MONASH University

Assessment

Faculty of Information Technology

FIT9132: Introduction to Databases

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Assignment 1: Conceptual Model

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1. Assumptions for Entities and Attributes

No.	Entities	Attributes	ID	Assumptions
1.	VEHICLES	1. VIN (Vehicle Entity Number - 17 characters) 2. Registration plate (7 characters) 3. Car makes (Peugeot) 4. Odometer Reading 5. Passenger capacity	1. veh_vin [key] 2. veh_plate 3. veh_make 4. veh_odometer 5. veh_passengers	• Vehicle is an entity because it helps Paris Arrow Transit (PAT) to track the and identifies its' vehicle operation during Olympic competition • VIN is a unique identifier for each vehicle.
2.	NATIONAL OLYMPIC COMMITTEE (NOC)	1. IOC Code 2. Team Name (Country Name) 3. Region Name 4. Population	1. noc_ioc [key] 2. noc_team 3. noc_region 4. noc_ppl	• NOC is an entity because each NOC comes from different country and they will enter their team into the competition. • IOC Code is a unique identifier for each NOC.
3.	NOC OFFICIALS	1. Olympic ID 2. Official Name (first and last name) 3. NOC role	1. off_id [key] 2. off _fname 3. off_lname 4. off _role	• NOC Officials is an entity because each officials have their own role in the NOC and they will be booking and using the official vehicles throughout Olympic competition period • Official Olympic ID is a unique identifier for each official.
4.	TRIP	1. Olympic ID 2. Pick up date and time. 3. Drop off date and time. 4. Number of passengers	1. off_id[key] 2. trip_putime 3. trip_dotime 4. trip_passengers	• Trip is an entity because it tracks the number of trip and passengers that were using the services of PAT throughout Olympic competition
5.	DRIVER	1. Driver id 2. Drive's name (Given and Family) 3. Driver's license 4. Driver's date of birth 5. Driver's security clearance level 6. Driver's suspension status	1. dri_id [key] 2. dri_fname 3. dri_lname 4. dri_licno 5. dri_birth 6. dri_level 7. dri_susp (yes/no)	• Driver is an entity, because it will link to the officials who uses their services during Olympic competition • Driver ID is a unique identifier for each driver. • Licence Number is a unique identifier for each driver.
6.	DRIVER TRAINING	1. Training Module Code 2. Driver ID 3. Training Module completion date 4. Training Module Count	1. train_code [key] 2. dri_id[key] 3. dt_date_completed[key] 4. dt_total_count[key]	• The training module is an entity because it is associated with the driver's right to drive for PAT. • Training Module Code is a unique identifier for each training module.

7.	TRAINING MODULE	1. Training Module Code 2. Training Module name 3. Training description 4. Training Module Expiry	1. train_code [key] 2. train_name 3. train_descrip 4. train_expiry	• The training module is an entity because it is associated with the driver's right to drive for PAT. • Training Module Code is a unique identifier for each training module.
7.	LANGUAGE	1. ISO639-1 Code (Language Code) 2. Language Name	1. lang_code [key] 2. lang_name	• Language is an entity as it is linked to several entities. • ISO639-1 Code (language code) is a unique identifier for each language.

2. Determination of Relationship

No.	Relationship	Entities	Description	Crow's Foot Notation	Assumptions
1.	Vehicle Booking (One-to-Zero or Many) **1:n**	1. Vehicle (One) 2. Trip (Zero or Many)	1. A single trip is booked for one specificic vehicle 2. A vehicle can be associated with many trips throughout its service life	Vehicle -||--o|< Trip	1. Trip entity will be referencing the Vehicle Vin (Primary Key) of the Vehicle entity. This establishes the entity's relationship. 2. We assume that the vehicle will not be double booked for different trips at the same time. 3. A zero indicates that no suitable match is available for the trip requested by the official due to unavailable vehicle.
2.	NOC Official's Entity relationship (One-to- One or Many) **1:n**	1. NOC (One) 2. Official (One or Many)	1. Many officials belongs to a single NOC	NOC -||--|< Official	1. There's a primary key in the NOC Official entity (likely Off_ID) will be referencing with the IOC Code (primary key) from NOC 2. Officials can't have several relationship with multiple NOCs IOC Code 3. Within officials, there will be a Chef De Mission from each NOC to supervise the officials
3.	NOC Officials Entity Relationship (One to One) **1:1**	3. NOC (One) 4. Official (One)	2. One Chef De Mission belongs to a single NOC	NOC -||--|| Official	4. One Official with administrator role (Chef De Mission) from each NOC is selected to manage the officials
4.	Trips Booking (One-to-Zero or Many) **1:n**	1. Official (One) 2. Trip (Zero or Many)	1. A trip is booked by NOC Official 2. An official can book multiple trips 3. Some trips may not be available due to unsuitable match of driver or vehicle	Official -||--o|< Trip	1. The trip ID will be references as an attribute to the official ID 2. A trip requires a suitable driver and vehicle match. Therefore, a zero indicates that no suitable match is available for the trip requested by the official.
5.	Driver to Trip (One-to-Zero or Many) **1:n**	1. Driver (One) 2. Trip (Zero or Many)	1. A driver can drive on multiple trips but only one driver per booking's trip	Driver -|| --o|< Trip	1. A single trip can only have one driver 2. However, a driver can have multiple trips 3. A trip requires a suitable driver and

			2. Some trips may not be available due to unsuitable match of driver or vehicle		vehicle match. Therefore, a zero indicates that no suitable match is available for the trip requested by the official.
6.	Driver to Vehicle (One or Many to One or Many) **m:n**	1. Driver (One or Many) 2. Vehicle (One or Many)	1. One or Many driver can drive one or many vehicle. 2. However, one driver can only drive vehicle for one trip	Driver ->|-- |<Vehicle	4. One driver can drive one vehicle for each trip. 5. A driver is not attached/ assigned to specific vehicle 6. Many driver can drive many vehicle for different trip
7.	Driver's Training (One-to-One or Many) **1:n**	1. Driver (One) 2. Driver Training (One or Many)	1. A training module can be completed by multiple drivers. 2. Driver need to attend 1 mandatory training (Transport of VIPs)	Driver ->|--|< Driver_Training	1. A driver can complete multiple training modules. 2. Many driver can complete the same training modules 3. However, a min of one mandatory training required to be attended by the driver
8.	Training Module (One-to-One or Many) **1:n**	3. Training Module (One) 4. Driver Training (One or Many)	3. A driver need to attend min of 1 training module 4. Each trainig module has a expiry period (3 months or others)	Training_Module -||--|< Driver_Training	4. A training module has an expiry period and it will be counted from driver's training completion date
9.	Driver to Language (One or Many-to-One or Many)	1. Driver (One or Many) 2. Language (One or Many)	1. A driver can speak multiple language	Driver ->|--|< Language	1. A driver can speak multiple language and a language can be spoken by multiple driver
10.	Trip to Language (One or Many to One)	1. Trip (One or Many) 2. Language (One)	1. Many trip can have different language 2.	Trip ->|--|| Language	1. For each booked trip, only a single preferred language will be recorded