MODULE NAME:	MODULE CODE:
DATABASE INTERMEDIATE	DATA6212
DATABASE INTERMEDIATE	DATA6212d
DATABASE INTERMEDIATE	DATA6212p

ASSESSMENT TYPE:	**TAKE-HOME ASSESSMENT (PAPER ONLY)**
TOTAL MARK ALLOCATION:	**120 MARKS**
TOTAL TIME:	**This assessment should take you 2 Hours to complete, however you have 21 hours (midnight to 9pm on the same day) to submit. This additional time has been allocated to allow for the download, completion and upload of your submission.**

By submitting this assessment, you acknowledge that you have read and understood all the rules as per the terms in the registration contract, in particular the assignment and assessment rules in The IIE Assessment Strategy and Policy (IIE009), the intellectual integrity and plagiarism rules in the Intellectual Integrity Policy (IIE023), as well as any rules and regulations published in the student portal.

INSTRUCTIONS:

1. *Please **adhere to all instructions**. These instructions are different from what is normally present, so take time to go through these carefully.*
2. ***Independent work is required**. Students are not allowed to work together on this assessment. Any contraventions of this will be handled as per disciplinary procedures in The IIE policy.*
3. ***No material may be copied from original sources, even if referenced correctly, unless it is a direct quote indicated with quotation marks.***
4. *All work must be adequately and correctly referenced.*
5. *You should paraphrase (use your own words) the concepts that you are referencing, rather than quoting directly.*
6. *Marks will be awarded for the quality of your paraphrasing.*
7. *This is an open-book assessment.*
8. *Assessments must be typed unless otherwise specified.*
9. ***Ensure that you save a copy of your responses.***
   a. *Complete your responses in a Word document.*
   b. *The document name must be your **Name.Student number.Module Code**.*
   c. *Once you have completed the assessment, upload your document under the **submission link** in the correct module in Learn.*

Additional instructions:

- *For open book assessments the students may have open access to all resources inclusive of notes, books (hardcopy and e-books) and the internet. These resources may be accessed as hard copies or as electronic files on electronic devices.*
  All electronic devices batteries must be fully charged before the assessment as no charging of devices will be permitted during the sitting of the assessment. The IIE and associated

brands accept no liability for the loss or damage incurred to electronic devices used during open book assessments.

- *Answer All Questions.*

Question 1 **(Marks: 60)**

This question is based on a set of relations that has been set up for the management of blood sugar test results. The database contains information about the referring doctors, patients, and patients' blood sugar test results. The relationships between the tables must be derived from the data in each of the tables. The tables and the information is as follows:

DOCTORS		
DOCTOR_ID	VARCHAR(5) NOT NULL	PRIMARY KEY
DOCTOR_SURNAME	VARCHAR(40) NOT NULL	

PATIENTS		
PATIENT_ID	VARCHAR(5) NOT NULL	PRIMARY KEY
PATIENT_NAME	VARCHAR(20) NOT NULL	
PATIENT_SURNAME	VARCHAR(50) NOT NULL	
DATE_OF_BIRTH	SMALLDATETIME NOT NULL	

TEST_RESULTS		
DOCTOR_ID	VARCHAR(10) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES DOCTORS(DOCTOR_ID)
PATIENT_ID	VARCHAR(5) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES PATIENTS(PATIENT_ID)
TEST_DATE	SMALLDATETIME NOT NULL	PRIMARY KEY
TEST_RESULT	FLOAT NOT NULL	

The data is shown below:

DOCTORS	
DOCTOR_ID	**DOCTOR_SURNAME**
DR001	Coetzee
DR002	Hasim
DR003	Mbeku
DR004	Phillips

PATIENTS			
PATIENT_ID	**PATIENT_NAME**	**PATIENT_SURNAME**	**DATE_OF_BIRTH**
PT001	Dominique	Woolridge	1962-04-19
PT002	Nico	Baird	1951-11-19
PT003	Derek	Moore	1995-06-24
PT004	Neo	Petlele	1947-12-29
PT005	Andrew	Crouch	1972-01-30

