Name : Franciszek Ruszkowski Student number : w1787351

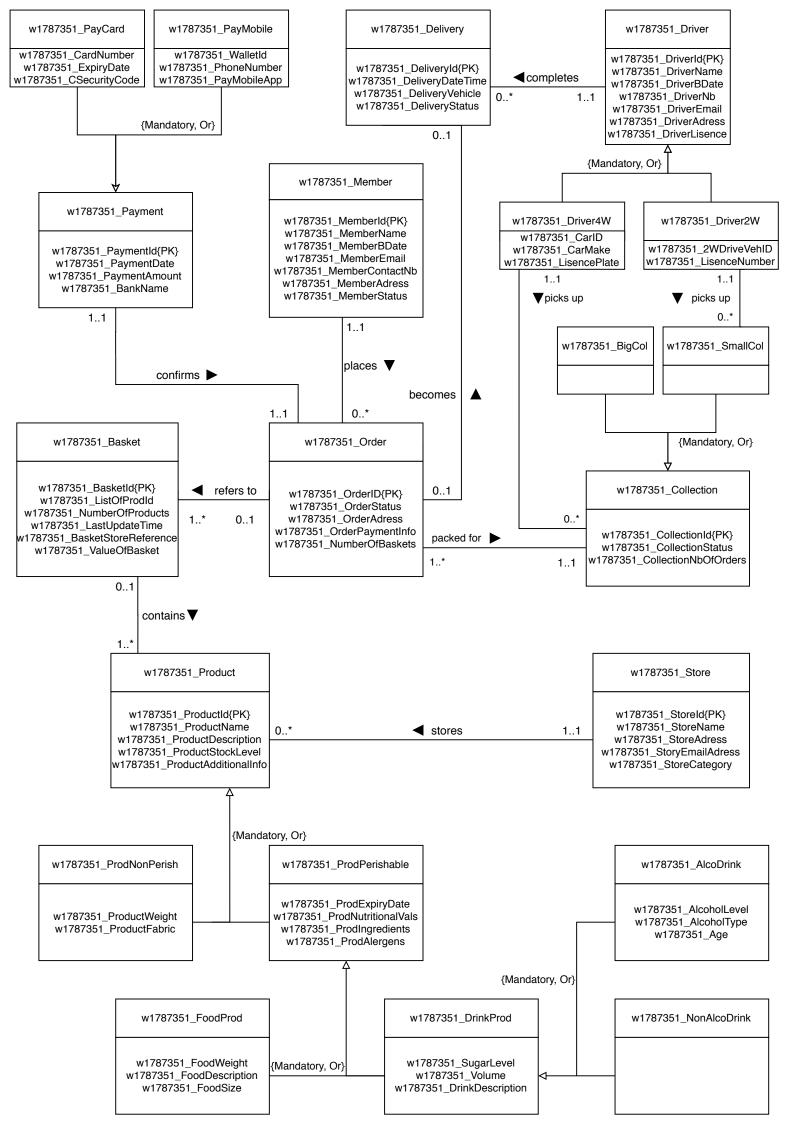
Course: Data Science And Analytics

Coursework Part A + B

22.11.2020

Tutorial Group : Reni Saumya, Chountas

Panagiotis Tuesday



# Data Dictionary on Entities

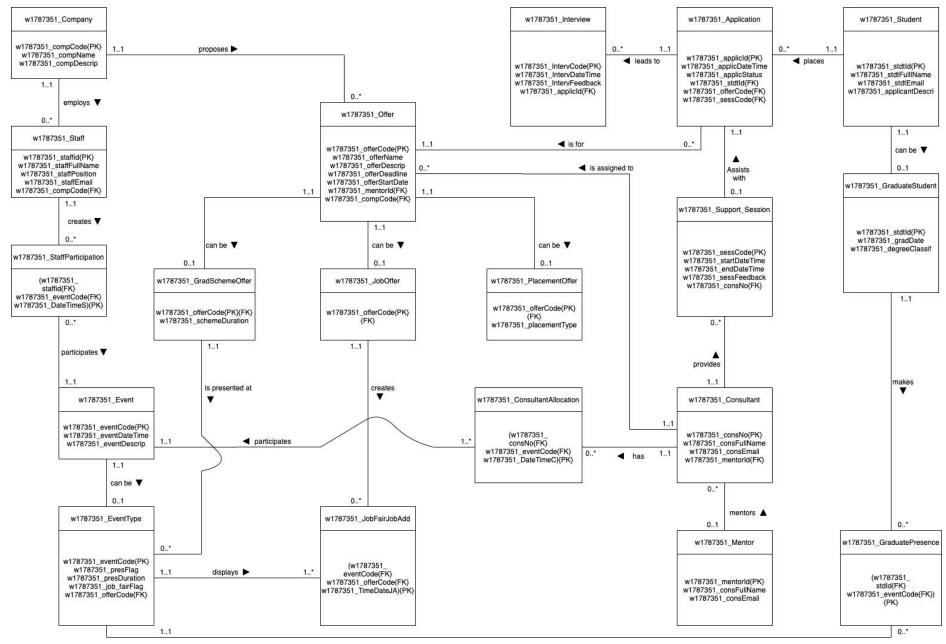
Entity Name	Description	
w1787351_Member	FTY Member Details	
w1787351_Delivery	Delivery details	
w1787351_Order	The order details confirmed by member	
w1787351_Store	Details on data regarding the Stores register by FTY	

w1787351_Payment	w1787351_PayCard	A payment has to be made either
	w1787351_PayMobile	by card of by phone
w1787351_Driver	w1787351_Driver4W	A driver has to drive either a 4 whee
	w1787351_Driver2W	vehichle or 2 wheel vehichle
w1787351_Collection	w1787351_BigCol	A collection has to be either big
	w1787351_SmallCol	or has to be small
w1787351_Product	w1787351_ProdPerishable	A product has to be either Perishab
	w1787351_ProdNonPerish	or non perishable
w1787351_ProdPerishable	w1787351_DrinkProd	Perishable products have to drinks
	w1787351_FoodProd	or food
w1787351_DrinkProd	w1787351_AlcoDrink	Drinks have to be either alcoholic
	w1787351_NonAlcoDrink	or non alcoholic

# Data Dictionarh on relationships

w1787351_Member		Places		w1787351_Order	Member may not have confirmed an order
			0*		Many order can be made
	11				There is no order without member creating it
	1				An order has maximum one member
w1787351_Payment		Confirms	11	w1787351_Order	An order doesnt exist yet without a payment
					Order refers to max one payment
	11				Payment confirms an order
	1				A payment cannot confirm more than 1 order
w1787351_Driver			0*	w1787351_Delivery	Delivery does not exist without a driver
	11	Completes			One delivery has max 1 driver
	] ''	Completes	0		New member - no drivers delivered anything
					Many different drivers can deliver
w1787351_Order			11	w1787351_Collection	An order has to be packed for collection
	- - 1*	Packed for			An order packed for max 1 collection
					A collection doesn't exist without at least 1 order
					A collection can have many orders inside
w1787351_Order	01		1*	w1787351_Product	An order cannot be empty
		Contains			An order can contain many products
	01	Contains			A product may not be assigned to order
					A product can be in maximum one order
w1787351_Basket	11			w1787351_Store	A basket refers to one store
		Refers to	0*		A basket cannot refer to more than one stores
					A store can not have any baskets yet
					A store can have multiple baskets refering to it
w1787351_Store			0*	w1787351_Product	A new store, 0 products so far
	11	1 Stores			A store can store many products
					A product cannot be without a store

