MODULE NAME:	MODULE CODE:
ADVANCED DATABASES	ADDB7311

ASSESSMENT TYPE: ASSIGNMENT 1 (PAPER ONLY)

TOTAL MARK ALLOCATION: 100 MARKS

TOTAL HOURS: 10 HOURS

By submitting this assignment, 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. *No material may be copied from original sources, even if referenced correctly, unless it is a direct quote indicated with quotation marks. No more than 10% of the assignment may consist of direct quotes.*
2. *Assignments must be typed unless otherwise specified. typed unless specified otherwise by the lecturer.*
3. *All work must be adequately and correctly referenced.*
4. *Begin each section on a new page.*
5. *Follow all instructions on the assignment cover sheet.*
6. *This is an individual assignment*

Referencing Rubric

Providing evidence based on valid and referenced academic sources is a fundamental educational principle and the cornerstone of high-quality academic work. Hence, The IIE considers it essential to develop the referencing skills of our students in our commitment to achieve high academic standards. Part of achieving these high standards is referencing in a way that is consistent, technically correct and congruent. This is not plagiarism, which is handled differently.

Poor quality formatting in your referencing will result in a penalty **of a maximum of ten percent being deducted from the percentage awarded**, according to the following guidelines. Please note, however, that **evidence of plagiarism in the form of copied or uncited work (not referenced), absent reference lists, or exceptionally poor referencing, may result in action being taken in accordance with The IIE's Intellectual Integrity Policy (0023)**.

Markers are required to provide feedback to students by indicating **(circling/underlining) the information that best describes the student's work.**

Minor technical referencing errors: 5% deduction from the overall percentage – the student's work contains **five or more errors** listed in the minor errors column in the table below.

Major technical referencing errors: 10% deduction from the overall percentage – the student's work contains **five or more errors** listed in the major errors column in the table below**.**

If both minor and major errors are indicated, then 10% only (and not 5% or 15%) is deducted from the overall percentage. The examples provided below are not exhaustive but are provided to illustrate the error

Required: **Technically correct referencing style**	**Minor errors in technical correctness of referencing style** **Deduct 5% from percentage awarded**	**Major errors in technical correctness of referencing style** **Deduct 10% from percentage awarded**
Consistency • The same referencing format has been used for all in-text references and in the bibliography/reference list.	Minor inconsistencies. • The referencing style is generally consistent, but there are one or two changes in the format of in-text referencing and/or in the bibliography. • For example, page numbers for direct quotes (in-text) have been provided for one source, but not in another instance. Two book chapters (bibliography) have been referenced in the bibliography in two different formats.	Major inconsistencies. • Poor and inconsistent referencing style used in-text and/or in the bibliography/ reference list. • Multiple formats for the same type of referencing have been used. • For example, the format for direct quotes (in-text) and/or book chapters (bibliography/ reference list) is different across multiple instances.
Technical correctness Referencing format is technically correct throughout the submission. Position of the reference: a reference is directly associated with every concept or idea. For example, quotation marks, page numbers, years, etc. are applied correctly, sources in the bibliography/reference list are correctly presented.	**Generally, technically correct with some minor errors.** • The correct referencing format has been consistently used, but there are one or two errors. • Concepts and ideas are typically referenced, but a reference is missing from one small section of the work. • Position of the references: references are only given at the beginning or end of every paragraph. • For example, the student has incorrectly presented direct quotes (in-text) and/or book chapters (bibliography/reference list).	**Technically incorrect.** • The referencing format is incorrect. • Concepts and ideas are typically referenced, but a reference is missing from small sections of the work. • Position of the references: references are only given at the beginning or end of large sections of work. • For example, incorrect author information is provided, no year of publication is provided, quotation marks and/or page numbers for direct quotes missing, page numbers are provided for paraphrased material, the incorrect punctuation is used (in-text); the bibliography/reference list is not in alphabetical order, the incorrect format for a book chapter/journal article is used, information is missing e.g. no place of publication had been provided (bibliography); repeated sources on the reference list.
Congruence between in-text referencing and bibliography/ reference list • All sources are accurately reflected and are all accurately included in the bibliography/ reference list.	**Generally, congruence between the in-text referencing and the bibliography/ reference list with one or two errors.** • There is largely a match between the sources presented in-text and the bibliography. • For example, a source appears in the text, but not in the bibliography/ reference list or vice versa.	**A lack of congruence between the in-text referencing and the bibliography.** • No relationship/several incongruencies between the in-text referencing and the bibliography/reference list. • For example, sources are included in-text, but not in the bibliography and vice versa, a link, rather than the actual reference is provided in the bibliography.
In summary: the recording of references is accurate and complete.	In summary, at least **80%** of the sources are correctly reflected and included in a reference list.	In summary, at least **60%** of the sources are incorrectly reflected and/or not included in reference list.