TEST_RESULTS			
DOCTOR_ID	**PATIENT_ID**	**TEST_DATE**	**TEST_RESULT**
DR002	PT001	2021-02-05	7.8
DR001	PT004	2021-01-14	11.1
DR002	PT001	2021-03-15	8.9
DR001	PT004	2021-02-28	11.7
DR004	PT005	2021-02-13	5.6
DR002	PT002	2021-03-30	7.8
DR004	PT002	2021-05-03	6.4

Create a database in SQL Server 2012™ named StudentNumber_DATA6212_ExamQ1 and execute the script file provided as a preload. The preload is named: DATA6212Eb_THEPreload.sql.
The script file will create all the necessary tables and populate the tables in this database with data.

Provide the appropriate SQL formulation and the result that would be produced for each query given below. Ensure to copy the SQL statements and the results into the MS Word document that you have created. Save this file as StudentNumber_DATA6212_Exam. Write the path and filename of this document on your exam paper.

Q.1.1 Create a view named 'NormalResults' containing the Patient_Name, Patient_Surname, Doctor_Surname, Test_Date and Test_Result for all patients who obtained a normal blood sugar test result (less than 7.8). (15)

Sample Results:

PATIENT_NAME	PATIENT_SURNAME	DOCTOR_SURNAME	TEST_DATE	TEST_RESULT
Nico	Baird	Phillips	03.05.2021	6,4
Andrew	Crouch	Phillips	13.02.2021	5,6

Q.1.2 Create a stored procedure named 'PatientRecord' that will display the Doctor_Surname, Test_Date, and Test_Result of all the tests a specific patient was referred for. When executing the stored procedure, make use of the Patient_ID 'PT001'. (15)

Sample Results:

DOCTOR_SURNAME	TEST_DATE	TEST_RESULT
Hasim	05.02.2021	7,8
Hasim	15.03.2021	8,9

Q.1.3 Create a query that displays the Doctor_ID, Doctor_Surname, and whether or not the doctor has referred any patients to have a blood sugar test performed or not. If the doctor referred patients, it must display 'Patients referred', or 'No patients referred' if the doctor did not refer any patients. Call the new column 'Referrals'. (15)

Sample Results:

DOCTOR_ID	DOCTOR_SURNAME	REFERRALS
DR001	Coetzee	Patients referred
DR002	Hasim	Patients referred
DR003	Mbeku	No patients referred
DR004	Phillips	Patients referred

Q.1.4 Write a query to generate a report indicating the average overall test result for each patient. The report should display the Patient_Name, Patient_Surname, and the overall average test result for the patient. Arrange the report so that the records are ordered in descending order based on the average test result. (10)

Sample Results:

PATIENT_NAME	PATIENT_SURNAME	AVERAGE TEST RESULT
Neo	Petlele	11,4
Dominique	Woolridge	8,35
Nico	Baird	7,1
Andrew	Crouch	5,6
Derek	Moore	*NULL*

Q.1.5 Write a query that will display the Patient_Name and Patient_Surname of all patients that have not had any blood sugar tests done. (5)

Sample Results:

PATIENT_NAME	PATIENT_SURNAME
Derek	Moore

Question 2 (MARKS: 60)

This question relates to creating and altering tables, as well as implementing constraints and referential integrity. Answer all the questions below by creating the necessary script.

