Unit:
Database Design and Development

Assignment title:
Evans Conference Management

Autumn 2019

Marking Scheme

Markers are advised that, unless a task specifies that an answer be provided in a particular form, then an answer that is correct (factually or in practical terms) **must** be given the available marks. If there is doubt as to the correctness of an answer, the relevant NCC Education materials should be the first authority.

This marking scheme has been prepared as a **guide only** to markers and there will frequently be many alternative responses which will provide a valid answer.

Each candidate's script must be fully annotated with the marker's comments (where applicable) and the marks allocated for each part of the tasks.

Throughout the marking, please credit any valid alternative point.

Where markers award half marks in any part of a task, they should ensure that the total mark recorded for the task is rounded up to a whole mark.

Marker's comments:

Moderator's comments:

Mark:	**Moderated mark:**	**Final mark:**

Penalties applied for academic malpractice:

Task	Guide	Maximum Marks
1	**a) Entity Model 15 Marks.** **See Appendix 1 for guide.** ***1 to 2 marks*** ***There is little correct beyond a few of the entities.*** ***From 3 to 5 marks*** ***If choice of entities is correct (alternative names are acceptable) but most relationships are wrong then give 1 mark for each correct entity. Give additional marks for any correct relationships.*** ***6 – 10 marks*** ***If all but two or three entities correct and relationships for entities that are present are correct the give 1 mark for each correct entity and relationships.*** ***11 – 15 marks*** ***Excellent solution that is correct in all but a few details.*** **b) Normalisation 10 marks** **See Appendix 2 for guide.** ***From 1 to 2 marks*** ***There is very little beyond rudimentary understanding of process of normalisation*** ***From 3 to 5 marks*** ***The discussion shows an understanding of some of the steps.*** ***From 6 to 8 marks*** ***The discussion shows an understanding of identification of each of the stages of normalisation up to 3rd normal form and how this has applied to scenario.*** ***From 9 to 10 marks*** ***There is Full discussion with only trivial mistakes. Mention should be made of functional dependencies.*** ***Note on normalisation: If students have chosen to show steps in normalisation then any method of showing normalisation is acceptable. However, this is a discussion so it is not necessary to do this.***	

	c) Data Dictionary 10 Marks **See Appendix 1 for guide.** ***The data dictionary should be a suitable development of the ER. It should clearly indicate Primary Keys and Foreign Keys*** ***1 mark for each correct entity with attibutes, PKs and FKs defined up to 10 marks.***	**35**
2	**See Appendix 4 for guide to queries.** ***a) Create the tables in SQL and show the CREATE scripts as running in the programming environment. (5 marks for showing all scripts running in programming environment with primary and foreign keys enforced. Each table equivalent to entities should have a statement unless an explanation has been provided for some other type of implementation e.g. as a domain; 2-4 marks for incomplete number of scripts/or scripts with errors/or keys not enforced. 1 mark only for scripts not shown as running)*** ***NOTE. Implementation of keys can use the alter table command.*** ***b) Create data on all locations, venues, conferences and conference organisations shown in the assignment. Provide a screen shot of the data. (1 mark)*** ***Answer should show script running of insert statement.*** ***c) Create data for rooms and time slots shown in assignment. Provide a screen shot of the data (1 mark)*** ***Answer should show script running of insert statement.*** ***d) Create data on all the venue facilities. Provide a screen shot of the data. (1 mark)*** ***Answer should show script running of insert statement.*** ***e) Create data showing all the room equipment. Provide a screen shot of the data (1 mark)*** ***Answer should show script running of insert statement.*** ***f) Write a query that selects the conference codes and conference organisations for conferences in Manchester. (3***	

marks. 3 marks for fully correct results and script. -1 for missing columns. -1 for poor formatting/other error)

Example of result

Conference Code	***Conference Organisation***
ERB18	*Ancient History Society*
CSC18	*European Languages Group*
STW19	*Early Modern History Society*

g) Write a query that selects the start dates for all the London based conferences. (3 marks. 3 marks for fully correct results and script. -1 for missing columns. -1 for poor formatting/other error)

Example of result

Start Date	***End Date***
01/MAR/18	*01/MAR/18*
03/MAY/18	*03/MAY/18*

h) Write a query that shows the details for conference VSC18 as shown in Document 2 (3 marks. 3 marks for fully correct results and script. -1 for missing columns. -1 for poor formatting/other error)