Overall Feedback about the consistency, technical correctness and congruence between in-text referencing and bibliography:

.....

.....

At the end of this assessment, you should be able to:

- Demonstrate the ability to control database objects.
- Define Structured Query Language (SQL) statements and SQL functions.
- Demonstrate creating and manipulating tables within a database using SQL queries and controls.
- Describe the Procedural Language PL/SQL coding language.
- Illustrate data manipulation using PL/SQL structures.
- Working with PL/SQL cursors.
- Creating and using PL/SQL subprograms.

CASE STUDY

Study the following case study and answer the questions that are based thereon:

ABC DELIVERY SPECIALISTS is a courier service that is fast-paced and competitive. ABC DELIVERY SPECIALISTS pride themselves on two things:

1) Getting their deliveries to their customers on time, and

2) Ensuring that that their packages are delivered safely.

After a current customer analysis, 18% of their customers stated they received their packages late, and 11% said they've received their parcels damaged. The company at present do not make use of a structured database system and feel that implementing a database system will give them the ability to improve and monitor their customers, employees, drivers, billings and deliveries. At present all the data is stored in a flat file system, which needs to be imported into a new database management system.

You have been contracted to perform the design and implementation of a database system for ABC DELIVERY SPECIALISTS. You have decided to implement a solution using Oracle database.

The data in flat files has been provided in the following comma separated value files (csv):

- Billing.csv
- Customers.csv
- Delivery_Items.csv
- Driver.csv
- Driver_Deliveries.csv
- Staff.csv
- Vehicle.csv

You are tasked to code the following:

STATE ALL ASSUMPTIONS you need to develop your answers and queries. Your answers, code and screenshots must be saved in a single Microsoft Word document. Save this document as **"ADDB7311 Assignment – Student Number".**

Question 1 (Marks: 20)

The management of ABC DELIVERY SPECIALISTS requires an Entity Relationship Diagram (ERD) based on the flat files that have been supplied. Your ERD must incorporate all the entities and attributes supplied, as well as establishing the relationships between the entities. A proper design is essential to ensure that the data in the flat files can be imported successfully.

Refer to Marking Rubric at the end of assignment

Question 2 (Marks: 10)

Using the Entity Relationship Diagram (ERD) you have created in **Question 1**, create the tables, and import the values supplied in each of the csv files provided.

Refer to Marking Rubric at the end of assignment

Question 3 (Marks: 10)

ABC DELIVERY SPECIALISTS requires you to create users and grant privileges to use the database. You have been provided with the following details:

Username	Password	Privileges
Tshepo	tmphoabc2023	SELECT ANY TABLE
Mya	mrobertabc2023	INSERT ANY TABLE

Q.3.1	Create the required users and permissions. **Note: Additional research might be required in line with the Oracle XE version installed.**	(8)

Q.3.2	Explain the importance of separation of duties for the different users.	(2)

Refer to Marking Rubric at the end of assignment

Question 4 (Marks: 15)

Q.4.1	Management of ABC DELIVERY SPECIALISTS require a report of the driver's name, driver code, vehicle identification number (VIN) and mileage of the vehicle that was used in the deliveries. In your solution only display the results for a vehicle that has a mileage of less than 80 000 miles.	(10)

Sample Output:

```
----------------------------------------------------
DRIVER:          Jono, Mvuyisi
CODE:            EC1
VIN NUMBER:  1ZA35868540
MILEAGE:         79058
----------------------------------------------------
```

Q.4.2	In **Q.4.1,** you were required to create a solution that will not be called but rather run on ad hoc basis. Explain what database solution you have used to create the report and justify its benefit to ABC DELIVERY SPECIALISTS.	(5)

Refer to Marking Rubric at the end of assignment

Question 5 **(Marks: 25)**

Q.5.1	The Operations Manager of ABC DELIVERY SPECIALISTS requires a report of the staff member who has processed the most deliveries. For the report, create a PL/SQL query indicating the Staff member's id, first name, surname, and a count of deliveries that they have processed.	(10)

Sample Output:

DRIVER ID: 51014

FIRST NAME: Jabu

SURNAME: Xolani

DELIVERIES PROCESSED: 2

Q.5.2	PL/SQL blocks are broken into three (3) sections. Describe each of these sections and how each section has been implemented in the query you created in **Q.5.1.**		(5)
Q.5.3	You would want to ensure that management are able to pull this report on their own.		
	Q.5.3.1	You have suggested an alternative solution using a View. Explain to the Operations Manager how a View works and state a benefit of this solution.	(3)
	Q.5.3.2	Modify your code in **Q.5.1** to use a View. Add necessary comments to aid understanding for the managers.	(7)