	w1787351_Driver4W	,			w1787351_Collection	New Driver, may have 0 collections picked up	
			Dioko un	0*		A driver can have many collections	
Ī		11	Picks up	0"		A collection has to be assigned to a driver	
						A collection cannot be assigned to >1 driver	
	w1787351_Driver2W	1			w1787351_SmallCol	New Driver, may have 0 collections picked up	
			Dioko un	0*		A driver can have many collections	
		11	Picks up	0		A collection has to be assigned to a driver	
						A collection cannot be assigned to >1 driver	
Data Dictionary on Atrributes							
w1	1787351_Member				w1787351_PayCard		
w1787351_MemberId{PK} w1787351_MemberName w1787351_MemberBDate  Unique Id number of member - therefor Member's full name Member's birth date		e PK	w1787351_CardNumber w1787351_ExpiryDate w1787351_CSecurityCode	Credit/Debit card expiry date			
w178 w17873	37351_MemberEmail 351_MemberContactNb	Member's te	ember's Email address elephone contact phone nu		w1787351_PayMobile		
	7351_MemberAdress 7351_MemberStatus	Member's residential address (for contact) Member's verification status (new,pending)			w1787351_WalletId w1787351_PhoneNumber w1787351_PayMobileApp		
V	v1787351_Order				w1787351_Driver		
w17 w178 w17873	87351_OrderID{PK} 87351_OrderStatus 37351_OrderAdress 351_OrderPaymentInfo 351_NumberOfBaskets	Order status (payed for, completed) Order address - delivery address Order payment info - method of payment etc		)	w1787351_DriverId{PK} w1787351_DriverName w1787351_DriverBDate w1787351_DriverNb w1787351_DriverEmail w1787351_DriverAdress w1787351_DriverLisence	Driver's unique Id number- hence PK Driver's full name Driver's date of birth Driver's telephone contact number Driver's email address Driver's home address Driver's driver lisence serial number	
					w1787351_Driver4W		
V	v1787351_Basket				w1787351_CarlD w1787351_CarMake w1787351_LisencePlate	Car id number when registered for foodtooyou Car's make Car's Lisence Plate	
w1787351_BasketId{PK} w1787351_ListOfProdId w1787351_NumberOfProducts w1787351_LastUpdateTime w1787351_BasketStoreReference w1787351_ValueOfBasket  Unique basket Id number - hence PK Listed products in a basket Number of Products Last Update of basket date/time Reference number to store Monetary value of basket			w1787351_Driver2W w1787351_2WDriveVehID w1787351_LisenceNumbe				
		1			w1787351_Collection		
w1	787351_Payment				w1787351_CollectionId w1787351_CollectionSt w1787351_CollectionNbOf	tatus Collection status - pending, done	
w178 w1787	7351_PaymentId{PK} 37351_PaymentDate 351_PaymentAmount 787351_BankName	Pay	ayment Id number - hence ayment date and time ment monetary amount 's name from where paid	PK	w1787351_Product		
w1	787351_Delivery				w1787351_ProductId{PK} w1787351_ProductName w1787351_ProductDescription w1787351_ProductStockLevel  Product's unique id number Product's original name Product's description Product's stock level		
w17873 w1787	351_DeliveryId{PK} 51_DeliveryDateTime 351_DeliveryVehicle 351_DeliveryStatus	De Type of veh	Delivery Id number unique - hence PK Delivery Date and time type of vehicle that delivered - 4w or 2w Delivery status - pending, completed etc		w1787351_ProductStockl w1787351_ProductAddition w1787351_ProdPerishal	nalInfo Product's additional information	
	1787351_Store		p = 200g; 2300p0000		w1787351_ProdExpiryDow1787351_ProdNutritional	pate Product's expiry date	
w178	37351_StoreId{PK}	Store's unique ld number - hence PK		<	w1787351_ProdIngredie w1787351_ProdAlerger	ents Product's ingredienrts	
w178 w17873	37351_StoreName 7351_StoreAdress 51_StoreEmailAdress '351_StoreCategory	Stor Sto	Store's official name Store's location address Store's email address 's category of products they sell		w1787351_AlcoDrink	(	
w1787	351_ProdNonPerish				w1787351_AlcoholLeve w1787351_AlcoholTyp w1787351_Age		
	351_ProductWeight 7351_ProductFabric		rishable product's weight rishable product's fabrtic				