Q.2.1 You are required to create the following tables in a database named StudentNumber_DATA6212_ExamQ2: (20)

CUSTOMERS		
CUSTOMER_ID	VARCHAR(10) NOT NULL	PRIMARY KEY
CUSTOMER _NAME	VARCHAR(50) NOT NULL	

EQUIPMENT		
EQUIPMENT_CODE	VARCHAR(5) NOT NULL	PRIMARY KEY
EQUIPMENT_NAME	VARCHAR(50) NOT NULL	
HOURLY_RATE	SMALLMONEY NOT NULL	

EQUIPMENT_BOOKINGS		
CUSTOMER_ID	VARCHAR(10) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES CUSTOMERS(CUSTOMER_ID)
EQUIPMENT_CODE	VARCHAR(5) NOT NULL	PRIMARY KEY

		FOREIGN KEY REFERENCES EQUIPMENT(EQUIPMENT_CODE)
BOOKING_DATE	DATE NOT NULL	PRIMARY KEY
HOURS	SMALLINT NOT NULL	
DEPOSIT_PAID	SMALLMONEY NOT NULL	

Q.2.2 Populate the tables created in Question 2.1 with the following data: (10)

CUSTOMERS	
CUSTOMER_ID	**CUSTOMER_NAME**
123456	Neo Petlele
246810	Derek Moore
369121	Pedro Ntaba
654321	Thabo Joe
987654	Dominique Woolridge

EQUIPMENT_CODE	**EQUIPMENT_NAME**	**HOURLY_RATE**
E0001	Floor Sander	250.85
E0002	Welder	129.50
E0003	Compressor	360.00
E0004	Hammer Drill	102.90
E0005	Tile Lifter	199.99

EQUIPMENT_BOOKINGS				
CUSTOMER_ID	**EQUIPMENT_ CODE**	**BOOKING_ DATE**	**HOURS**	**DEPOSIT_PAID**
123456	E0001	2021-10-30	3	350.00
246810	E0005	2021-11-19	2	200.00
246810	E0004	2021-10-15	5	300.00
654321	E0002	2021-09-10	1	130.00
987654	E0001	2021-12-15	7	900.00
123456	E0002	2021-11-01	3	200.00
246810	E0003	2021-09-29	4	750.00

Q.2.3 Alter the CUSTOMERS table to add a column as specified below: (5)

CUSTOMERS	
CONTACT_NUMBER	VARCHAR(10)

Q.2.4 Update the contents of the CUSTOMERS table to populate the new CONTACT_NUMBER field that was added to the table in Question 2.3. Use the data as specified below to populate the field: (5)

CUSTOMER_ID	CUSTOMER_NAME	CONTACT_NUMBER
123456	Neo Petlele	**0833875687**
246810	Derek Moore	**0836914682**
369121	Pedro Ntaba	**0728965412**
654321	Thabo Joe	**0847946130**
987654	Dominique Woolridge	**0739718264**

Q.2.5 Write a query that will display the CUSTOMER_ID and CUSTOMER_NAME of CUSTOMERS that have not booked any equipment. (5)

Sample Results:

CUSTOMER_ID	CUSTOMER_NAME
369121	Pedro Ntaba

Q.2.6 Write a query to generate a report indicating the number of equipment bookings on record for each customer. Customers for which no equipment are booked should also be indicated. The report should display the CUSTOMER_ID and CUSTOMER_NAME, as well as the number of equipment bookings. Arrange the report so that the records are ordered in descending order based on the number of equipment bookings. (10)

Sample Results:

CUSTOMER_ID	CUSTOMER_NAME	NUMBER OF EQUIPMENT BOOKINGS
246810	Derek Moore	3
123456	Neo Petlele	2
654321	Thabo Joe	1
987654	Dominique Woolridge	1
369121	Pedro Ntaba	0

Q.2.7 Write a query that will indicate the longest equipment booking (HOURS) for the Floor Sander (EQUIPMENT_CODE = 'E0001'). Display the CUSTOMER_ID, CUSTOMER_NAME, BOOKING_DATE, and HOURS. (5)

Sample Results:

CUSTOMER_ID	CUSTOMER_NAME	BOOKING_ DATE	HOURS
987654	Dominique Woolridge	2021-12-15	7

END OF PAPER