Refer to Marking Rubric at the end of assignment

Question 6		**(Marks: 20)**
Q.6.1	You have been tasked with creating a PL/SQL query that will produce a report displaying the customer's full name, phone number, customer email, number of bills allocated to the customer. In your solution, also display the customer rating. The customer receives an Elite rating if the number of bills is greater than or equal to 4. Otherwise, the customer receives a standard rating. All Elite customers will receive a note "Thank you for being our valued customer". ***Refer to Marking Rubric at the end of assignment***	**(15)**

Sample Output:

CUSTOMER NAME: Bob, Smith
CUSTOMER PHONE: 0877277521
CUSTOMER EMAIL: bobs@isat.com
NumberOfBills: 2

CUSTOMER NAME: Sam, Hendricks
CUSTOMER PHONE: 0863257857
CUSTOMER EMAIL: shen@mcom.co.za
NumberOfBills: 5 (ELITE)
Thank you for being our valued customer

CUSTOMER NAME: Jeff, Jones
CUSTOMER PHONE: 0612547895
CUSTOMER EMAIL: jj@isat.co.za
NumberOfBills: 4 (ELITE)
Thank you for being our valued customer

CUSTOMER NAME: Andre, Kerk
CUSTOMER PHONE: 0827238521
CUSTOMER EMAIL: akerk@mcal.co.za
NumberOfBills: 2

CUSTOMER NAME: Larry, Clark
CUSTOMER PHONE: 0834567891
CUSTOMER EMAIL: larc@mcom.co.za
NumberOfBills: 3

CUSTOMER NAME: Nicole, Kerk

CUSTOMER PHONE: 0827238529

CUSTOMER EMAIL: nk@mcal.co.za

NumberOfBills: 1

CUSTOMER NAME: Mel, Hendricks

CUSTOMER PHONE: 0863257852

CUSTOMER EMAIL: melh@mcom.co.za

NumberOfBills: 1

CUSTOMER NAME: Stuart, Jones

CUSTOMER PHONE: 0827238521

CUSTOMER EMAIL: sjones@mcal.co.za

NumberOfBills: 1

CUSTOMER NAME: Catherine, Smith

CUSTOMER PHONE: 0877277523

CUSTOMER EMAIL: cath@isat.com

NumberOfBills: 1

CUSTOMER NAME: Josh, Maverick

CUSTOMER PHONE: 0612547897

CUSTOMER EMAIL: joshm@isat.co.za

NumberOfBills: 1

PL/SQL procedure successfully completed.

Q.6.2	Analyse your code in **Q.6.1**; As an experienced database developer, suggest and briefly explain any two improvements to the code or any two alternatives you could use to produce the same report**.**	***(5)***

Appendix A

MODULE NAME:	MODULE CODE:
ADVANCED DATABASES	ADDB7311

STUDENT NAME:					
STUDENT NUMBER:					
Question 1	**Levels of Achievement**				**Feedback**
Entity Relationship Diagram	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Entities	**6-7**	**4-5**	**1-3**	**0**	
	All entities represented in ERD as per flat files supplied.	**More than half of the entities represented in ERD as per flat file supplied.**	**More than half of entities not represented on ERD as per flat file provided.**	**Not provided**	
Attributes	**6-7**	**4-5**	**1-3**	**0**	
	At least 75% of attributes represented in ERD as per flat files supplied	**At least 50% of attributes represented in ERD as per flat file supplied**	**At least 10% of attributes represented in ERD as per flat file provided**	**Not provided**	
Relationships	**5-6**	**3-4**	**1-2**	**0**	
	At least 75% of relationships correctly identified and implemented in ERD	**At least 50% of relationships correctly identified and implemented in ERD**	**At least 10% of relationships correctly identified and implemented in ERD**	**Not provided**	

Question 2	Levels of Achievement				Feedback
Tables & Data Import	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Database Schema	4-5	3	1-2	0	
	New database schema created; At least 75% of tables created correctly.	New database schema created; At least 50% of tables created correctly.	New database schema created; At least 10% of tables created correctly.	Not provided	
Data values	4-5	3	1-2	0	
	All Data successfully imported into each table from the csv files.	Data imported into each table from csv files; some improvement required	Data imported into some tables from the csv files; major improvements required	Not provided	

