MONASH University
Information Technology

FIT9132 Introduction to Databases

2017 Semester 2

Assignment 1 - Database Design - Run Monash (RM) v1.1

Run Monash (RM) is a running carnival which is held several times a year across various Monash campuses and external locations. Anyone can attend an RM Carnival. A carnival is run on a particular date, in a particular location and only lasts for one day. During a carnival a range of events are offered from the following list:

- Marathon 42.2 Km
- Half Marathon 21.1 Km
- 10 Km Run
- 5 Km Run
- 3 Km Community Run/Walk

Not all events are run at each carnival. Each carnival is sponsored by a range of companies and organisations. Appendix A shows some of the details on the 2017 Summer Series Run Monash.

Competitors enter via the Run Monash web site. When a competitor initially registers for Run Monash, they are assigned a unique competitor number. Competitor's numbers consist of a C followed by four digits eg C0122. Appendix B shows the online form used by people who wish to register as Run Monash competitors.

After a competitor has registered for Run Monash, they will be sent details of each upcoming carnival and the range of events which will be offered. Competitors can log in to the Run Monash site and enter for a particular event within a carnival (see Appendix C). Every entry is assigned a unique entry number (e.g., 3021). Using official timing devices at the carnival, Run Monash records the entrants finishing time and their place within the event. These details are posted on the Run Monash result site the day following the carnival.

A major focus of the Run Monash Carnivals is to raise funds for various charities. *Run Monash record the charity name, a contacts name and the phone contact number for each approved charity.* When a competitor enters an event, they may nominate a charity for which they will raise funds (not all competitors will select a charity for each event they enter). Competitors who have entered an event can also form teams to support their training and run as a group. The first competitor to register a team for a given carnival is assigned as the Team Manager. This team manager can then add other competitors who have entered the carnival to the team. Teams are identified by a unique team name which the manager must select when they first create the team. Team names are unique within a carnival, however, a given team name may be reused by different competitors in a different carnival as teams are recreated for each carnival depending on which competitors have entered an event for the carnival. Run Monash wishes to record, as part of the stored data, how many members are on each team. Teams may also nominate a charity for which they will raise funds, although not all teams will do so. All charities for which funds can be raised must first be approved by Run Monash.

As part of the entry process for a carnival, competitors can purchase a range of carnival specific merchandise such as running gear, drink bottles etc. Run Monash keep track of the current stock of each item of merchandise they make available. Appendix D shows an invoice from a competitor who has entered an event.

The successful operation of the carnivals depends on a group of volunteers who carry out the various functions leading up to the competition day and on the day itself. People who would like to volunteer for the Run Monash carnivals register on the Run Monash site. Each volunteer is assigned a unique volunteer id - their name, contact address and phone number are also recorded. Volunteer numbers consist of a V followed by three digits e.g., V123. After registering as a volunteer the Run Monash management team contacts volunteers and assigns them a particular role within a particular carnival e.g. timing official, race marshall, first aid, etc. The volunteers are paid a fixed stipend for the carnival they agree to work in (all volunteers regardless of role are paid the same stipend although this can vary across carnivals). Also, in recognition of their efforts, volunteers can purchase carnival merchandise at a reduced rate of 50% of the listed item cost. Appendix E shows an invoice from a volunteer.

Appendix A

Run Monash Summer Series

Carnival Date: February 15th 2017

Carnival Director: Mary Ampard

Carnival Location: The Tan, Botanic Gardens, Melbourne, Victoria

Events Offered: 10 Km Run, 5 Km Run, 3 Km Community Run/Walk

Sponsor Name	Naming Sponsor	Amount of Sponsorship	Sponsor Contact	Sponsor Phone Contact
VegOut	Yes	$20,000	Mary Wie	03 99012323
Dept Sport and Recreation	No	$15,000	Peter Pierre	03 99090210

Appendix B Competitor Registration Screens (note this process is made up of three screens - the three screens should be dealt with in one normalisation process using all data across the three screens). When the person entering their details clicks on "Register" on screen B3 they are assigned their RM competitor number. As a consequence you may add this number to your normalisation.

Screen B1:

Run Monash Competitor Registration

On selecting "Register" the Run Monash System will automatically assign a competitor number

Name *

[   ] [   ]
First Name   Last Name

Gender *
○ Female   ○ Male

Date of Birth
[dd-mm-yyyy] 🗓
Date

E-mail *
[ex: myname@example.com]

Are you a University student *
○ Yes   ○ No

Contact Mobile Number *
[   ]

[Next]

Medical Questionnaire

Do you have any Medical Conditions we should be aware of *

○ No   ○ Yes

If your answer is yes to the above, please select the area (or areas) we should be aware of below:

☐ Breathing   ☐ Hearing   ☐ Heart
☐ Muscular   ☐ Sight   ☐ Other

Emergency Contact

Name *

First Name   Last Name

Phone Number

Contact Phone number

Relationship to Competitor *

○ Parent   ○ Guardian
○ Partner   ○ Friend

Back   Next

Parent/Guardian Details

If the competitor being registered is under 16 years of age this section must be completed

Name

First Name   Last Name

Phone Number

Contact Phone number

☐ I acknowledge that I am the competitor's Parent or Legal Guardian

Please carefully check that all required items on this form have been completed.

Check the competition terms and conditions.

If you wish to register for our events click 'I agree below' and then select "Register". Run Monash will email you your assigned Competitor number.