- We first consider the specialisations and 1:1 mandatory on both sides.
- There are no 1:1 mandatory on both sides so we just map the specialisations
- 1. Student entity with {optional} specialisation to Graduate. We apply rule 10, so that it becomes 2 tables: w1787351\_Student and w1787351\_GraduateStudent, multiplicities 1..1 and 0..1 respectively, and the relationship "Can Be". Having 1 to 1 optional, we copy the primary key from the w1787351\_Student (Parent) table and put it as the foreign key in the w1787351\_GraduateStudent (Child) table, along with all the attributes that were in the Graduate specialisation before.
- 2. Event entity with an {optional and} specialisation. We apply rule 8, so that it becomes 2 tables: w1787351\_Event and w1787351\_EventType, multiplicities 1...1 and 0..1 respectively, and the relationship "Can Be". Having 1 to 1 optional, we copy the primary key from the w1787351\_Event (Parent) table and put it as the foreign key in the w1787351\_EventType (Child ) table, and further following rule 8 we add flag attributes, along with all the attributes that were in the specialisations before.
- 3. Offer entity with an {optional or} specialisation. We apply rule 10, so that it becomes 4 tables : w1787351\_Offer, w1787351\_GradSchemeOffer, w1787351\_JobOffer and w1787351\_PlacementOffer, multiplicities 1...1 at Offer and 0..1 on all new tables, and all the relationships become "Can Be". Having 1 to 1 optional, we copy the primary key from the w1787351\_Offer (Parent) table and put it as the foreign key in all new (Child) tables, along with all the attributes that were in the Offer specialisations before.
- We now consider many to many relationships, and any ternary relationships
- There are no ternary relationships so we just map the many to many relationships
- 4. Staff and Event entities have a many to many relationship. We use rule 5 and create 3 tables. 2 Parent tables (w1787351\_Staff and w1787351\_Event) linked with a new child table w1787351\_StaffParticipation. Both parent tables have a 1:M relationship with the newly created child table. The Primary key in the Child table is a combination of 2 Primary Keys of the parent tables, which are now foreign keys in the Child table. The Primary Key in the child table is composite, because a Staff can attend several events, therefore we add the w1787351\_DateTimeS. The new relationships are the following: w1787351\_Staff creates w1787351\_StaffParticipation, and w1787351\_StaffParticipation participates in w1787351\_Event.
- 5. Consultant and Event entities have a many to many relationship. We use rule 5 and create 3 tables. 2 Parent tables (w1787351\_Consultant and w1787351\_Event) linked with a new child table w1787351\_ConsultantAllocation. Both parent tables have a 1:M relationship with the newly created child table. The Primary key in the Child table is a combination of 2 Primary Keys of the parent tables, which are now foreign keys in the Child table. The Primary Key in the child table is composite, because a Consultant can be allocated to several events, therefore we add the w1787351\_DateTimeC. The new relationships are the following: w1787351\_Consultant has w1787351\_ConsultantAllocation, and w1787351\_ConsultantAllocation participates in w1787351\_Event.
- 6. JobOffer and EventType tables have a many to many relationship. We use rule 5 and create 3 tables. 2 Parent tables (w1787351\_JobOffer and w1787351\_EventType) linked with a new