Example of result

Date	***Slot***	***Room***	***Speaker***	***Topic Title***
03/JAN/2018	*AM*	*Manston Hall*	*Joshua Patterson*	*Poetry of Matthew Arnold*
03/JAN/2018	*AM*	*Robin Hall*	*Glenda Smith*	*Influences of Darwin on the Romantic Novel*
03/JAN/2018	*AM*	*Robin Hall*	*Mark Reynolds*	*Influences of Darwin on the Romantic Novel*
03/JAN/2018	*PM*	*Manston Hall*	*Joshua Patterson*	*The Oxford Movement*
03/JAN/2018	*PM*	*Robin Hall*	*Abel Kelani*	*Ruskin, Morris and response to the industrial revolution*
04/JAN/2018	*AM*	*Manston Hall*	*Glenda Smith*	*Imperial Dreams of Popular Fiction*
04/JAN/2018	*AM*	*Manston Hall*	*Glenda Smith*	*Imperial Dreams of Popular Fiction*
04/JAN/2018	*AM*	*Robin Hall*	*Albert Dean*	*Dickens and the City*

i) Write a query that shows the equipment in Manston Hall (3 marks. 3 marks for fully correct results and script. -1 for incorrect result without explanation. -1 for poor formatting/other error)

Equipment Type
Smart Board
PC
PA System

j) Write a query to show the facilities available at University College London (3 marks. 3 marks for fully correct results and script. -1 for missing columns. -1 for poor formatting/other error)

Example of result

Facility Type
Swimming Pool
Restaurant
Gym
On-site Accommodation
Smart Office Space

k) Update the speaker for the AM slot in Manston Hall on the 03/JAN/2018 to 'Robert Matthews' (3 marks. 3 marks for fully correct update and script. -1 for update that uses an id instead of the name. -1 for poor formatting/other error)

Show row updated.

l) Alter the database so that it keeps a record of the number of seats available in each room. (3 marks. 3 marks for fully correct alter script. -1 for each error including poor formatting/other error)

Show added column

30

3	***The company have said they would like to extend the database to include costing information for each of their conferences so that they can more accurately bill their customers, the organisations for whom they are arranging the conference. Data should be kept on the cost of hiring venues and paying speakers. There should be a way of recording any additional expenses. You should include an outline of how you would derive costing information using SQL and specify the method of implementing any changes required to derive this costing information.*** ***The discussion could include a written specification, table diagrams with attributes shown and/ or SQL. Credit should be given to any valid approach. Points that might be discussed include: recording venue hire rates; adding a column on parts and to record pay rates for speakers; recording costs of additional costs; using aggregate fields to hold the total costs.*** ***Suggestions for awarding marks: Up to 5 marks for general discussion. Up to 5 marks for table structures. Up to 5 marks for SQL. Alternative approaches might, for example, outline in writing rather than show the SQL syntax.***	**15**
4	***In the future Evans Conference Management could expand as an organisation by merging with other similar companies across the UK and the Republic of Ireland. Describe the factors that might make them consider implementing a distributed database.*** ***General Points: Organisations of any success tend to get bigger and diversify (1 mark) It often happens that they will develop new sites both within the boundaries of one country and sometimes to other countries (globalisation). (1 mark for this or similar) This trend has been enhanced in the last century and even more so in recent decades by the use of technology that makes it easier to operate at a distance (from the telephone to the World Wide Web). (1 mark) Firms might also be involved in takeovers where they inherit databases from those firms they have taken over or merged with. (1 mark). With the increasing importance of database to any organisation the need for distributed databases has grown alongside the trend in organisations being distributed. (1 mark)*** ***Alternative points should be credited.*** ***Suggestions for awarding marks: Up to 5 marks for general discussion as indicated above. Up to 5 additional marks for points made about Evans Conference Management.*** ***Contextual points could be discussed: how a distributed database might work within the context of acquisition of new***	

	overseas offices and integration of their legacy systems; localised nature of events management indicating types of fragmentation that involves different data needs at different sites (horizontal fragmentation); ability to share data between different countries giving opportunities for organising events between countries (ability to share data). Other relevant points of discussion should be credited.	**10**
5	***This discussion should show an understanding of what the original requirements were (up to 2 marks.) A discussion of how the initial design attempted to meet them (up to 4 marks) and an overall assessment of how well the requirements have been met (up to 4 marks).*** ***The table here is indicative of one way of understanding and documenting the original requirements.***	

