THE INDEPENDENT INSTITUTE OF EDUCATION

MODULE NAME:	MODULE CODE:
DATABASE INTERMEDIATE	DATA6212
DATABASE INTERMEDIATE	DATA6212d
DATABASE INTERMEDIATE	DATA6212p
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. *Five minutes per hour of the assessment to a maximum of 15 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. *Calculators are allowed.*
3. *Answer All Questions .*
4. *Instructions for assessments including practical computer work:*
   - *Use of good programming practice and comments in code is compulsory.*
   - *Save your application in the location indicated by the administrator (e.g., the Z:\ drive or your local drive).*

- *Create a folder as follows: use the module code and your own student number and create a folder with a folder name as per the format shown here:*
- ***StudentNumber_ModuleCode_Exam**. Save all files (including any source code files, template files, design files, image files, text files, database files, etc.) within this folder.*
- *E.g., if your student number is 12345, and you are writing an examination for the module DATA6212, create a folder named **12345_Data6212_Exam** and use this throughout the session to save all your files.*
- ***Important:** Upon completion of your assessment, you must save and close all your open files and double click the ExamLog application on your desktop. You must follow the instructions carefully to ensure that the information about the files that you have submitted for this assessment has been logged on the network. Specify the location of your source code on your question paper.*

Question 1 **(Marks: 60)**

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

Q.1.1 You are required to create the following tables in a database named StudentNumber_DATA6212_ExamQ1: (20)

EMPLOYEES		
EMPLOYEE_ID	VARCHAR(5) NOT NULL	PRIMARY KEY
EMPLOYEE_NAME	VARCHAR(30) NOT NULL	
EMPLOYEE_SURNAME	VARCHAR(30) NOT NULL	
DATE_OF_BIRTH	DATE NOT NULL	

DOCTORS		
DOCTOR_ID	VARCHAR(5) NOT NULL	PRIMARY KEY
DOCTOR_NAME	VARCHAR(30) NOT NULL	

EMPLOYEE_SICKLEAVE		
EMPLOYEE_ID	VARCHAR(5) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES EMPLOYEES(EMPLOYEE_ID)
START_DATE	DATE NOT NULL	PRIMARY KEY
DOCTOR_ID	VARCHAR(5) NOT NULL	
NUMBER_OF_DAYS	SMALLINT NOT NULL	

Q.1.2 Populate the tables created in **Q.1.1** with the following data: (10)

EMPLOYEES			
EMPLOYEE_ ID	**EMPLOYEE_NAME**	**EMPLOYEE_ SURNAME**	**DATE_OF_BIRTH**
I0001	Dominique	Woolridge	1993-04-19
I0002	Nico	Baird	1991-11-19
I0003	Derek	Moore	1992-06-24
I0004	Neo	Petlele	1993-12-29
I0005	Andrew	Crouch	1994-01-30

DOCTORS	
DOCTOR_ID	**DOCTOR_NAME**
D0001	Thabo Ntlali
D0002	Deon Coetzee
D0003	Kwezi Mbete
D0004	Trevor January
D0005	Julia Robins

EMPLOYEE_SICKLEAVE			
EMPLOYEE_ID	**DOCTOR_ID**	**START_DATE**	**NUMBER_OF_DAYS**
I0001	D0004	2021-01-25	2
I0002	D0001	2021-05-14	1
I0003	D0003	2021-06-07	5
I0003	D0002	2021-06-29	15
I0004	D0001	2021-08-01	3
I0005	D0004	2021-10-22	9
I0005	D0001	2021-12-28	4

Q.1.3 Alter the VENUES table to add a column as specified below: (5)

Alter the EMPLOYEES table to add a column as specified below:

EMPLOYEES	
AGE	SMALLINT

Q.1.4	Update the contents of the EMPLOYEES table to populate the new AGE field that was added to the table in **Q.1.3**. The age should be calculated based on the current date and the date of birth.	(5)
Q.1.5	Write a query that will display the names of doctors that have not issued any doctor's certificates to employees yet. Sample Results: **DOCTOR_NAME** Julia Robbins	(5)
Q.1.6	Write a query to generate a report indicating the total number of sick leave days for each employee. The report should display the employee name and surname, as well as the total number of sick leave days. Arrange the report so that the records are ordered in descending order based on the number of sick leave days. Sample Results: **EMPLOYEE_NAME** **EMPLOYEE_SURNAME** **TOTAL SICK LEAVE DAYS** Derek Moore 20 Andrew Crouch 13 Neo Petlele 3 Dominique Woolridge 2 Nico Baird 1	(10)
Q.1.7	Write a query that will indicate which employee has been booked off for the most number of days by doctor 'D0001'. Display the employee name and surname, doctor name, and number of days. Sample Results: **EMPLOYEE_NAME** **EMPLOYEE_SURNAME** **DOCTOR_NAME** **NUMBER_OF_DAYS** Andrew Crouch Thabo Ntlali 4	(5)

