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[Email address]

Abstract

[Draw your reader in with an engaging abstract. It is typically a short summary of the document.   
When you’re ready to add your content, just click here and start typing.]

6CI008 Database Design and Application

Coursework Assignment – Joint Submission

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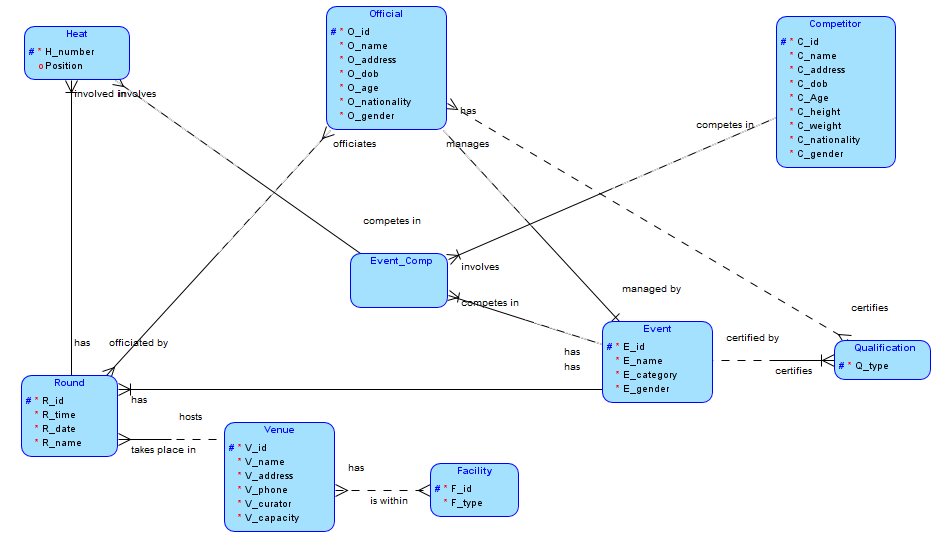
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# Part 1 – Entity Relationship Model

## Logical Model



## Assumptions

A venue can have many facilities, and facilities can be available in many venues.

A venue can host many rounds of several events, however one round cannot take place in a number of venues.

A round can have many heats, but one heat cannot be a part of many rounds.

An official can have many qualifications and in turn, one qualification can be attained by a multitude of officials.

Only one official can oversee an event, and each event can only have one official in charge.

An event can have multiple qualifications; however, one qualification cannot have more than one event.

A competitor can be involved in a number of events; however, they cannot participate in each event more than once.

A competitor in an event can take part in several heats, but they cannot be involved in the same heat more than once.

A event can have a number of competitors taking part, but each competitor in an event cannot take part more than once.

# Part 2 - Relational Model

## Relational Model

## DDL Script

-- Generated by Oracle SQL Developer Data Modeler 17.3.0.261.1529

-- at: 2017-11-24 18:49:08 GMT

-- site: Oracle Database 12c

-- type: Oracle Database 12c

CREATE TABLE competitor (

c\_id VARCHAR2(8) NOT NULL,

c\_name VARCHAR2(30) NOT NULL,

c\_address VARCHAR2(50) NOT NULL,

c\_dob DATE NOT NULL,

c\_age NUMBER(3) NOT NULL,

c\_height NUMBER(18,3) NOT NULL,

c\_weight NUMBER(18,3) NOT NULL,

c\_nationality VARCHAR2(30) NOT NULL,

c\_gender VARCHAR2(1) NOT NULL

);

ALTER TABLE competitor

ADD CHECK ( c\_gender IN (

'F',

'M'

) );

ALTER TABLE competitor

ADD CHECK ( c\_nationality IN (

'England',

'Estonia',

'France',

'Portugal'

) );

ALTER TABLE competitor ADD CONSTRAINT competitor\_pk PRIMARY KEY ( c\_id );

CREATE TABLE event (

e\_id VARCHAR2(8) NOT NULL,

e\_name VARCHAR2(30) NOT NULL,

e\_category VARCHAR2(30) NOT NULL,

e\_gender VARCHAR2(1) NOT NULL,

event\_manager\_id VARCHAR2(8) NOT NULL

);

ALTER TABLE event

ADD CHECK ( e\_category IN (

'Athletics',

'Boxing',

'Cycling',

'Water Sport'

) );

ALTER TABLE event

ADD CHECK ( e\_gender IN (

'F',

'M'

) );

CREATE UNIQUE INDEX event\_\_idx ON

event ( event\_manager\_id ASC );

ALTER TABLE event ADD CONSTRAINT event\_pk PRIMARY KEY ( e\_id );

CREATE TABLE event\_comp (

c\_id VARCHAR2(8) NOT NULL,

e\_id VARCHAR2(8) NOT NULL

);

ALTER TABLE event\_comp ADD CONSTRAINT event\_comp\_pk PRIMARY KEY ( c\_id,

e\_id );

CREATE TABLE facility (

f\_id VARCHAR2(8) NOT NULL,

f\_type VARCHAR2(30) NOT NULL

);

ALTER TABLE facility ADD CONSTRAINT facility\_pk PRIMARY KEY ( f\_id );

CREATE TABLE heat (

h\_number NUMBER(2) NOT NULL,

position NUMBER(3),

c\_id VARCHAR2(8),

e\_id VARCHAR2(8),

r\_id VARCHAR2(8) NOT NULL

);

ALTER TABLE heat ADD CONSTRAINT heat\_pk PRIMARY KEY ( r\_id,

h\_number, c\_id );

CREATE TABLE official (

o\_id VARCHAR2(8) NOT NULL,

o\_name VARCHAR2(30) NOT NULL,

o\_address VARCHAR2(50) NOT NULL,

o\_dob DATE NOT NULL,

o\_age NUMBER(3) NOT NULL,

o\_nationality VARCHAR2(30) NOT NULL,

o\_gender VARCHAR2(1) NOT NULL

);

ALTER TABLE official

ADD CHECK ( o\_nationality IN (

'England',

'Estonia',

'France',

'Portugal'

) );

ALTER TABLE official

ADD CHECK ( o\_gender IN (

'F',

'M'

) );

ALTER TABLE official ADD CONSTRAINT official\_pk PRIMARY KEY ( o\_id );