- child table w1787351\_JobFairJobAdd. Both parent tables have a 1:M relationship with the newly created child table. The Primary key in the Child table is a combination of 2 Primary Keys of the parent tables, which are now foreign keys in the Child table. The Primary Key in the child table is composite, because a JobFairJobAdd the same Add can be displayed at several events, therefore we add the w1787351\_TimeDateJA. The new relationships are the following: w1787351\_JobOffer creates w1787351\_JobFairJobAdd and w1787351\_EventType displays w1787351\_JobOfferJobAdd
- 7. GraduateStudent and EventType tables have a many to many relationship. We use rule 5 and create 3 tables. 2 Parent tables (w1787351\_GraduateStudent and w1787351\_EventType) linked with a new child table w1787351\_GraduatePresence. Both parent tables have a 1:M relationship with the newly created child table. The Primary key in the Child table is a combination of 2 Primary Keys of the parent tables, which are now foreign keys in the Child table. The Primary Key in the child table is compound, because a GraduateStudent cannot be at two events at the same time. The new relationships are the following: w1787351\_GraduateStudent creates w1787351\_GraduatePresence and w1787351\_GraduatePresence appears at w1787351\_EventType.
- We now map the 1.1 relationships optional on one side/ optional on both sides and the 1 to many
- 8. Student and Application entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Student places w1787351 Application.
- 9. Interview and Application entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Application leads to an w1787351\_Interview.
- 10. Offer and Application entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Application is for an w1787351\_Offer
- 11. Consultant is an entity that has a relationship with itself "Mentors". However, we still use rule number 1, as there is a 1 to many relationship. Therefore we get a table w1787351\_Consultant we introduce a FK in the same table with a different name (w1787351\_mentorId) to reference the PK of the same table.
- 12. Consultant and Support\_Session entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from

- the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Consultant provides w1787351\_Support\_Session
- 13. Support\_Session and Application entities have a 1 to 1 optional on one side relationship. To map them, we have to use rule number 3, which tells us to create 2 tables with the same, and decide which one is "more mandatory" and could be the Parent Table. In this case w1787351\_Application will become the Parent Table, w1787351\_Support\_Session will become the Child table, the multiplicities remain the same and the relationship remains "assists with". The only addition is now the Child table has the Primary key of the parent table as the foreign key
- 14. Offer and Consultant entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Consultant is assigned to an w1787351 Offer.
- 15. Offer and Company entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Company proposes an w1787351\_Offer.
- 16. Staff and Company entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Company employs w1787351\_Staff.
- 17. Staff and Company entities have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_Company employs w1787351\_Staff.
- 18. GradScheme and EventType have a 1 to many relationship. To map them to a Logical ERD we have to use rule number 1. The entity with 0..1 multiplicity becomes the Parent Table and entity with 0..\* multiplicity becomes the Child table. The primary key from the Parent Table is copied as a foreign key to the Child Table, apart from that all the attributes remain the same in the new tables, The relationship stays the same w1787351\_GradScheme is presented at w1787351\_EventType.