Question 2 (Marks: 60)

This question is based on a set of relations that have been set up for the management of student test results. The database contains information about the students, modules, and the test results of students for the specific modules. The relationships between the tables must be derived from the data in each of the tables. The tables and the information is as follows:

MODULES		
MODULE_CODE	VARCHAR(10) NOT NULL	PRIMARY KEY
MODULE_NAME	VARCHAR(40) NOT NULL	

STUDENTS		
STUDENT_NUMBER	VARCHAR(5) NOT NULL	PRIMARY KEY
STUDENT_NAME	VARCHAR(20) NOT NULL	
STUDENT_SURNAME	VARCHAR(50) NOT NULL	
DATE_OF_BIRTH	SMALLDATETIME NOT NULL	

TEST_RESULTS		
MODULE_CODE	VARCHAR(10) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES MODULES(MODULE_CODE)
STUDENT_NUMBER	VARCHAR(5) NOT NULL	PRIMARY KEY FOREIGN KEY REFERENCES STUDENTS(STUDENT_NUMBER)
TEST_NUMBER	SMALLINT NOT NULL	PRIMARY KEY
TESTMARK	SMALLINT NOT NULL	

The data is shown below:

MODULES	
MODULE_CODE	**MODULE_NAME**
DATA6212	Database Intermediate
INPU221	Desktop Publishing
PROG6211	Programming 2A
PROG6212	Programming 2B
WEDE220	Web Development (Intermediate)

STUDENTS			
STUDENT_ NUMBER	**STUDENT_NAME**	**STUDENT_SURNAME**	**DATE_OF_BIRTH**
ST001	Dominique	Woolridge	1996-04-19
ST002	Nico	Baird	1994-11-19
ST003	Derek	Moore	1995-06-24
ST004	Neo	Petlele	1996-12-29
ST005	Andrew	Crouch	1997-01-30

TEST_RESULTS			
MODULE_CODE	**STUDENT_NUMBER**	**TEST_NUMBER**	**TESTMARK**
PROG6211	ST001	1	65
WEDE220	ST004	1	87
PROG6211	ST001	2	68
WEDE220	ST004	2	85
INPU221	ST005	1	39
WEDE220	ST002	1	71
WEDE220	ST002	2	95

Create a database in SQL Server 2017™ named StudentNumber_DATA6212_ExamQ2 and execute the script file provided as a preload. The preload is named: DATA6212EaPreload.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_DATA6212_Exam. Write the path and filename of this document on your exam paper.

Q.2.1 Create a view named 'PassWithDistinction' that contains the Student_Name, Student_Surname, Module_Name, Test_Number and TestMark for all students that obtained a mark of 75 and more for a specific test. (15)

Sample Results:

	STUDENT_NAME	STUDENT_SURNAME	MODULE_NAME	TEST_NUMBER	TESTMARK
1	Nico	Baird	Web Development (Intermediate)	2	95
2	Neo	Petlele	Web Development (Intermediate)	1	87
3	Neo	Petlele	Web Development (Intermediate)	2	85

Q.2.2 Create a stored procedure named 'StudentRecord' that will display the Module_Name, Test_Number, and TestMark of all the tests a specific student has written. When executing the stored procedure make use of the Student_Number 'ST001'. (15)

Sample Results:

	MODULE_NAME	TEST_NUMBER	TESTMARK
1	Programming 2A	1	65
2	Programming 2A	2	68

Q.2.3 Create a query that displays the Module_Code, Module_Name, and whether or not any tests have been written for the module. If test results have been captured it must display 'Tests results captured', or 'No test results captured' if no test results have been captured for that module. Call the new column 'Test Result Status'. (15)

Sample Results:

	MODULE_CODE	MODULE_NAME	TEST RESULT STATUS
1	DATA6212	Database Intermediate	No test results captured
2	INPU221	Desktop Publishing	Test results captured
3	PROG6211	Programming 2A	Test results captured
4	PROG6212	Programming 2B	No test results captured
5	WEDE220	Web Development (Intermediate)	Test results captured

Q.2.4 Write a query to generate a report indicating the average overall test mark for each student. The report should display the Student_Name, Student_Surname, as well as the overall average test mark for the student. Arrange the report so that the records are ordered in descending order based on the average test mark. (10)

Sample Results:

	STUDENT_NAME	STUDENT_SURNAME	AVERAGE MARK
1	Neo	Petlele	86
2	Nico	Baird	83
3	Dominique	Woolridge	66
4	Andrew	Crouch	39
5	Derek	Moore	*NULL*

Q.2.5 Write a query that will display the Student_Name and Student_Surname of all students that have not written any tests. (5)

Sample Results:

	STUDENT_NAME	STUDENT_SURNAME
1	Derek	Moore

END OF PAPER