CREATE TABLE official\_heat\_task (

o\_id VARCHAR2(8) NOT NULL,

r\_id VARCHAR2(8) NOT NULL,

type VARCHAR2(15) NOT NULL

);

ALTER TABLE official\_heat\_task ADD CONSTRAINT o\_h\_pk PRIMARY KEY ( o\_id,

r\_id , c\_id);

CREATE TABLE official\_quals\_held (

o\_id VARCHAR2(8) NOT NULL,

q\_type VARCHAR2(15) NOT NULL,

e\_id VARCHAR2(8) NOT NULL

);

ALTER TABLE official\_quals\_held

ADD CONSTRAINT o\_q\_pk PRIMARY KEY ( o\_id,

q\_type,

e\_id );

CREATE TABLE qualification (

e\_id VARCHAR2(8) NOT NULL,

q\_type VARCHAR2(15) NOT NULL

);

ALTER TABLE qualification

ADD CHECK ( q\_type IN (

'Judge',

'Referee',

'Starter',

'Timekeeper'

) );

ALTER TABLE qualification ADD CONSTRAINT qualification\_pk PRIMARY KEY ( q\_type,

e\_id );

CREATE TABLE Round

(

R\_id VARCHAR2 (8) NOT NULL ,

R\_time VARCHAR2 (5) NOT NULL ,

R\_date DATE NOT NULL ,

R\_name VARCHAR2 (15) DEFAULT 'Final' NOT NULL ,

V\_id VARCHAR2 (8) NOT NULL ,

E\_id VARCHAR2 (8) NOT NULL

)

;

ALTER TABLE Round

ADD CONSTRAINT Check\_date

CHECK (R\_date between date '2018-04-04' and date '2018-04-15' )

;

ALTER TABLE Round

ADD

CHECK (R\_name IN ('Final', 'Preliminary', 'Quarterfinal', 'Semifinal'))

;

ALTER TABLE round ADD CONSTRAINT round\_pk PRIMARY KEY ( r\_id );

CREATE TABLE venue (

v\_id VARCHAR2(8) NOT NULL,

v\_name VARCHAR2(30) NOT NULL,

v\_address VARCHAR2(50) NOT NULL,

v\_phone VARCHAR2(15) NOT NULL,

v\_curator VARCHAR2(30) NOT NULL,

v\_capacity NUMBER(10) NOT NULL

);

ALTER TABLE venue ADD CONSTRAINT unique\_venue UNIQUE (v\_name);

ALTER TABLE venue ADD CONSTRAINT venue\_pk PRIMARY KEY ( v\_id );

CREATE TABLE venue\_facilities (

v\_id VARCHAR2(8) NOT NULL,

f\_id VARCHAR2(8) NOT NULL

);

ALTER TABLE venue\_facilities ADD CONSTRAINT v\_f\_pk PRIMARY KEY ( v\_id,

f\_id );

ALTER TABLE event\_comp

ADD CONSTRAINT event\_comp\_competitor\_fk FOREIGN KEY ( c\_id )

REFERENCES competitor ( c\_id )

ON DELETE CASCADE;

ALTER TABLE event\_comp

ADD CONSTRAINT event\_comp\_event\_fk FOREIGN KEY ( e\_id )

REFERENCES event ( e\_id )

ON DELETE CASCADE;

ALTER TABLE event

ADD CONSTRAINT event\_official\_fk FOREIGN KEY ( event\_manager\_id )

REFERENCES official ( o\_id )

ON DELETE CASCADE;

ALTER TABLE heat

ADD CONSTRAINT heat\_event\_comp\_fk FOREIGN KEY ( c\_id,

e\_id )

REFERENCES event\_comp ( c\_id,

e\_id )

ON DELETE CASCADE;

ALTER TABLE heat

ADD CONSTRAINT heat\_round\_fk FOREIGN KEY ( r\_id )

REFERENCES round ( r\_id )

ON DELETE CASCADE;

ALTER TABLE official\_heat\_task

ADD CONSTRAINT o\_h\_official\_fk FOREIGN KEY ( o\_id )

REFERENCES official ( o\_id )

ON DELETE CASCADE;

ALTER TABLE official\_heat\_task

ADD CONSTRAINT o\_h\_round\_fk FOREIGN KEY ( r\_id )

REFERENCES round ( r\_id )

ON DELETE CASCADE;

ALTER TABLE official\_quals\_held

ADD CONSTRAINT o\_q\_official\_fk FOREIGN KEY ( o\_id )

REFERENCES official ( o\_id )

ON DELETE CASCADE;

ALTER TABLE official\_quals\_held

ADD CONSTRAINT o\_q\_qualification\_fk FOREIGN KEY ( q\_type,

e\_id )

REFERENCES qualification ( q\_type,

e\_id )

ON DELETE CASCADE;

ALTER TABLE qualification

ADD CONSTRAINT qualification\_event\_fk FOREIGN KEY ( e\_id )

REFERENCES event ( e\_id )

ON DELETE CASCADE;

ALTER TABLE round

ADD CONSTRAINT round\_event\_fk FOREIGN KEY ( e\_id )

REFERENCES event ( e\_id )

ON DELETE CASCADE;

ALTER TABLE round

ADD CONSTRAINT round\_venue\_fk FOREIGN KEY ( v\_id )

REFERENCES venue ( v\_id )

ON DELETE CASCADE;

ALTER TABLE venue\_facilities

ADD CONSTRAINT v\_f\_facility\_fk FOREIGN KEY ( f\_id )

REFERENCES facility ( f\_id )

ON DELETE CASCADE;

ALTER TABLE venue\_facilities

ADD CONSTRAINT v\_f\_venue\_fk FOREIGN KEY ( v\_id )

REFERENCES venue ( v\_id )

ON DELETE CASCADE;

-- Oracle SQL Developer Data Modeler Summary Report:

--

-- CREATE TABLE 12

-- CREATE INDEX 1

-- ALTER TABLE 34

-- CREATE VIEW 0

-- ALTER VIEW 0

-- CREATE PACKAGE 0

-- CREATE PACKAGE BODY 0

-- CREATE PROCEDURE 0

-- CREATE FUNCTION 0

-- CREATE TRIGGER 0

-- ALTER TRIGGER 0

-- CREATE COLLECTION TYPE 0

-- CREATE STRUCTURED TYPE 0

-- CREATE STRUCTURED TYPE BODY 0

-- CREATE CLUSTER 0

-- CREATE CONTEXT 0

-- CREATE DATABASE 0

-- CREATE DIMENSION 0

-- CREATE DIRECTORY 0

-- CREATE DISK GROUP 0

-- CREATE ROLE 0

-- CREATE ROLLBACK SEGMENT 0

-- CREATE SEQUENCE 0

-- CREATE MATERIALIZED VIEW 0

-- CREATE SYNONYM 0

-- CREATE TABLESPACE 0

-- CREATE USER 0

--

-- DROP TABLESPACE 0

-- DROP DATABASE 0

--

-- REDACTION POLICY 0

-- TSDP POLICY 0

--

-- ORDS DROP SCHEMA 0

-- ORDS ENABLE SCHEMA 0

-- ORDS ENABLE OBJECT 0

--

-- ERRORS 0

-- WARNINGS 0

## Constraints

The constraints highlighted in the DDL script above consist of a variety of constraints. The ones we have used are CHECK and UNIQUE. We highlighted the venue name as something that should be unique. We also used a selection of CHECK IN constraints to list some values that are the only ones allowed to be entered into a field. Some of them were created as a domain in the modeler, such as gender checks. One of the more complex checks we wrote was setting the date in the Round table to be within the dates that are outlined in the case study, from 4th April 2018 to 15th April 2018. Other lists of values we created were the nationality and event category attributes. These can be extended further to allow more values, but we only included a selection for the sake of testing the database without getting too involved in its context. These value lists can be added to after completion of the database.

## Changes to Relational Model

The changes we made to the relational model were very minor, just some changes to the names of some attributes and tables.

The table created from the O\_H relationship needed a change to the name of the table. We changed this to Official\_Heat\_task and also added a new attribute to the table which was Type – VARCHAR(15). This new attribute would describe what role each Official would be taking in each heat.

O\_Q table also had a name change to Official\_quals\_held to give a bit more context to what the table contains.

V\_F table got changed to Venue\_Facilities, again for more context to its contents.

The foreign key O\_id in the Event table needed a name change to give context to why it is within that table. This got changed to Event\_manager\_id as this is the identifier of the Official in charge of the event.

Other changes involved the cutting down of attribute names. Upon engineering to the relational model from the logical one, many of the foreign keys inherited their foreign table names as a part of their attribute name. We removed these to make it easier to read and easier to use, especially when manually inserting code. These can all be seen in the images shown above.

## Changes from case study

One of the necessary requirements we didn’t stick to was making the event name unique. There was a contradiction in the case study we believed, as the result from Appendix one showed a name that couldn’t be unique. By including the gender as an attribute there was no way of making the name unique. For example, we could have had unique event names by naming them “Men’s 100m” and “Women’s 100m”. However, the gender attribute makes that redundant. So, we have added the gender attribute instead and not added a UNIQUE constraint to the name.

We have tried to follow the case study as closely as possible and believe that our design reflects that.

# Part 3 – Test Data and Queries

## Test Data scripts

### COMPETITOR

C\_ID C\_NAME C\_ADDRESS C\_DOB C\_AGE C\_HEIGHT C\_WEIGHT C\_NATIONALITY C\_GENDER

-------- ------------------------------ -------------------------------------------------- --------- ---------- ---------- ---------- ------------------------------ ----------

C0000001 Gabbie Alfonso 5 Dryden Point 12-MAR-97 20 175.555 80.555 England F

C0000002 Travers Medler 3 Oneill Alley 12-MAR-97 20 175.555 80.555 Estonia M

C0000003 Mickie Domesday 77 Toban Circle 12-MAR-97 20 175.555 80.555 Estonia M

C0000004 Celesta Carlisi 79 Sheridan Court 12-MAR-97 20 175.555 80.555 England F

C0000005 Friedrick Sebyer 95139 Novick Lane 12-MAR-97 20 175.555 80.555 France M

C0000006 Tull Digman 521 Forest Junction 12-MAR-97 20 175.555 80.555 Estonia F

C0000007 Brooke Mallan 53073 Lyons Center 12-MAR-97 20 175.555 80.555 Estonia F

C0000008 Aeriell Aleswell 98 Petterle Court 12-MAR-97 20 175.555 80.555 France F

C0000009 Willard Snelgrove 12 Hansons Pass 12-MAR-97 20 175.555 80.555 France M

C0000010 Barry Chuckle 2 Me Road 12-MAR-97 20 175.555 80.555 England M

C0000011 Paul Chuckle 2 You Lane 12-MAR-97 20 175.555 80.555 England M

C\_ID C\_NAME C\_ADDRESS C\_DOB C\_AGE C\_HEIGHT C\_WEIGHT C\_NATIONALITY C\_GENDER

-------- ------------------------------ -------------------------------------------------- --------- ---------- ---------- ---------- ------------------------------ --------

C0000012 Jeremie Dyche 94 Sachtjen Pass 12-MAR-97 20 175.555 80.555 Portugal M

C0000013 Candace Grima 201 Nancy Road 12-MAR-97 20 175.555 80.555 France F

C0000014 Adriane Rosen 1 Maywood Avenue 12-MAR-97 20 175.555 80.555 Portugal F

C0000015 Cassi Linkin 3 Dwight Parkway 12-MAR-97 20 175.555 80.555 Portugal F

C0000016 Bradley Linnemann 459 Manley Court 12-MAR-97 20 175.555 80.555 Portugal M

16 rows selected.

### EVENT

E\_ID E\_NAME E\_CATEGORY E EVENT\_MANAGER\_ID

-------- ------------------------------ ------------------------------ - ----------------

E0000001 Featherweight Boxing F O0000001

E0000002 Heavyweight Boxing F O0000002

E0000003 Featherweight Boxing M O0000003

E0000004 Heavyweight Boxing M O0000004

E0000005 Javelin Athletics F O0000005

E0000006 100m Athletics F O0000006

E0000007 200m Athletics M O0000007

E0000008 Long Jump Athletics M O0000008

E0000009 Diving Water Sport F O0000009

E0000010 50m Water Sport F O0000010

E0000011 25m Water Sport M O0000011

E\_ID E\_NAME E\_CATEGORY E EVENT\_MANAGER\_ID

-------- ------------------------------ ------------------------------ - ----------------

E0000012 Diving Water Sport M O0000012

E0000013 Mountain Biking Cycling F O0000013

E0000014 Sprint Cycling F O0000014

E0000015 Mountain Biking Cycling M O0000015

E0000016 Sprint Cycling M O0000016

16 rows selected.