☐ I agree to the Run Monash competition terms & conditions. *

Register

VegOut Run Monash Summer Series Carnival

Please fill out this form to register for "VegOut Run Monash Summer Series", The Tan, Botanic Gardens, Melbourne, Victoria on February 15th, 2017.

Only competitors with a valid Run Monash assigned competitor number may enter an event. After you submit this registration you will be able to order event merchandise and will be emailed an Entry Number for this event.

Please ensure your emergency contact details are up to date on the Run Monash site before entering for this event

RM Competitor Number *

Assignment Project Exam Help

eg. C1234

https://powcoder.com

Your competitor number consists of a C followed by four digits

Name *

Add WeChat powcoder

First Name   Last Name

Event being entered (Only one event may be entered per Carnival) *

○ 10 Km Run

○ 5 Km Run

○ 3 Km Community Run/Walk

Register a Team Name for this event

Team names will be checked to ensure they are unique within the carnival – the competitor who initially registers a team name is automatically assigned the role of Team Manager

Select a Charity to raise funds for

Royal Childrens Hospital   ▼

Register

Appendix D Merchandise Sale

VegOut Run Monash Summer Series

Order Number: 408
Order Date: 1 Feb 2017

Carnival Date: February 15th 2017
Carnival Location: The Tan, Botanic Gardens, Melbourne, Victoria

For: C1234 Name: Sansa Stark

Merchandise				
Item Code	**Item Description**	**Cost**	**Qty**	**LineCost**
WHR-G-MED	Women's HR Tee Shirt - Green - Medium	$45.00	1	$45.00
EFM	Engraved Finishers Medal	$15.00	1	$15.00
Pickup or Delivery			Delivery	$10.00
			Total Cost:	$70.00

Appendix E Merchandise Sale

VegOut Run Monash Summer Series

Order Number: 512
Order Date: 10 Feb 2017

Carnival Date: February 15th 2017
Carnival Location: The Tan, Botanic Gardens, Melbourne, Victoria

For: V110 Name: Tyrion Lannister

Merchandise				
Item Code	**Item Description**	**Cost**	**Qty**	**LineCost**
MHR-R-SML	Men's HR Tee Shirt - Red - Small	$20.00	2	$40.00
WHR-G-MED	Women's HR Tee Shirt - Green - Medium	$22.50	1	$22.50
Pickup or Delivery			Pickup	$0.00
			Total Cost:	$62.50

TASKS

1. Using LucidChart, prior to completing task 2 (the normalisation), prepare an **initial conceptual model** (Entity Relationship Diagram) for Run Monash (RM). For this initial conceptual model, *only include what you see as identifiers (keys) for each entity*, do not include other attributes at this stage. Surrogate keys must not be added to this model. *Participation and connectivity for all relationships must be shown on the diagram*. **(10 marks)**

2. Perform **normalisation to the 3NF** for each set of data depicted in Appendix A - E. Consolidate all the found 3NF relations into a final set of relations.

   During normalisation:
   a. You **must not** add surrogate keys to the normalisation.
   b. Clearly identify the Primary Key in all relations.
   c. Clearly identify the partial and transitive dependencies (if they exist) in all 1NF relations. You may use a dependency diagram or use your own notation (see the week 5 sample solution for a possible alternative representation). **(30 marks)**

3. Using your initial conceptual model and the result from your normalisation, **prepare a logical level design** for the RM database. The logical model must be drawn using the Oracle Data Modeler. The information engineering or Crow's foot notation must be used in drawing the model. All attributes must be commented in the database. Sequences must be used to generate primary key and check clauses must be applied to attributes where appropriate. Be sure to include the legend as part of your model. **(50 marks)**

4. **Generate the schema for the database** in Oracle Data Modeler and use the schema to create the database in your Oracle account. The only edit you are permitted to carry out to the generated schema file is to add header comment/s containing your details (student name/id) and drop sequence commands. Capture the output of the schema statements using the spool command. Ensure your generated script includes drop table statements. Name the schema file as **rm_schema.sql**. **(10 marks)**

Submission Requirements

Due: Friday 8-SEP-2017 11 PM (week 7)

The following files are to be submitted:

- A pdf file containing your conceptual model. Name the file **rm_conceptual.pdf**

- A pdf file containing your full normalisation for each form/document showing clearly UNF, 1NF, 2NF and 3NF, your dependency diagrams and your final synthesis of all 3NF relations. Name the file **rm_normalisation.pdf.**

- A pdf file containing the final logical Model you created in Oracle Data Modeller. Name the file **rm_logical.pdf.**

- A zip file containing your Oracle data modeler project (in zipping these files be sure you include the .dmd file and the folder of the same name). Name the file **rm_OracleModel.zip.** This model must be able to be opened by your marker and contain your full model *otherwise your task 3 will not be marked*. For this reason, you should carefully check that your model is complete - as a suggestion you should take your submission archive, copy it to a new temporary folder, extract your submission parts, extract your model and ensure it opens correctly *before* submission.

- A schema file (CREATE TABLE statements) generated by Oracle Data Modeller. Name the file **rm_schema.sql**

- The output from SQL Developer spool command showing the tables have been created. Name the file **rm_schema_output.txt**

- A pdf document containing any assumptions you have made in developing the model or comments your marker should be aware of. Name the file **rm_assumptions.pdf**

Note that there are **seven required files**. These files must be zipped into a single zip file named a1-<yourauthcateid1>.zip e.g., a1-xyz123.zip before the assignment due date/time. Submit the a1-xyz123.zip to Moodle before the due date.

Late submission will incur penalties as outlined in the unit guide.