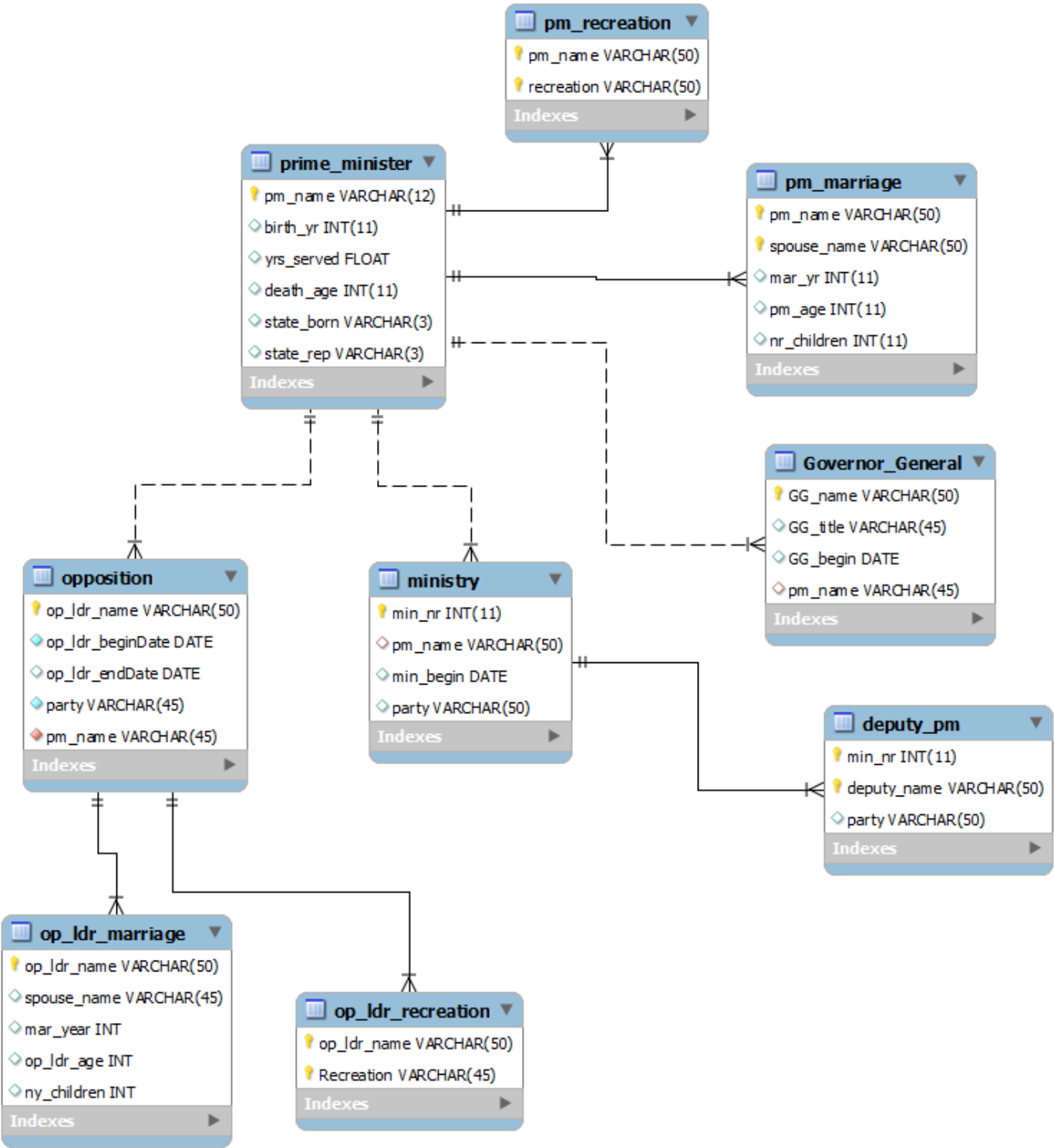
1. Find certain Governors General of Australia.
 - a. Find all Governors General of Australia who were Barons at the time of their appointment. List them by Title and name and date that they were appointed to the position. Order the list by ascending date of appointment. (5 marks)
 - b. Now, format the date of appointment as day of the week, day of the month, month and year; eg. Monday, 01 January, 1901. Order the list by ascending date of appointment. (5 Marks)
2. Find certain Leaders of the Opposition.
 - a. Find all Leaders of the Opposition and their date of appointment, who assumed their position after 01/01/1980. (5 marks)
 - b. For each Leader of the Opposition listed, add their wife's name and their date of marriage. (5 Marks)
3. Find certain Governors General of Australia.
 - a. List the title, name, date of appointment for Governors General of Australia who were appointed between 01 January 1930 and 01 January 1960. Order by ascending date of appointment. (5 marks)
 - b. Now add to the results of q3a, the list of Prime Ministers who appointed them and all Leaders of the Opposition who served during their appointment as Governor General of Australia. Order by ascending date of appointment. (5 marks)
4. Who are the Opposition Leaders who subsequently became Prime Minister after 1930?
 - a. List their name, the date they were elected Opposition Leader and the date they were elected Prime Minister. The dates must be formatted as day of the week, day of the month, month in digits and year in four digits; eg. Monday, 01/01/1901. Order the list in ascending date of appointment as Prime Minister. (15 marks)
 - b. Now add their Deputy Prime Minister's name and the party that they led. Order the list by ascending date of appointment as Opposition Leader. (10 marks)