### EVENT\_COMP

C\_ID E\_ID

-------- --------

C0000001 E0000001

C0000001 E0000002

C0000001 E0000003

C0000001 E0000004

C0000001 E0000012

C0000002 E0000001

C0000002 E0000002

C0000002 E0000003

C0000002 E0000004

C0000002 E0000012

C0000003 E0000001

C\_ID E\_ID

-------- --------

C0000003 E0000002

C0000003 E0000003

C0000003 E0000004

C0000003 E0000012

C0000004 E0000001

C0000004 E0000002

C0000004 E0000003

C0000004 E0000004

C0000004 E0000012

C0000005 E0000001

C0000005 E0000002

C\_ID E\_ID

-------- --------

C0000005 E0000003

C0000005 E0000004

C0000005 E0000012

C0000006 E0000001

C0000006 E0000002

C0000006 E0000003

C0000006 E0000004

C0000006 E0000012

C0000006 E0000013

C0000007 E0000005

C0000007 E0000006

C\_ID E\_ID

-------- --------

C0000007 E0000007

C0000007 E0000008

C0000007 E0000012

C0000007 E0000013

C0000008 E0000005

C0000008 E0000006

C0000008 E0000007

C0000008 E0000008

C0000008 E0000012

C0000008 E0000013

C0000009 E0000012

C\_ID E\_ID

-------- --------

C0000009 E0000013

C0000010 E0000012

C0000010 E0000013

C0000011 E0000012

C0000011 E0000013

C0000011 E0000014

C0000012 E0000012

C0000012 E0000013

C0000012 E0000014

C0000013 E0000009

C0000013 E0000013

C\_ID E\_ID

-------- --------

C0000013 E0000015

C0000014 E0000009

C0000014 E0000015

C0000015 E0000009

C0000015 E0000010

C0000015 E0000011

C0000015 E0000016

C0000016 E0000009

C0000016 E0000010

C0000016 E0000011

C0000016 E0000016

66 rows selected.

### FACILITY

F\_ID F\_TYPE

-------- ------------------------------

F0000001 Running Track

F0000002 Floodlights

F0000003 Swimming Pool

F0000004 Boxing Ring

F0000005 Indoor Cycling Track

F0000006 Outdoor Cycling Track

F0000007 Javelin Run

F0000008 Throwin Hammer Ring

F0000009 Long Jump Sandpit

F0000010 Triple Jump Sandpit

10 rows selected.

### HEAT

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

1 C0000001 E0000001 R0000001

1 C0000002 E0000001 R0000001

1 C0000003 E0000001 R0000001

1 C0000004 E0000001 R0000001

1 C0000005 E0000001 R0000001

1 C0000006 E0000001 R0000001

1 C0000001 E0000002 R0000004

1 C0000002 E0000002 R0000004

1 C0000003 E0000002 R0000004

1 C0000004 E0000002 R0000004

1 C0000005 E0000002 R0000004

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

1 C0000006 E0000002 R0000004

1 C0000001 E0000003 R0000007

1 C0000002 E0000003 R0000007

1 C0000003 E0000003 R0000007

1 C0000004 E0000003 R0000007

1 C0000005 E0000003 R0000007

1 C0000006 E0000003 R0000007

1 C0000001 E0000004 R0000010

1 C0000002 E0000004 R0000010

1 C0000003 E0000004 R0000010

1 C0000004 E0000004 R0000010

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

1 C0000005 E0000004 R0000010

1 C0000006 E0000004 R0000010

1 C0000007 E0000005 R0000013

1 C0000008 E0000005 R0000013

1 C0000007 E0000006 R0000014

1 C0000008 E0000006 R0000014

1 C0000007 E0000007 R0000015

1 C0000008 E0000007 R0000015

1 C0000007 E0000008 R0000016

1 C0000008 E0000008 R0000016

1 C0000013 E0000009 R0000017

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

1 C0000014 E0000009 R0000017

1 C0000015 E0000009 R0000017

1 C0000016 E0000009 R0000017

1 C0000015 E0000010 R0000020

1 C0000016 E0000010 R0000020

1 C0000015 E0000011 R0000021

1 C0000016 E0000011 R0000021

1 1 C0000001 E0000012 R0000022

1 2 C0000002 E0000012 R0000022

1 3 C0000003 E0000012 R0000022

1 4 C0000004 E0000012 R0000022

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

1 5 C0000005 E0000012 R0000022

1 6 C0000006 E0000012 R0000022

2 1 C0000007 E0000012 R0000022

2 2 C0000008 E0000012 R0000022

2 3 C0000009 E0000012 R0000022

2 4 C0000010 E0000012 R0000022

2 5 C0000011 E0000012 R0000022

2 6 C0000012 E0000012 R0000022

1 C0000001 E0000012 R0000023

1 C0000002 E0000012 R0000023

1 C0000003 E0000012 R0000023

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

1 C0000004 E0000012 R0000023

2 C0000007 E0000012 R0000023

2 C0000008 E0000012 R0000023

2 C0000009 E0000012 R0000023

2 C0000010 E0000012 R0000023

1 1 C0000006 E0000013 R0000026

1 2 C0000007 E0000013 R0000026

1 3 C0000008 E0000013 R0000026

1 4 C0000009 E0000013 R0000026

2 1 C0000010 E0000013 R0000026

2 2 C0000011 E0000013 R0000026

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

2 3 C0000012 E0000013 R0000026

2 4 C0000013 E0000013 R0000026

1 C0000006 E0000013 R0000027

1 C0000007 E0000013 R0000027

1 C0000008 E0000013 R0000027

1 C0000010 E0000013 R0000027

1 C0000011 E0000013 R0000027

1 C0000012 E0000013 R0000027

1 C0000011 E0000014 R0000030

1 C0000012 E0000014 R0000030

1 C0000013 E0000015 R0000031

H\_NUMBER POSITION C\_ID E\_ID R\_ID

---------- ---------- -------- -------- --------

1 C0000014 E0000015 R0000031

1 C0000015 E0000016 R0000032

1 C0000016 E0000016 R0000032

80 rows selected.

