THE INDEPENDENT INSTITUTE OF EDUCATION

MODULE NAME:	MODULE CODE:
DATABASE (INTERMEDIATE)	DATA6222
DATABASE (INTERMEDIATE)	DATA6222d

ASSESSMENT TYPE:	**EXAMINATION (PAPER ONLY)**
TOTAL MARK ALLOCATION:	**120 MARKS**
TOTAL HOURS:	**2 HOURS (+10 minutes reading time)**

SETUP TIME – SPECIAL INSTRUCTIONS:

1. *For practical IT tests or exams written on campus, the usual reading time is replaced by an **additional 30-minute setup time** allocated for setup, saving and upload activities.*
2. *Students are allowed to make notes during the 30-minute setup time.*
3. *Students are allowed to **start working** on their practical solutions as soon as the 30-minute setup time starts.*

INSTRUCTIONS:

1. *Please adhere to all instructions in the assessment booklet.*
2. *Independent work is required.*
3. *Ten minutes is dedicated to reading time before the start of the assessment. You may make notes on your question paper, but not in your answer sheet. Calculators may not be used during reading time.*
4. *You may not leave the assessment venue during reading time, or during the first hour or during the last 15 minutes of the assessment.*
5. *Ensure that your name is on all pieces of paper or books that you will be submitting. Submit all the pages of this assessment's question paper as well as your answer script.*
6. *Answer all the questions on the answer sheets or in answer booklets provided. The phrase 'END OF PAPER' will appear after the final set question of this assessment.*
7. *Remember to work at a steady pace so that you are able to complete the assessment within the allocated time. Use the mark allocation as a guideline as to how much time to spend on each section.*

Additional instructions:

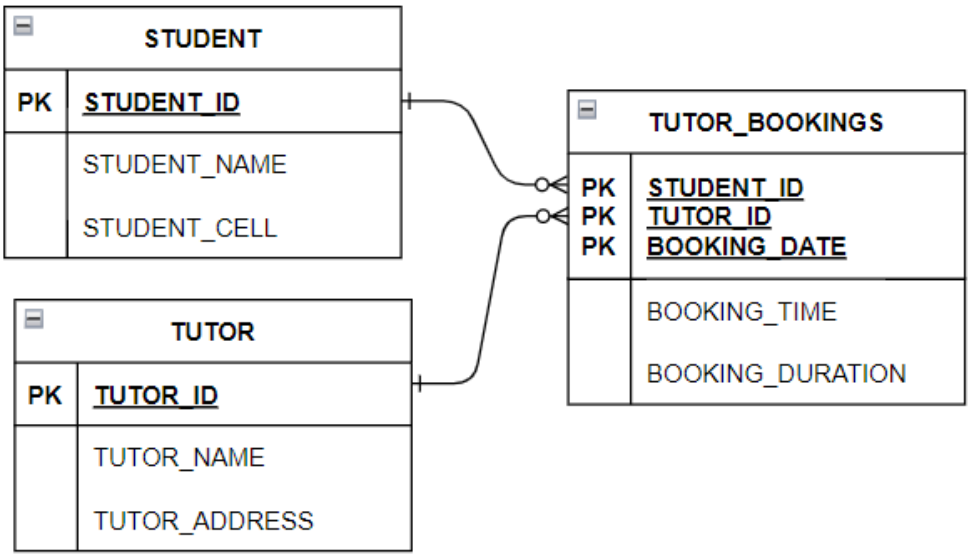
1. *This is an OPEN BOOK assessment.*
2. *Students can use lab computers or their personal devices to connect to Azure Lab Services and to complete the assessment. If students choose to use their own devices they must ensure that they are able to connect to campus networks, Azure Lab Services and the LMS in advance of the assessment sitting. No campus assistance is available during the assessment to troubleshoot problems with personal devices.*
3. *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 its sites of delivery accept no liability for the loss or damage incurred to electronic devices used during open book assessments.*
4. *Answer All Questions.*

5. *Instructions for submitting your assessment:*
   - *Use of good programming practice and comments in code is compulsory.*
   - *Save your solution/project in the designated space for this module.*
   - *Save all files (including any source code files, template files, design files, image files, text files, database files, etc.) within the designated space.*
   - *Do NOT save zipped (archive) files in the designated space unless specifically instructed to do so.*
   - ***Important:** Upon completion of your assessment, you must save and close all your open files before submitting your work. You will submit your assessment on the LMS page for this module.*
   - ***To complete your submission:** Create a document in MS Word or Notepad. The document name must follow the format shown here:*
   - ***StudentNumber_ModuleCode_Test.** E.g., if your student number is 12345 and you are writing a Test for the module DATA6222, create a document named **12345_DATA6222_Exam.***
   - *In this document include the following: Your student number, the module code, and **the link to the designated space** where you saved your practical work. If you are required to include any written answers, also include these answers in the same document.*
   - *Submit this document in the LMS, using the Exam submission link for this module.*

Question 1 **(Marks: 60)**

This question relates to creating views, stored procedures, and reports.