Part 2

The design of the Prime_Ministers database is now very old. You have been asked to review this design, as shown in the ERD below and advise how it could be updated. You are to complete the following tasks:

5. Advise how you would improve the ability to query information in this database. For simplicity, use only the tables prime_minister, governor_general, ministry and opposition in your answer.
 - a. What new integrity constraints would you use in each of these tables? (5 marks)
 - b. Why would you use these integrity constraints? Explain how your constraints would improve queries on the tables. (10 marks)
 - c. Write the DDL code that would implement your new integrity constraints for the following tables:
 - i. Prime_minister (5 marks)
 - ii. Governor General (5 marks)
 - iii. Ministry (5 marks)
 - iv. Opposition (5 marks)

(Note: You **must** keep all of the data attributes currently in these tables. Your implementation should include all existing data attributes and any new integrity constraints)



Rationale

This assessment will test your ability to:

- be able to implement a database design using Structured Query Language (SQL);
- be able to query a database using SQL.

Marking criteria

Marking Rubric

Task	HD	DI	CR	PS	FL
SQL tasks 1 – 5	The SQL statements accurately retrieve and format all the required information	The SQL statements retrieve and format > 75% of the required information using correct SQL syntax.	The SQL statements retrieve and format > 60% of the required information using correct SQL syntax.	The SQL statements retrieve and format > 50% of the required information using	The SQL statements retrieve and format < 50% of the required information using SQL

	using concise and correct SQL syntax.			mostly correct SQL syntax	syntax that contains frequent errors
Define new integrity constraints	Accurate and well-defined explanation of all the integrity constraints to be used and reasons for their use, without errors, is provided with evidence of synthesized application of concepts.	Provides correct identification and explanation of all the integrity constraints to be used with most reasons for their use, with evidence of applying the concepts correctly.	Good identification and explanation of most of the integrity constraints to be used with some reasons for their use, referencing some links between the concepts and application.	Reasonable identification and explanation of most of the integrity constraints to be used with some reasons for their use	Poor or inadequate identification and explanation of few or none of the integrity constraints to be used
Explain how integrity constraints improve queries	Comprehensive explanation of use of integrity constraints to improve query performance, with evidence of synthesized application of concepts.	Provides accurate explanation of use of integrity constraints to improve query performance, with evidence of applying the concepts correctly.	Good explanation of use of integrity constraints to improve query performance, referencing some links between the concepts and application.	Adequate explanation of use of integrity constraints to improve query performance	Poor or inadequate explanation of use of integrity constraints to improve query performance
Write DDL code for 4 new table implementations	The SQL DDL statements accurately create new tables, with all correct integrity constraints using concise and correct SQL syntax.	The SQL DDL statements create new tables, with >75% correct integrity constraints using correct SQL syntax.	The SQL DDL statements create new tables, with >60% correct integrity constraints using correct SQL syntax.	The SQL DDL statements create new tables, with >50% correct integrity constraints using mostly correct SQL syntax	The SQL DDL statements do not accurately create new tables, with <50% or no integrity constraints using SQL syntax that contains frequent errors

Marking Guide

Task	Mark	Score
1 a	5	
1 b	5	
2 a	5	
2 b	5	
3 a	5	
3 b	5	
4 a	15	
4 b	10	
5 a	15	
5 b	10	
5 c i	5	
5 c ii	5	
5 c iii	5	
5 c iv	5	
Total	100	
Final Mark	15	

Presentation

You are required to submit:

1. The appropriate SQL statements for each query, which should be copied from your SQL code in MySQL and pasted into a single submission file, and
2. Screenshots of the resultant tables which are to be pasted into your submission file immediately after the SQL code for that query.
3. Typing or manually drawing the results is NOT acceptable

Assessment item 6

Final Exam Value: 50%

Date: To be advised

Duration: 2 hours 10 minutes

Submission method options

N/A - submission not required/applicable

Rationale

Covering all topics, this assessment task has been designed to assess your ability to:

- apply database theory to the design and implementation of relational databases;
- analyse and model business database requirements using Entity Relationship Diagrams;
- analyse a database design and apply Normalisation theory and techniques;
- implement a database design using Structured Query Language (SQL);
- query a database using SQL.

Requirements

The examination consists of:

- Multiple choice questions,
- short and long answer questions.

The examination is a Closed book examination.

All questions must be answered.

Marking criteria

Question 1 has a similar criteria to Assignment 1 and 4

Question 2 has a similar criteria to Assignment 2.

Question 3 has a similar criteria to Assignment 3.

Question 4 has a similar criteria to Assignment 5.

Question 5: Answer is clear, well-expressed, explains what is required and demonstrates understanding.

Material provided by the University

Answer Booklets (1 X 12 page)

General Purpose Answer Sheet GPAS-200R

Material required by the student

Writing implements, including a 2B pencil and an eraser.

Any calculator allowed, including programmable calculators (hand held, no printer).

iPads and other hand-held computers are not accepted as calculators.