### OFFICIAL

O\_ID O\_NAME O\_ADDRESS O\_DOB O\_AGE O\_NATIONALITY O\_GENDER

-------- ------------------------------ -------------------------------------------------- --------- ---------- ------------------------------ --------

O0000001 Kacy Brobyn 0538 Spohn Parkway 10-SEP-85 32 England F

O0000002 Karylin Bernlin 73 Bluejay Circle 10-SEP-85 32 England F

O0000003 Allison Ceeley 4235 Banding Crossing 10-SEP-85 32 England F

O0000004 Lissi Tuite 4 Hollow Ridge Parkway 10-SEP-85 32 England F

O0000005 Major Dring 49216 Morningstar Crossing 10-SEP-85 32 Estonia M

O0000006 Jillian Hunting 020 Columbus Court 10-SEP-85 32 Estonia F

O0000007 Luther Churchouse 0785 Waxwing Court 10-SEP-85 32 Estonia M

O0000008 Faun Schultze 96 Steensland Pass 10-SEP-85 32 Estonia M

O0000009 Bernadette Butchard 4748 Mitchell Circle 10-SEP-85 32 France F

O0000010 Madge Callander 85538 Ludington Trail 10-SEP-85 32 France F

O0000011 Laney Feavers 2 Almo Center 10-SEP-85 32 France F

O\_ID O\_NAME O\_ADDRESS O\_DOB O\_AGE O\_NATIONALITY O\_GENDER

-------- ------------------------------ -------------------------------------------------- --------- ---------- ------------------------------ --------

O0000012 Clareta Wickersley 527 Ruskin Circle 10-SEP-85 32 France F

O0000013 Merna Donativo 03360 Tennyson Road 10-SEP-85 32 Portugal F

O0000014 Herold Spirit 77 Grasskamp Plaza 10-SEP-85 32 Portugal M

O0000015 Godwin Mumbray 189 Talmadge Point 10-SEP-85 32 Portugal M

O0000016 Abbie Reilinger 5454 Hansons Road 10-SEP-85 32 Portugal F

16 rows selected.

### OFFICIAL\_HEAT\_TASK

O\_ID R\_ID TYPE

-------- -------- ---------------

O0000001 R0000001 Judge

O0000001 R0000002 Judge

O0000001 R0000003 Judge

O0000001 R0000013 Judge

O0000001 R0000017 Judge

O0000001 R0000018 Judge

O0000001 R0000019 Judge

O0000001 R0000026 Judge

O0000001 R0000027 Judge

O0000001 R0000028 Judge

O0000001 R0000029 Judge

O\_ID R\_ID TYPE

-------- -------- ---------------

O0000002 R0000001 Referee

O0000002 R0000002 Referee

O0000002 R0000003 Referee

O0000004 R0000013 Timekeeper

O0000004 R0000017 Timekeeper

O0000004 R0000018 Timekeeper

O0000004 R0000019 Timekeeper

O0000005 R0000004 Judge

O0000005 R0000005 Judge

O0000005 R0000006 Judge

O0000006 R0000004 Referee

O\_ID R\_ID TYPE

-------- -------- ---------------

O0000006 R0000005 Referee

O0000006 R0000006 Referee

O0000006 R0000014 Referee

O0000006 R0000020 Referee

O0000006 R0000026 Timekeeper

O0000006 R0000027 Timekeeper

O0000006 R0000028 Timekeeper

O0000006 R0000029 Timekeeper

O0000006 R0000030 Referee

O0000007 R0000030 Starter

O0000008 R0000014 Timekeeper

O\_ID R\_ID TYPE

-------- -------- ---------------

O0000008 R0000020 Timekeeper

O0000009 R0000015 Judge

O0000009 R0000021 Judge

O0000009 R0000031 Judge

O0000010 R0000015 Referee

O0000010 R0000021 Referee

O0000010 R0000031 Referee

O0000012 R0000007 Judge

O0000012 R0000007 Timekeeper

O0000012 R0000008 Judge

O0000012 R0000008 Timekeeper

O\_ID R\_ID TYPE

-------- -------- ---------------

O0000012 R0000009 Judge

O0000012 R0000009 Timekeeper

O0000013 R0000010 Judge

O0000013 R0000011 Judge

O0000013 R0000012 Judge

O0000013 R0000016 Judge

O0000014 R0000022 Referee

O0000014 R0000023 Referee

O0000014 R0000024 Referee

O0000014 R0000025 Referee

O0000015 R0000010 Starter

O\_ID R\_ID TYPE

-------- -------- ---------------

O0000015 R0000011 Starter

O0000015 R0000012 Starter

O0000015 R0000016 Starter

O0000015 R0000022 Starter

O0000015 R0000023 Starter

O0000015 R0000024 Starter

O0000015 R0000025 Starter

O0000015 R0000032 Starter

O0000016 R0000032 Timekeeper

64 rows selected.

