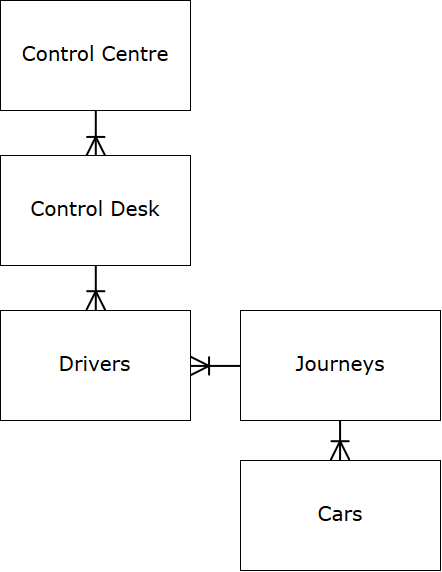
Samuel Bloxham, Zack Hawkins, Sebastian Michalak, Josie Wood

Word count:  [-----]

ISAD: Group Report

# Modelling

Initial ERD



Assumptions:

* Journeys are made by cars, not drivers

Normalisation

|  |  |  |  |
| --- | --- | --- | --- |
| **UNF** | **1NF** | **2NF** | **3NF** |
| **Control Centre** | **Control centre** | **Control centre** | **Control Centre** |
| Control Desk | Control desk | Control desk | Control Desk |
| (Call ID | Vehicle reg | Vehicle reg |  |
| Customer first name | Car make | Car make | **Control Centre** |
| Customer last name | Passenger capacity | Passenger capacity | **Call ID** |
| Home tel. # |  |  |  |
| Mobile tel. # | **Control centre** | **Control centre** | **Call ID** |
| Address | **Call ID** | Call ID | Customer ID |
| Comment) | Customer ID | Customer ID | Driver ID |
|  | Driver ID | Driver ID | Pick up Address |
| (Customer ID | Pick up address | Pick up address | Pick up Postcode |
| Pick up address | Pick up postcode | Pick up postcode | Date/Time |
| Pick up postcode | Drop off address | Date/time | Drop off Address |
| Drop off address | Drop off postcode | Drop off address | Drop off Postcode |
| Drop off postcode | Note | Drop off postcode | Note |
| Date/time | Card # | Note | Card # |
| Note |  | Card # |  |
| Card #) | **Control centre** |  | **Control Centre** |
|  | **Customer ID** | **Control centre** | **Customer ID** |
| (Driver ID | Customer first name | **Customer ID** |  |
| Driver first name | Customer last name |  | **Customer ID** |
| Driver last name | Home tel.# | **Customer ID** | Customer first name |
| Days working | Mobile tel. # | Customer first name | Customer last name |
| Shift) | Address | Customer last name | Home tel. # |
|  | Comment | Home tel. # | Mobile # |
| (Vehicle reg |  | Mobile # | Address |
| Car make | **Control centre** | Address | Comment |
| Passenger Capacity) | **Driver ID** | Comment |  |
|  | Driver first name |  | **Control Centre** |
|  | Driver last name | **Control centre** | **Driver ID** |
|  | Days working | **Driver ID** |  |
|  | Shift |  | **Driver ID** |
|  |  | **Driver ID** | **Vehicle reg** |
|  |  | Driver first name | Driver first name |
|  |  | Driver last name | Driver last name |
|  |  | Days working | Days working |
|  |  | shifts | Shifts |
|  |  |  |  |
|  |  |  | **Vehicle Reg** |
|  |  |  | Car make |
|  |  |  | Passenger capacity |
|  |  |  |  |

#### *Final ERD made in mySQL*

[erd]