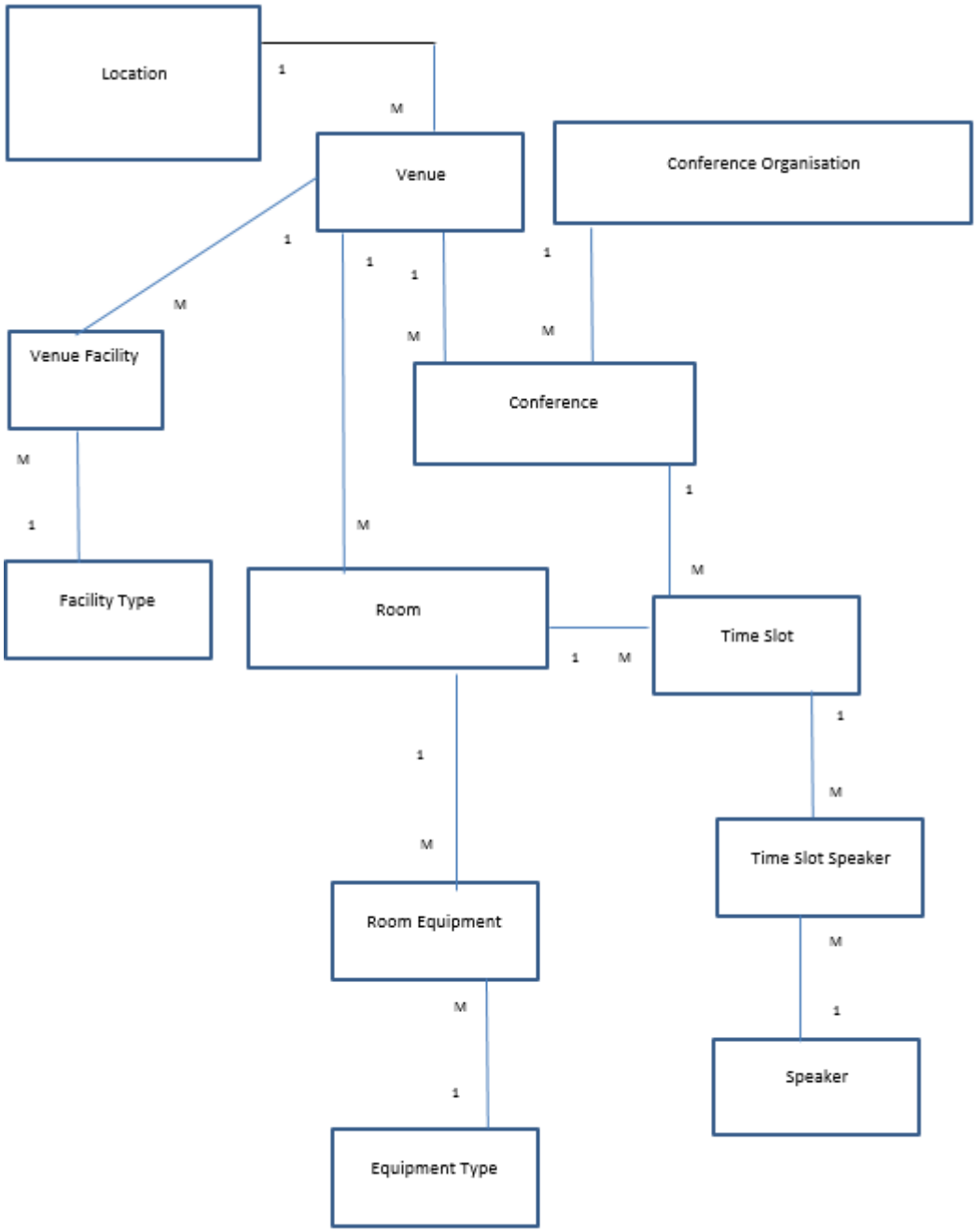
Original Requirement	*Design Aspect*	*How met in final implementation*
Conference location and venue organisation	*Entities for location, venues, conferences, venue facilities, conference organisation. Any join entities*	*Equivalent tables* *Queries f), g), i) Used to manage various aspects of the conferences*
Time slots, rooms and speakers	*Entities for room, time slot, speaker. Any join entities*	*Equivalent tables* *Queries h) Details of a particular conference* *Update k)*
Room equipment	*Entities for room, room equipment, equipment type*	*Equivalent tables* *Queries j) shows the facilities of a room*

Alternatively structured discussions should be credited

10

Appendix 1

Suggested ER



Location could be implemented as a domain.

Appendix 2 Normalisation

Appendix 2

To gain full marks for this there should be overview of normalisation in general and discussion of how this has applied to the scenario.

How normalisation has informed the database design.

The normalisation process has identified some of the most important relations in the system. These are locations, venues, and conferences. It shows how these should be modelled and implemented in the database. It has helped identify the primary keys of these core tables and the foreign keys.