### OFFICIAL\_QUALS\_HELD

O\_ID Q\_TYPE E\_ID

-------- --------------- --------

O0000001 Judge E0000001

O0000001 Judge E0000005

O0000001 Judge E0000009

O0000001 Judge E0000013

O0000002 Referee E0000001

O0000002 Referee E0000005

O0000002 Referee E0000009

O0000002 Referee E0000013

O0000003 Starter E0000001

O0000003 Starter E0000005

O0000003 Starter E0000009

O\_ID Q\_TYPE E\_ID

-------- --------------- --------

O0000003 Starter E0000013

O0000004 Timekeeper E0000001

O0000004 Timekeeper E0000005

O0000004 Timekeeper E0000009

O0000004 Timekeeper E0000013

O0000005 Judge E0000002

O0000005 Judge E0000006

O0000005 Judge E0000010

O0000005 Judge E0000014

O0000006 Referee E0000002

O0000006 Referee E0000006

O\_ID Q\_TYPE E\_ID

-------- --------------- --------

O0000006 Referee E0000010

O0000006 Referee E0000014

O0000006 Timekeeper E0000013

O0000007 Starter E0000002

O0000007 Starter E0000006

O0000007 Starter E0000010

O0000007 Starter E0000014

O0000007 Timekeeper E0000013

O0000008 Timekeeper E0000002

O0000008 Timekeeper E0000006

O0000008 Timekeeper E0000010

O\_ID Q\_TYPE E\_ID

-------- --------------- --------

O0000008 Timekeeper E0000014

O0000009 Judge E0000003

O0000009 Judge E0000007

O0000009 Judge E0000011

O0000009 Judge E0000015

O0000010 Referee E0000003

O0000010 Referee E0000007

O0000010 Referee E0000011

O0000010 Referee E0000015

O0000011 Starter E0000003

O0000011 Starter E0000007

O\_ID Q\_TYPE E\_ID

-------- --------------- --------

O0000011 Starter E0000011

O0000011 Starter E0000015

O0000012 Timekeeper E0000003

O0000012 Timekeeper E0000007

O0000012 Timekeeper E0000011

O0000012 Timekeeper E0000015

O0000013 Judge E0000004

O0000013 Judge E0000008

O0000013 Judge E0000012

O0000013 Judge E0000016

O0000014 Referee E0000004

O\_ID Q\_TYPE E\_ID

-------- --------------- --------

O0000014 Referee E0000008

O0000014 Referee E0000012

O0000014 Referee E0000016

O0000015 Starter E0000004

O0000015 Starter E0000008

O0000015 Starter E0000012

O0000015 Starter E0000016

O0000016 Timekeeper E0000004

O0000016 Timekeeper E0000008

O0000016 Timekeeper E0000012

O0000016 Timekeeper E0000016

66 rows selected.

### QUALIFICATION

E\_ID Q\_TYPE

-------- ---------------

E0000001 Judge

E0000002 Judge

E0000003 Judge

E0000004 Judge

E0000005 Judge

E0000006 Judge

E0000007 Judge

E0000008 Judge

E0000009 Judge

E0000010 Judge

E0000011 Judge

E\_ID Q\_TYPE

-------- ---------------

E0000012 Judge

E0000013 Judge

E0000014 Judge

E0000015 Judge

E0000016 Judge

E0000001 Referee

E0000002 Referee

E0000003 Referee

E0000004 Referee

E0000005 Referee

E0000006 Referee

E\_ID Q\_TYPE

-------- ---------------

E0000007 Referee

E0000008 Referee

E0000009 Referee

E0000010 Referee

E0000011 Referee

E0000012 Referee

E0000013 Referee

E0000014 Referee

E0000015 Referee

E0000016 Referee

E0000001 Starter

E\_ID Q\_TYPE

-------- ---------------

E0000002 Starter

E0000003 Starter

E0000004 Starter

E0000005 Starter

E0000006 Starter

E0000007 Starter

E0000008 Starter

E0000009 Starter

E0000010 Starter

E0000011 Starter

E0000012 Starter

E\_ID Q\_TYPE

-------- ---------------

E0000013 Starter

E0000014 Starter

E0000015 Starter

E0000016 Starter

E0000001 Timekeeper

E0000002 Timekeeper

E0000003 Timekeeper

E0000004 Timekeeper

E0000005 Timekeeper

E0000006 Timekeeper

E0000007 Timekeeper

E\_ID Q\_TYPE

-------- ---------------

E0000008 Timekeeper

E0000009 Timekeeper

E0000010 Timekeeper

E0000011 Timekeeper

E0000012 Timekeeper

E0000013 Timekeeper

E0000014 Timekeeper

E0000015 Timekeeper

E0000016 Timekeeper

64 rows selected.

### ROUND

R\_ID R\_TIME R\_DATE R\_NAME V\_ID E\_ID

-------- ------ --------- --------------- -------- --------

R0000001 20.00 05-APR-18 Quarterfinal V0000001 E0000001

R0000002 20.00 06-APR-18 Semifinal V0000001 E0000001

R0000003 20.00 07-APR-18 Final V0000001 E0000001

R0000004 20.00 08-APR-18 Quarterfinal V0000002 E0000002

R0000005 20.00 09-APR-18 Semifinal V0000002 E0000002

R0000006 20.00 10-APR-18 Final V0000002 E0000002

R0000007 20.00 11-APR-18 Quarterfinal V0000003 E0000003

R0000008 20.00 12-APR-18 Semifinal V0000003 E0000003

R0000009 20.00 13-APR-18 Final V0000003 E0000003

R0000010 20.00 05-APR-18 Quarterfinal V0000004 E0000004

R0000011 20.00 06-APR-18 Semifinal V0000004 E0000004

R\_ID R\_TIME R\_DATE R\_NAME V\_ID E\_ID

-------- ------ --------- --------------- -------- --------

R0000012 20.00 07-APR-18 Final V0000004 E0000004

R0000013 20.00 05-APR-18 Final V0000005 E0000005

R0000014 20.00 06-APR-18 Final V0000006 E0000006

R0000015 20.00 07-APR-18 Final V0000007 E0000007

R0000016 20.00 14-APR-18 Final V0000008 E0000008

R0000017 20.00 05-APR-18 Quarterfinal V0000009 E0000009

R0000018 20.00 06-APR-18 Semifinal V0000009 E0000009

R0000019 20.00 07-APR-18 Final V0000009 E0000009

R0000020 20.00 08-APR-18 Final V0000010 E0000010

R0000021 20.00 09-APR-18 Final V0000001 E0000011

R0000022 20.00 06-APR-18 Preliminary V0000002 E0000012

R\_ID R\_TIME R\_DATE R\_NAME V\_ID E\_ID

-------- ------ --------- --------------- -------- --------

R0000023 20.00 07-APR-18 Quarterfinal V0000002 E0000012

R0000024 20.00 08-APR-18 Semifinal V0000002 E0000012

R0000025 20.00 09-APR-18 Final V0000002 E0000012

R0000026 20.00 10-APR-18 Preliminary V0000003 E0000013

R0000027 20.00 11-APR-18 Quarterfinal V0000003 E0000013

R0000028 20.00 12-APR-18 Semifinal V0000003 E0000013

R0000029 20.00 13-APR-18 Final V0000003 E0000013

R0000030 20.00 12-APR-18 Final V0000004 E0000014

R0000031 20.00 13-APR-18 Final V0000005 E0000015

R0000032 20.00 14-APR-18 Final V0000006 E0000016

32 rows selected.