# Database development

|  |  |  |
| --- | --- | --- |
| **Task** | | **Query** |
| **QUERIES TO PRODUCE THE DATABASE** | | |
| Creating each table with columns, primary and foreign keys | Control | CREATE TABLE control (  control\_centre\_id VARCHAR(9) NOT NULL,  control\_desk\_id VARCHAR(5) NOT NULL,  primary key(control\_centre\_id)); |
| Customers | CREATE TABLE customer\_details (  customer\_id INT(10) NOT NULL AUTO\_INCREMENT,  customer\_first\_name VARCHAR(15) NOT NULL,  customer\_last\_name VARCHAR(30) NOT NULL,  home\_tel\_no INT(11),  mobile\_tel\_no INT(12) NOT NULL,  address VARCHAR(60) NOT NULL,  postcode VARCHAR(8) NOT NULL,  customer\_comment VARCHAR(300),  primary key (customer\_id)); |
| Caller | CREATE TABLE caller(  call\_id INT(10) NOT NULL,  customer\_id INT(10)NOT NULL,  driver\_id VARCHAR(9) NOT NULL,  pickup\_address VARCHAR (60) NOT NULL,  pickup\_post VARCHAR (8) NOT NULL,  date\_time datetime NOT NULL,  dropoff\_address VARCHAR(60) NOT NULL,  dropoff\_post VARCHAR(8) NOT NULL,  note VARCHAR (300),  card\_no INT(19) NOT NULL,  primary key (call\_id),  foreign key(customer\_id) REFERENCES customers(customer\_id),  foreign key(driver\_id) REFERENCES drivers(driver\_id)); |
| Drivers | CREATE TABLE driver\_details(  driver\_id VARCHAR(9) NOT NULL,  vehicle\_reg VARCHAR(8) NOT NULL,  driver\_first\_name VARCHAR (15) NOT NULL,  driver\_last\_name VARCHAR (30) NOT NULL,  days VARCHAR (7) NOT NULL,  shift VARCHAR (9) NOT NULL,  primary key (driver\_id),  foreign key(vehicle\_reg) REFERENCES vehicles(vehicle\_reg)); |
| Vehicles | CREATE TABLE vehicles(  vehicle\_reg VARCHAR(8) NOT NULL,  car\_make VARCHAR(20) NOT NULL,  licensed\_to\_carry INT(2),  primary key (vehicle\_reg)); |
| Journeys | CREATE TABLE journeys(  control\_centre\_id VARCHAR(9) NOT NULL,  call\_id INT (10) NOT NULL,  primary key (control\_centre\_id),  foreign key(call\_id) REFERENCES caller(call\_id));  foreign key (control\_centre\_id) REFERENCES control(control\_centre\_id)); |
| Reading data from .txt files into table | Customers.txt | LOAD DATA LOCAL INFILE ‘/path/customers.txt’ INTO TABLE customers |
| Drivers.txt | LOAD DATA LOCAL INFILE ‘/path/drivers.txt’ INTO TABLE drivers |
| Journey\_plans.txt | LOAD DATA LOCAL INFILE ‘/path/journey\_plans.txt’ INTO TABLE caller |
| Remove records from database  (deleting customer with id 007) | | DELETE FROM customers WHERE customer\_id = ‘007’; |
| Editing record in database  (changing customer last name given cust id) | | UPDATE customers SET ‘customer\_last\_name = ‘Smith’ WHERE customer\_id = 007; |
| **QUEREIS TO RETRIEVE HISTORICAL DETAILS FROM DATABASE** | | |
| Retrieve list of customers served in previous week | | SELECT customer\_first\_name, customer\_ last\_name FROM caller WHERE date\_time >= NOW() – INTERVAL 1 WEEK; |
| Retrieve list of customers picked up or dropped off at the Railway Station | | SELECT customer\_first\_name, customer\_last\_name FROM caller WHERE drop\_off\_address = ‘Railway Station’ OR pick\_up\_address = ‘Railway Station’; |
| Retrieve number of taxis hired per shift on particular date, week, or period of time | Date  (AM shift of 20/03/19) | SELECT COUNT(DISTINCT vehicle\_reg) FROM caller WHERE DATE(date\_time) = ‘2019-03-20’ AND shift == ‘Morning’; |
| Week  (AM shift between 20/03/19 and 27/03/19) | SELECT COUNT(DISTINCT vehicle\_reg) FROM caller WHERE DATE(date\_time) BETWEEN ‘2019-03-20’ AND ‘2019-03-27 ‘ AND shift == ‘Morning’; |
| Period of time  (between 10 am on 20/03/19 and 9pm on 21/03/19) | SELECT COUNT(DISTINCT vehicle\_reg) FROM caller WHERE date\_time BETWEEN ‘2019-03-20 10:00:00’ AND ‘2019-03-21 21:00:00‘; |
| Retrieve list of most frequent customers | |  |
| Retrieve list of non-returning customers | | SELECT customer\_first\_name, customer\_ last\_name FROM caller WHERE date\_time <= NOW() – INTERVAL 1 YEAR; |

# Evaluation/ Critical review

Evaluation / Critical Review  Problems encountered and any deviations from the design with reasons  Suitability and completeness of the solution  Further work—what else you would like to do and what you would do differently?

Problems encountered

* When we received the data set for customers we found that it had a home postcode for each customer, which is an attribute we didn’t pick out from the brief. This means we need to alter our database from our 3NF as we need to add a postcode column to the customers table, because otherwise when we read the data there’s more than we have allocated space for, causing it to error.
* We had trouble importing data from the .txt files into our database without creating new tables from the data or converting the files into .csv format, both of which don’t appear to apply with our briefing. As such, we have discussed our issue with Chris and found our issue using the Show Logs function, which informed us that some of the data being read in didn’t comply with the restrictions of the table, eg we set our card num value as an INT(16), but in the table each 4 digits is followed by a dash, so it couldn’t be saved as a n int. We fixed this issue by changing the card num value to hold a VARCHAR(19) to account for non-int characters such as the dash 3 times within the card number. By editing all the data types where required, we were able to successfully read in the data to our tables.
* The way data was given in the data didn’t match up to how we had planned to arrange it in our database; for example, the car details such as registration weren’t in their own table as we had anticipated, but incorporated into the [] table. To allow the data to be fully read in properly, we had to alter our database to accept these values into the [] table, so that no data was dropped.
* Another issue we found was that the customer data we were given didn’t contain customer IDs. This meant we had to procedurally create an ID for each customer in the database. As well as this, there were more customer IDs in the journeys list than customers themselves, so we had to create another 200 customer records on top of the given 100 in order to match up with the 300 customers referred to in the journeys table.

Suitability and completeness of solution

What would we do differently?

# Group involvement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Activity** | **Expected Start Date** | **Estimated Hours (per person)** | **Actual Start Date** | **Actual Hours Spent on this activity** | **Work Carried Out by** |
| **Data Model (ERD)** | 11 February | 10 | 19/02/19 | 2 | Sam |
| 2 | Seb |
| 2 | Zack |
| 2 | Josie |
| **Data Model (Normalisation)** | 18 February | 10 | 19/02/19 | 7 | Sam |
| 7 | Seb |
| 7 | Zack |
| 7 | Josie |
| **Development (MySQL)** | 25 February | 30 | 12/03/19 | 3 | Sam |
| 3 | Seb |
| 6 | Zack |
| 4 | Josie |
| **Report Writing** | 11 February | 10 | 26/02/19 | - | Sam |
| - | Seb |
| - | Zack |
| 5 | Josie |