Example of Document 1 normalised to 3NF

3NF	Table
Location (PK)	LOCATION
Venue ID (PK) Venue Name Location (FK)	VENUE
Conference Code(PK) Venue ID(FK) Conference Name Conference Organisation Start Date End Date	CONFERENCE

Appendix 3 Data Dictionary

Attribute Name / Key	Data Type	Range/ Length	Constraints
Location			
Location Code	Char / Varchar	10	PK
Location Name	Char / Varchar	30	
Venue			
Venue ID	Char / Varchar	10	PK
Location Code	Char / Varchar	10	FK
Venue Name	Char/Varchar	30	
Venue Facility			
Venue ID	Char / Varchar	10	PK/FK
Facility Type	Char/Varchar	10	PK/FK
Facility Type			
Facility Type	Char / Varchar	10	PK
Description	Char/Varchar	30	
Conference			
Conference Code	Char / Varchar	10	PK
Name	Char / Varchar	30	
Conference Organisation	Char/Varchar	10	FK
Venue ID	Char/Varchar	10	FK
Start Date	Date		
End Date	Date		
Room			
Room Name	Char / Varchar	30	PK
Venue ID	Char/Varchar	10	FK

Room Equipment			
Room Name	Char / Varchar	30	PK/FK
Equipment Type	Char/Varchar	10	PK/FK
Equipment Type			
Equipment Type	Char/Varchar	10	PK
Description (optional)	Char/Varchar	30	
Time Slot			
Conference Code	Char/Varchar	10	PK/FK
Room Name	Number	30	PK/FK
Slot Date	Date	10	PK/FK
Slot	Char/Varchar	2	PK/FK
Topic Title	Char/Varchar	30	
Time Slot Speaker			
Room Name	Char/Varchar	30	PK/FK
Conference Code	Char/Varchar	10	PK/FK
Slot Date	Date		PK/FK
Slot	Char/Varchar	2	PK/FK
Speaker ID	Char/Varchar	10	PK/FK
Speaker			
Speaker ID	Char/Varchar	10	PK
First Name	Char/Varchar	30	
Last Name	Char/Varchar		

Appendix 4 Suggestions for SQL

SQL will depend on the given model. Below are some suggestions:

f)

```
select c.conference_code, c.conference_organisation
from conference c, venue v, location l
where c.venue_id = v.venue_id
and v.location_code = l.location_code
and l.location_name = 'Manchester';
```

g)

```
select c.start_date
from conference c, venue v, location l
where c.venue_id = v.venue_id
and v.location_code = l.location_code
and l.location_name = 'London';
```

h)

```
select tss.speaker, tss.room, tss.slot, tss.date, sp.last_name, sp.first_name, ts.topic_title
from time_slot ts, time_slot_speaker tss, speaker sp
where ts.room_name = tss.room_name
and ts.conference_code = tss.conference_code
and ts.slot_date = tss.slot_date
and ts.slot = tss.slot
and tss.speaker_id = sp.speaker_id;
```

Use of an artificial key for time slot will simplify this query. This is legitimate.

i)

```
select e.equipment_type
from equipment e, room_equipment re
where e.equipment_type = re.equipment_type
and e.room_name = “Marston Hall”;
```

j)

```
select f.facility_type
from facility_type f, venue v, venue_facility vf
where f.facility_type = vf.facility_type
and vf.venue_id = v.venue_id
and v.venue_name = “University College London”;
```

Learning Outcomes matrix

Task	Learning Outcomes assessed	Marker can differentiate between varying levels of achievement
1	2,3	Yes
2	4,5	Yes
3	5	Yes
4	1	Yes
5	2	Yes

Grade descriptors

Learning Outcome	Pass	Merit	Distinction
Understand the enterprise application of database systems	***Demonstrate adequate level of understanding***	***Demonstrate robust level of understanding***	***Demonstrate highly comprehensive level of understanding***
Understand how to enhance the design of and further develop a database system	***Demonstrate ability to perform the task***	***Demonstrate ability to perform the task consistently well***	***Demonstrate ability to perform the task to the highest standard***
Be able to enhance a logical database design	***Demonstrate ability to perform the task***	***Demonstrate ability to perform the task consistently well***	***Demonstrate ability to perform the task to the highest standard***
Be able to develop a physical database design	***Show adequate development***	***Show sound and appropriate development***	***Show innovative and highly appropriate development***
Be able to enhance a database system using SQL	***Demonstrate ability to perform the task***	***Demonstrate ability to perform the task consistently well***	***Demonstrate ability to perform the task to the highest standard***