**Database Design and Development Database Project Report – Patrick O'Carroll**

The first element of this project which was completed was the ERD model created through an online application. This model consists of seven entities, these entities correspond to the seven different tables found in the database. Each entity consists of different relationships between each other resulting in the foreign keys which are used through the database. This model also displays the primary and foreign keys which are to be found int the database tables along with the datatypes for each attribute.

In the database itself, as mentioned previously consists of seven tables namely appointments, bill, patient, payment, referrals, specialist, and treatment.

The 'appointments' table consists of six attributes and twenty-five rows. Each row identifies each separate patient appointment, both previous and upcoming through 'apptNumber'. This is also this table's primary key. The 'apptDate' column displays the date each appointment was organised for. The 'apptTime' attribute displays the time of each appointment, and the 'patientNumber' column identifies which patient will be attending each appointment. This is aforeign key for this table. This table also consists of the 'apptCancelDate' and the 'lateCancel' columns. These are to be used if a patient cancels their appointment. The date the appointment was cancelled is entered in the 'apptCancelDate' column and if the cancelation was late enough to incur a €10 cancelation fee the 'lateCancel' column is marked 'YES', otherwise if the cancelation was not at early enough notice the cell is marked 'NO'. For these two cancel columns, if a patient has not cancelled their appointment, they are to remain NULL.

The 'bill' table is populated with five different attributes and contains 23 separate rows of data. The 'billNumber' attribute is a unique identifier for each individual bill making it a primary key for this table. 'billDate' describes the date that the bill was issued from the secretary. The 'patientNumber' column is a foreign key and allows a bill to be corresponding to the patient who received treatment while the 'apptNumber' column consists of the appointment identifier when the treatment was received. This is also a foreign key. Lastly, the 'treatmentName' column describes the treatment the patient received. This is the third foreign key in this table.

The 'patient' table documents all contact information necessary for each unique patient. The 'patientNumber' column is used for this table's primary key. While the patientFirstName, patientLastName, patientDOB, patientPhone,, patientEircode and patientEmail are all relevant pieces of information in order to contact or treat a patient. This table also includes the 'patientBalance' column. This column is used to display the amount of money a patient through unpaid bills. This is done through subtracting all of the patients payments from their bill.

The 'payment' table is included as a means to keep record of all patient payments. This includes the date the patient payment was received, the unique identifier for each payment (this table's primary key), the patientNumber (a foreign key from the patient table), the payment method (should only be credit card, cash or cheque), the amount the patient paid in this transaction, the billNumber' that

the payment is in relation to (another foreign key for this table) and lastly the 'billBalance'. The 'billBalance' column is included to indicate how much is still owed by a patient for each individual bill.

The referrals table displays all outpatient referrals from the clinic to specialists in Cork City. Each referral receives a referralNumber, the primary key for this table. This table consists of the patientNumber, the specialistNumber and the apptNumber, each a separate foreign key. These foreign keys are necessary in order to keep track of what patient got referred to which specialist during which appointment.

The specialist table contains a list of all specialists in the dentist clinics contact book who are used for referrals for patients. Each row consists of a primary key, the 'specialistNumber', and all relevant contact information for each specialist including their name, their speciality, their phone number, clinic address and work email.

The final table in this database is the treatment table. This table consists of only two columns, the 'treatmentName' and 'treatmentCost'. These attributes keep track of the name of each treatment performed by Dr.Mary Mulcahy in her clinic and also their corresponding cost for the patient. In this table 'treatmentName' is used as the primary key as there is only one of each treatment.

This database also consists of three separate views. The first is the 'highrepayment' view. This view is used to keep track of which patient has accumulated a high bill and has not yet paid; these patients are not given additional appointments until the payments due are made.

The 'latecancel' view allows for the secretary to quickly view which patients have cancelled their appoint on short notice and so are subject to a €10 fine.

Finally, the 'laterepayment' view allows a user to see which patients are very late in repaying their bill. If a user appears in this view they should not receive additional appointments until their 'patientBalance' is '0'