Question 3	Levels of Achievement				Feedback
Users & Permissions	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Q.3.1	3-4	2	1	0	
	Users and passwords created successfully; Insignificant to no errors in code.	Users and passwords created successfully; minor errors in code requiring minor modifications	Users and passwords created; major errors in code	Not provided	
Q.3.1	3-4	2	1	0	
	All privileges successfully implemented with insignificant to no errors	Privileges implemented with minor modifications required in code	Privileges implemented with major modifications required in code	Not provided 0	
Q.3.2	2	1	½	0	
	SOD well explained in relation to scenario.	SOD theoretically explained.	SOD partially explained with no appropriate reference to scenario.	Not provided	

Question 4	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Q.4.1. Declarations & Variables	**3**	**2**	**1**	**0**	
	Correct declarations and variables declared.	All variables declared; One variable is inadequate/not declared correctly.	At least one variable declared correctly.	Not provided.	
Q.4.1: Statements	**4-5**	**3**	**1-2**	**0**	
	Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly; All sections of code implemented correctly. .	At least one of the following is inadequate/not implemented: Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly. All sections of code implemented correctly.	At least two of the following are inadequate/not implemented: Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly. All sections of code implemented.	Not provided.	

Q.4.1: Output	2	1	½	0	
	Correct output achieved;	Incorrect output achieved; minor changes;	Incorrect output is achieved; major changes;	Not provided.	
Q.4.2.	4-5	3	1-2	0	
	Database solution correctly identified; Solution adequately explained; Benefit well provided within context.	Database solution correctly identified; explanation and benefit provided within context, however, needs more clarity.	Database solution correctly identified; explanation and benefit provided, however, theoretical and requires more clarity.	Not provided	

Question 5	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Q.5.1. Declarations & Variables	**3**	**2**	**1**	**0**	
	Correct declarations and variables declared.	All variables declared; One variable is inadequate/not declared correctly.	At least one variable declared correctly.	Not provided.	
Q.5.1: Statements	**4-5**	**3**	**1-2**	**0**	
	Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly; All sections of code implemented correctly. .	At least one of the following is inadequate/not implemented: Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly. All sections of code implemented correctly.	At least two of the following are inadequate/not implemented: Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly. All sections of code implemented.	Not provided.	

Q.5.1: Output	2	1	½	0	
	Correct output achieved;	Incorrect output achieved; minor changes;	Incorrect output is achieved; major changes;	Not provided.	
Q.5.2.					
PL/SQL Theory	4-5	3	1-2	0	
	PL/SQL Blocks described, and implementation explained	At least two blocks discussed including their implementation.	At least one block discussed including their implementation.	Not provided	
Q.5.3					
Q.5.3.1: Motivation	3	2	1	0	
	View adequately explained; considering the audience, benefit adequately provided	View adequately explained; but explanation is technical, benefit adequately provided	View explained; but audience not factored, benefit not provided	Not provided	
Q.5.3.2: View code	6-7	4-5	1-3	0	

	All Code provided with insignificant modifications required; runs successfully ; Code to run view provided, runs successfully(4); Comments provided to aid understanding for the user (3).	Code provided with minor modifications required; Some comments provided to aid understanding for the user.	Code provided with major modifications required; Little or no comments provided to aid understanding for the user.	Not provided	

Question 6	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Q.6.1. Declarations & Variables	**3**	**2**	**1**	**0**	
	Correct declarations and variables declared.	All variables declared; One variable is inadequate/not declared correctly.	At least one variable declared correctly.	Not provided.	
Q.6.1: PL/SQL Statements	**4-5**	**3**	**1-2**	**0**	
	Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly; All sections of code implemented correctly. .	At least one of the following is inadequate/not implemented: Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly. All sections of code implemented correctly.	At least two of the following are inadequate/not implemented: Correct cursor implemented; SELECT statement correctly used; Correct tables used and linked correctly. All sections of code implemented.	Not provided.	
Q.6.1: Decision Statements	**4-5**	**3**	**1-2**	**0**	

	Correct decision statement implemented;	decision statement implemented; minor changes required to produce desired output	decision statement implemented; major changes required to produce desired output	Not provided	
Q.6.1: Output	2	1	½	0	
	Correct output achieved;	Incorrect output achieved; minor changes;	Incorrect output is achieved; major changes;	Not provided.	
Q.6.2	4-5	3	1-2	0	
Improvements / Alternatives	Two improvements/ alternatives suggested and adequately explained.	Two improvements/ alternatives suggested however, explanations are inadequate.	Two improvements/ alternatives suggested however, no explanation provided	Not provided	