The questions that follow are based on a database that has been set up to manage tutor session bookings. Consider the Entity Relationship Diagram (below).



The database is populated with the following data:

STUDENT		
STUDENT_ID	**STUDENT_NAME**	**STUDENT_CELL**
123456	Neo Petlele	076 8978 657
246810	Derek Moore	083 1595 753
369121	Pedro Ntaba	082 3578 963
654321	Thabo Joe	071 1346 798
987654	Dominique Woolridge	084 7139 852

TUTOR		
TUTOR_ID	**TUTOR_NAME**	**ADDRESS**
ID0001	Theo Sithole	12 Radar Drive, Durban
ID0002	Yanga Mabiso	116 Clearwater Road, Tshwane
ID0003	Sally Sutton	1 Waterstone Drive, Sandton
ID0004	Fred Dlamini	2 Ring Road, Gqeberha
ID0005	Tandy Marais	1 Belmont Road, Cape Town

TUTOR_BOOKINGS				
STUDENT_ ID	**TUTOR_ ID**	**BOOKING_ DATE**	**BOOKING_ TIME**	**BOOKING_ DURATION**
123456	ID0001	2024-10-30	9H00	30
246810	ID0005	2024-10-29	12H00	20
246810	ID0004	2024-10-30	13H00	50
654321	ID0002	2024-10-28	18H00	100
987654	ID0001	2024-10-29	10H00	120
123456	ID0002	2024-10-20	12H00	30
246810	ID0004	2024-10-29	9H00	40

Create a database in SQL Server 2012™ named StudentNumber_DATA6222_ExamQ1 and execute the script file provided as a preload. The preload is named: DATA6222EaPreload.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 as well as the results into the MS Word document that you have created. Save this file as StudentNumber_DATA6222_Exam. Write the path and filename of this document on your exam paper.

***CAREFULLY NOTE:* Each task might or might not indicate the sample result. If provided, this should be used as a guide of the expected format and/or result. However, the sample result, in some cases, may only include a single record of the expected results.**

Q.1.1 Create a view named 'LongSessions' that contains the TUTOR_ID, STUDENT_ID, BOOKING_DATE, BOOKING_TIME, AND BOOKING_DURATION for all bookings for 2024 that are for 100 or more minutes. (15)

Sample Results:

STUDENT _ID	***TUTOR _ID***	***BOOKING _DATE***	***BOOKING _TIME***	***BOOKING _DURATION***
654321	*ID0002*	*2024-10-28*	*18H00*	*100*
987654	*ID0001*	*2024-10-29*	*10H00*	*120*

Q.1.2 Create a stored procedure named 'FindBookings' that will display the TUTOR_NAME, STUDENT_NAME, STUDENT_CELL, BOOKING_DATE, BOOKING_TIME, AND BOOKING_DURATION of all sessions booked for a specific tutor. When executing the stored procedure make use of the TUTOR_ID 'ID0002'. (15)

SAMPLE RESULTS:

TUTOR_ NAME	***STUDENT_ NAME***	***STUDENT_ CELL***	***BOOKING_ DATE***	***BOOKING_ TIME***	***BOOKING_ DURATION***
Yanga Mabiso	Thabo Joe	071 1346 798	*2024-10-28*	*18H00*	*100*
Yanga Mabiso	Neo Petlele	076 8978 657	*2024-10-20*	*12H00*	*30*

Q.1.3 Create a query that displays the TUTOR_ID, TUTOR_NAME, TUTOR_ADDRESS and whether there are bookings recorded for the tutor or not. If there are bookings recorded it must display 'Sessions Available' or 'No Sessions' if there are no bookings for the tutor. Name the new column 'BOOKING_STATUS'. (15)

Sample Results:

TUTOR_ID	***TUTOR_NAME***	***ADDRESS***	***BOOKING STATUS***
ID0001	*Theo Sithole*	*12 Radar Drive, Durban*	*Sessions Available*
ID0002	*Yanga Mabiso*	*116 Clearwater Road, Tshwane*	*Sessions Available*
ID0003	*Sally Sutton*	*1 Waterstone Drive, Sandton*	*No Sessions*
ID0004	*Fred Dlamini*	*2 Ring Road, Gqeberha*	*Sessions Available*
ID0005	*Tandy Marais*	*1 Belmont Road, Cape Town*	*Sessions Available*

Q.1.4 Write a query to generate a report indicating the total duration of all booked sessions for each tutor. The report should display the TUTOR_NAME and the total duration of all booked sessions for the tutor. Arrange the report so that the records are ordered in descending order based on the total duration of booked sessions. (10)

Sample Results:

TUTOR_NAME	***TOTAL BOOKING DURATION***
Theo Sithole	*150*
Yanga Mabiso	*130*
Fred Dlamini	*90*
Tandy Marais	*20*
Sally Sutton	*NULL*

Q.1.5 Write a query that will display the TUTOR_NAME of tutors for which there are no booked sessions. (5)

Sample Results:

TUTOR_NAME
Sally Sutton

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_DATA6222_ExamQ2: (20)

PRODUCT		
PRODUCT_ID	VARCHAR(5) NOT NULL	PRIMARY KEY
PRODUCT_NAME	VARCHAR(40) NOT NULL	

STORE		
STORE_ID	VARCHAR(5) NOT NULL	PRIMARY KEY
STORE_NAME	VARCHAR(20) NOT NULL	
ADDRESS	VARCHAR(50) NOT NULL	
CITY	VARCHAR(20) NOT NULL	

AVAILABILITY		
PRODUCT_ID	VARCHAR(5) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES PRODUCT(PRODUCT_ID)
STORE_ID	VARCHAR(5) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES STORE(STORE_ID)
QUANTITY	SMALLINT NOT NULL	

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

PRODUCT_ID	PRODUCT_NAME
P001	Baked Beans Tin
P002	Tinned Ham
P003	Tinned Apples
P004	Mixed Veg Tin
P005	All Berries Jam

STORE			
STORE_ID	**STORE_NAME**	**ADDRESS**	**CITY**
S001	JHB Store	167 Pert Road	Johannesburg
S002	Walmer Store	5 Second Avenue	Gqeberha
S003	Bertha Mkhize Store	33 Bertha Mkhize Street	Durban
S004	Bram Fischer Store	27 Bram Fischer Road	Durban
S005	Tshwane Store	210 Du Toit Street	Tshwane

AVAILABILITY		
PRODUCT_ID	**STORE_ID**	**QUANTITY**
P002	S001	13
P002	S004	9
P003	S005	8
P004	S003	5
P004	S001	9

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

AVAILABILITY	
STOCK_ORDERED	SMALLINT

Q.2.4 Update the contents of the AVAILABILITY table to populate the new STOCK_ORDERED field for PRODUCT_ID 'P004' and STORE_ID 'S003' that was added in Question 2.3. Use the data as specified below to populate the field: (5)

AVAILABILITY		
PRODUCT_ID	**STORE_ID**	**STOCK_ORDERED**
P004	S003	3

Q.2.5 Write a query that will display the PRODUCT_NAME of all products that are not available in any of the stores. (5)

Sample Results:

PRODUCT_NAME
Baked Beans Tin
All Berries Jam

Q.2.6 Write a query to generate a report indicating the total available stock for each product across all stores. The report should display the PRODUCT_NAME, and total available stock. Arrange the report so that the products are arranged in alphabetical order. (10)

Sample Results:

PRODUCT_NAME	**TOTAL_AVAILABLE**
All Berries Jam	NULL
Baked Beans Tin	*NULL*
Mixed Veg Tin	*14*
Tinned Apples	8
Tinned Ham	*22*

Q.2.7	Write a query that will indicate which store has the most product with PRODUCT_ID 'P002' in stock. Display the STORE_NAME, ADDRESS, CITY, PRODUCT_NAME, and QUANTITY of the product available at the store. Sample Results: **STORE_NAME** **ADDRESS** **CITY** **PRODUCT_NAME** **QUANTITY** JHB Store 167 Pert Road Johannesburg Tinned Ham 13	(5)

END OF PAPER