### VENUE

V\_ID V\_NAME V\_ADDRESS V\_PHONE V\_CURATOR V\_CAPACITY

-------- ------------------------------ -------------------------------------------------- --------------- ------------------------------ ----------

V0000001 Babbleblab Arena 5 South Center 9193282261 Petronia Jowett 8570

V0000002 Quatz Arena 62309 Mockingbird Park 8881102018 Johnathon Custard 5788

V0000003 Mudo Arena 256 Jenna Drive 8662567106 Kenna Lummus 7685

V0000004 Muxo Arena 08624 Fair Oaks Road 3521687732 Cheryl Ruffles 7596

V0000005 Wikizz Arena 41 Veith Pass 5109663323 Dasha Curzon 9382

V0000006 Divanoodle Arena 0 Mayer Terrace 5514020816 Gearalt Brunn 5605

V0000007 Yodel Arena 7683 Sage Pass 6565843248 Jaclyn Blincow 9732

V0000008 Livefish Arena 37 Burrows Junction 3766453242 Free Thunders 8331

V0000009 Twinte Arena 5743 Sunnyside Junction 2102373633 Malvina Gillanders 9901

V0000010 Npath Arena 64 Graedel Pass 3211135950 Mab Cardenoso 6982

10 rows selected.

### VENUE\_FACILITIES

V\_ID F\_ID

-------- --------

V0000001 F0000001

V0000001 F0000002

V0000001 F0000003

V0000001 F0000004

V0000001 F0000005

V0000001 F0000006

V0000001 F0000007

V0000001 F0000008

V0000001 F0000009

V0000001 F0000010

V0000002 F0000001

V\_ID F\_ID

-------- --------

V0000002 F0000002

V0000002 F0000003

V0000002 F0000004

V0000002 F0000005

V0000002 F0000006

V0000002 F0000007

V0000002 F0000008

V0000002 F0000009

V0000002 F0000010

V0000003 F0000001

V0000003 F0000002

V\_ID F\_ID

-------- --------

V0000003 F0000003

V0000003 F0000004

V0000003 F0000005

V0000003 F0000006

V0000003 F0000007

V0000003 F0000008

V0000003 F0000009

V0000003 F0000010

V0000004 F0000001

V0000004 F0000002

V0000004 F0000003

V\_ID F\_ID

-------- --------

V0000004 F0000004

V0000004 F0000005

V0000004 F0000006

V0000004 F0000007

V0000004 F0000008

V0000004 F0000009

V0000004 F0000010

V0000005 F0000001

V0000005 F0000002

V0000005 F0000003

V0000005 F0000004

V\_ID F\_ID

-------- --------

V0000005 F0000005

V0000005 F0000006

V0000005 F0000007

V0000005 F0000008

V0000005 F0000009

V0000005 F0000010

V0000006 F0000001

V0000006 F0000002

V0000006 F0000003

V0000006 F0000004

V0000006 F0000005

V\_ID F\_ID

-------- --------

V0000006 F0000006

V0000006 F0000007

V0000006 F0000008

V0000006 F0000009

V0000006 F0000010

V0000007 F0000001

V0000007 F0000002

V0000007 F0000003

V0000007 F0000004

V0000007 F0000005

V0000007 F0000006

V\_ID F\_ID

-------- --------

V0000007 F0000007

V0000007 F0000008

V0000007 F0000009

V0000007 F0000010

V0000008 F0000001

V0000008 F0000002

V0000008 F0000003

V0000008 F0000004

V0000008 F0000005

V0000008 F0000006

V0000008 F0000007

V\_ID F\_ID

-------- --------

V0000008 F0000008

V0000008 F0000009

V0000008 F0000010

V0000009 F0000001

V0000009 F0000002

V0000009 F0000003

V0000009 F0000004

V0000009 F0000005

V0000009 F0000006

V0000009 F0000007

V0000009 F0000008

V\_ID F\_ID

-------- --------

V0000009 F0000009

V0000009 F0000010

V0000010 F0000001

V0000010 F0000002

V0000010 F0000003

V0000010 F0000004

V0000010 F0000005

V0000010 F0000006

V0000010 F0000007

V0000010 F0000008

V0000010 F0000009

V\_ID F\_ID

-------- --------

V0000010 F0000010

100 rows selected.

## Query Scripts

### Query 1 – Selection and Count

SELECT

competitor.c\_nationality, AS “Nationality”

COUNT(DISTINCT event\_comp.e\_id) AS “Number of Entrants”

FROM

competitor

INNER JOIN event\_comp ON competitor.c\_id = event\_comp.c\_id

GROUP BY

competitor.c\_nationality

NATIONALITY NUMBER OF ENTRANTS

------------------------------ --------------------------------

Estonia 10

France 12

England 7

Portugal 8

This query shows the total amount of entries in all events by entrants, by country

### Query 2 – Average aggregate

SELECT

AVG(competitor.c\_age) AS "Average Age of Entrants"

FROM

competitor

INNER JOIN event\_comp ON competitor.c\_id = event\_comp.c\_id

Average Age of Entrants

-----------------------

20

This query shows the average age across all entrants.

### Query 3 – Join Query

SELECT

official.o\_id AS "ID",

official.o\_name AS "Official Name",

COUNT(DISTINCT official\_heat\_task.r\_id) AS "Number of Rounds Officiated"

FROM

official

INNER JOIN official\_heat\_task ON official.o\_id = official\_heat\_task.o\_id

GROUP BY

official.o\_id,

official.o\_name

ID Official Name Number of Rounds Officiated

-------- ------------------------------ ---------------------------

O0000016 Abbie Reilinger 1

O0000012 Clareta Wickersley 3

O0000010 Madge Callander 3

O0000001 Kacy Brobyn 11

O0000005 Major Dring 3

O0000006 Jillian Hunting 10

O0000015 Godwin Mumbray 9

O0000009 Bernadette Butchard 3

O0000007 Luther Churchouse 1

O0000013 Merna Donativo 4

O0000014 Herold Spirit 4

ID Official Name Number of Rounds Officiated

-------- ------------------------------ ---------------------------

O0000002 Karylin Bernlin 3

O0000004 Lissi Tuite 4

O0000008 Faun Schultze 2

14 rows selected.

### Query 4 - Distinct Join Query

SELECT DISTINCT

venue.v\_id AS id,

venue.v\_name AS venue,

COUNT(round.r\_id) AS "number of rounds"

FROM

venue

INNER JOIN round ON venue.v\_id = round.v\_id

GROUP BY

venue.v\_id,

venue.v\_name

HAVING

COUNT(round.r\_id) < 3

ORDER BY

"number of rounds" DESC

ID VENUE number of rounds

-------- ------------------------------ ----------------

V0000006 Divanoodle Arena 2

V0000005 Wikizz Arena 2

V0000008 Livefish Arena 1

V0000007 Yodel Arena 1

V0000010 Npath Arena 1

Shows the venues that host less than three events.