### **Question 7**

```
);

Create the w1787351_Offer Table

CREATE TABLE w1787351_Offer Code
w1787351_offerCode
w1787351_offerCode
w1787351_offerDearlip
w1787351_offerDearlip
w1787351_offerDearlip
w1787351_offerDearlip
w1787351_offerDearlip
w1787351_offerStartDate DATE,
w1787351_compCode
w1787351_offerStartDate DATE,
w1787351_compCode
w1787351_compCode
w1787351_compCode
constraint
w1787351_ocode_fk FOREIGN KEY (w1787351_offerCode),
constraint
w1787351_compCode
r0787351_compCode)

r087351_compCode)

r18737351_Company (w1787351_compCode)

w1787351_Company (w1787351_compCode)

w1787351_Company (w1787351_compCode, w1787351_compCode)

w1787351_Company (w1787351_compCode, w1787351_compName, w1787351_compDescrip)

WLUES
(18001, 'Cyxus', 'Production and distribution of bluelight reflective glasses'),
(18002, 'Wike', 'Meat and dairy products delivery service'),
(18002, 'Wike', 'Meat and dairy products delivery service'),
(18003, 'Ryanair', 'Internet provider serice');

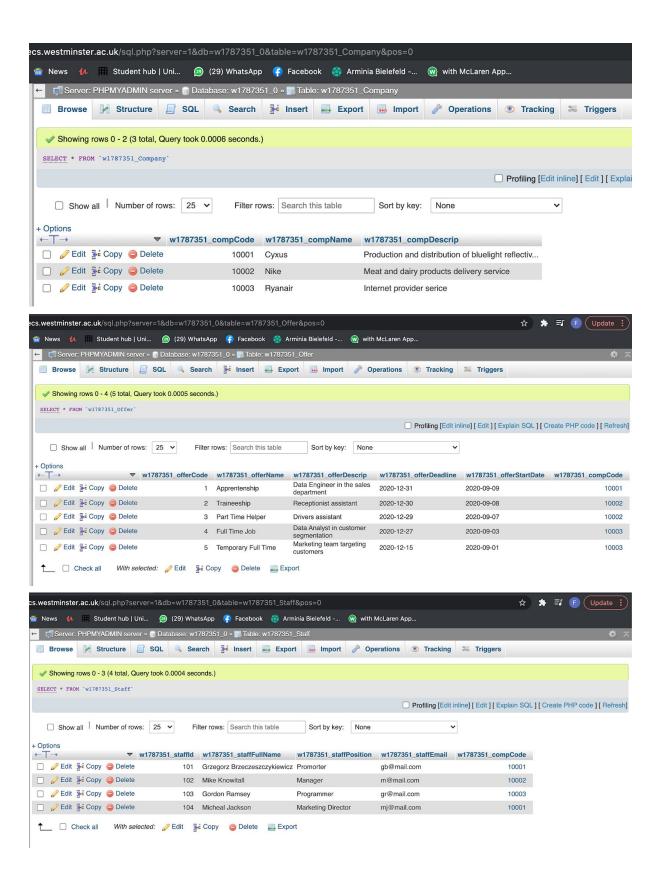
— Input the data into Staff

NSERT INTO
w1787351_Staff (w1787351_staffEmail, w1787351_compCode)

WLUES
(1801, 'Grzegorz Brzeczeszczykiewicz', 'Promorter', 'Obamail.com', 18082),
(1802, 'Wike Knowitall', 'Wanager', 'memail.com', 18082),
(1803, 'Gordon Ramsey', 'Programmer', 'gramail.com', 18082),
(1804, 'Micheal Jackson', 'Warketing Director ', 'mj@mail.com', 18081),

w1787351_offerDeadline, w1787351_offerStartDate, w1787351_compCode)

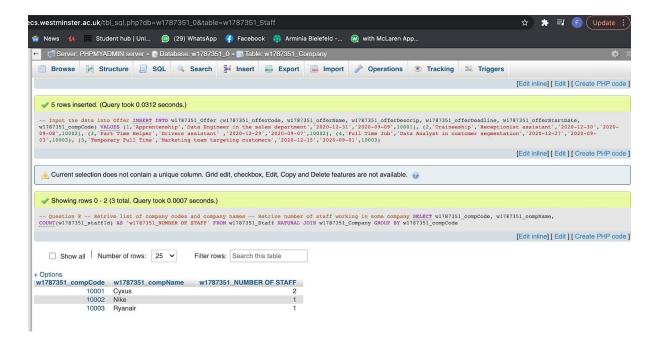
W1787351_offerDeadline, w1787351_o
```



## **Question 8**

```
-- Question 8
-- Retrive list of company codes and company names
-- Retrive number of staff working in some company

SELECT w1787351_compCode, w1787351_compName, COUNT(w1787351_staffId) AS 'w1787351_NUMBER OF STAFF'
FROM w1787351_staff NATURAL JOIN w1787351_Company
GROUP BY w1787351_compCode;
```



### **Question 9**

```
91
92 — Question 9
93
94 — Write a SQL query that displays a list of company names along
95 — the names and positions of staff they employ
96 — and the names and descriptions of the offers they propose.
97
98 SELECT w1787351_compName, w1787351_staffFullName,
99 w1787351_staffPosition, w1787351_offerName, w1787351_offerDescrip
100 FROM w1787351_Company c
101 JOIN w1787351_Staff s
102 ON s.w1787351_compCode = c.w1787351_compCode
103 JOIN w1787351_offer o
104 ON o.w1787351_compCode = c.w1787351_compCode
105 ORDER BY w1787351_compName;
```