### Query 5 – Sub-Query

SELECT DISTINCT

official.o\_id,

official.o\_name

FROM

official

WHERE

official.o\_id IN (

SELECT DISTINCT

official\_heat\_task.o\_id

FROM

official\_heat\_task

GROUP BY

official\_heat\_task.o\_id

HAVING

COUNT(official\_heat\_task.r\_id) > 9

)

O\_ID O\_NAME

-------- ------------------------------

O0000001 Kacy Brobyn

O0000006 Jillian Hunting

This query shows the officials that officiate more than 9 rounds.

# Part 4 – Triggers

## Audit Trigger

### Definition

create or replace TRIGGER COMP\_AUDIT

AFTER DELETE OR INSERT OR UPDATE ON COMPETITOR

FOR EACH ROW

DECLARE

audit\_change\_type VARCHAR2 (1);

BEGIN

audit\_change\_type :=

case

when inserting then 'I'

when updating then 'U'

when deleting then 'D'

else 'M'

end;

IF inserting THEN

insert into COMPETITOR\_AUDIT(

CHANGE\_TYPE,

AC\_ID,

AC\_NAME,

AC\_ADDRESS,

AC\_DOB,

AC\_AGE,

AC\_HEIGHT,

AC\_WEIGHT,

AC\_NATIONALITY,

AC\_GENDER,

CHANGE\_DATE

)

values(

audit\_change\_type,

:new.C\_ID,

:new.C\_NAME,

:new.C\_ADDRESS,

:new.C\_DOB,

:new.C\_AGE,

:new.C\_HEIGHT,

:new.C\_WEIGHT,

:new.C\_NATIONALITY,

:new.C\_GENDER,

sysdate);

ELSE

insert into COMPETITOR\_AUDIT(

CHANGE\_TYPE,

AC\_ID,

AC\_NAME,

AC\_ADDRESS,

AC\_DOB,

AC\_AGE,

AC\_HEIGHT,

AC\_WEIGHT,

AC\_NATIONALITY,

AC\_GENDER,

CHANGE\_DATE

)

values(

audit\_change\_type,

:old.C\_ID,

:old.C\_NAME,

:old.C\_ADDRESS,

:old.C\_DOB,

:old.C\_AGE,

:old.C\_HEIGHT,

:old.C\_WEIGHT,

:old.C\_NATIONALITY,

:old.C\_GENDER,

sysdate);

END IF;

END;

### Testing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test reference** | **Description** | **Replication Steps** | **Successful?** | **Comments** |
| 1 | Test Update | 1. Change any field within COMPETITOR 2. Commit 3. Check SQL Code | Y | No Issues |
| 2 | Test Delete | 1. Delete any record within COMPETITOR 2. Commit 3. Check SQL Code | Y | No Issues |
| 3.1 | Test Insert | 1. Attempt to insert a new record with valid data into COMPETITOR 2. Commit 3. Check SQL Code | N | After checking trigger code, the trigger only adds :old. data to the audit table, doesn't allow :new. data to be added |
| 3.2 | Re test Insert | Repeat 3.1 steps | Y | Added an IF statement to trigger, now working as intended |

### Audit Table structure

We made a trigger to audit any changes to the Competitor table as it contains sensitive personal data. The audit table for it contains records of all fields available in the COMPETITOR table, with two added fields, which are the date and time that the changes were made, and the code for the type of change that was made, I for insert, U for update and D for delete. The values are the changes that were made, so in the case of updates or deletes, it saves the data that was in the table previous to the changes, or in the case of insert it saves the new record. We felt that this was the best structure as it shows all archived data and clearly states what kind of changes were made and when.

The trigger had to be changed during testing, as it didn’t allow inserts on the competitor table, to fix this we added the IF statement that is in the trigger.

## Chosen other trigger

We’ve created an archiving trigger for the OFFICIAL table

### Definition

create or replace TRIGGER OFFI\_AUDIT

AFTER DELETE OR INSERT OR UPDATE ON OFFICIAL

FOR EACH ROW

DECLARE

audit\_change\_type VARCHAR2 (1);

BEGIN

audit\_change\_type :=

case

when inserting then 'I'

when updating then 'U'

when deleting then 'D'

else 'M'

end;

IF inserting THEN

insert into OFFICIAL\_AUDIT(

CHANGE\_TYPE,

AO\_ID,

AO\_NAME,

AO\_ADDRESS,

AO\_DOB,

AO\_AGE,

AC\_NATIONALITY,

AC\_GENDER,

CHANGE\_DATE

)

values(

audit\_change\_type,

:new.O\_ID,

:new.O\_NAME,

:new.O\_ADDRESS,

:new.O\_DOB,

:new.O\_AGE,

:new.O\_NATIONALITY,

:new.O\_GENDER,

sysdate);

ELSE

insert into OFFICIAL\_AUDIT(

CHANGE\_TYPE,

AO\_ID,

AO\_NAME,

AO\_ADDRESS,

AO\_DOB,

AO\_AGE,

AO\_NATIONALITY,

AO\_GENDER,

CHANGE\_DATE

)

values(

audit\_change\_type,

:old.O\_ID,

:old.O\_NAME,

:old.O\_ADDRESS,

:old.O\_DOB,

:old.O\_AGE,

:old.O\_NATIONALITY,

:old.O\_GENDER,

sysdate);

END IF;

END;

### Testing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test reference** | **Description** | **Replication Steps** | **Successful?** | **Comments** |
| 1 | Test Update | 1. Change any field within OFFICAL 2. Commit 3. Check SQL Code | Y | No Issues |
| 2 | Test Delete | 1. Delete any record within OFFICIAL 2. Commit 3. Check SQL Code | Y | No Issues |
| 3 | Test Insert | 1. Attempt to insert a new record with valid data into OFFICIAL 2. Commit 3. Check SQL Code | Y | No issues |

# Partnership Statement

Georg Birnbaum and Daniel Ball-Woodvine have both worked equally on this assignment and present this work as a joint submission.