MODULE NAME:	MODULE CODE:
ADVANCED DATABASES	ADDB7311

ASSESSMENT TYPE: ASSIGNMENT 1 (PAPER ONLY)
TOTAL MARK ALLOCATION: 100
TIME ALLOWANCE: 15 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 and Property Rights Policy (IIE023), as well as any rules and regulations published in the student portal.

INSTRUCTIONS:

1. *The research component of the assessment must be typed as well as adequately and correctly referenced.*
2. *Where images are used for reference, they must be included in the submission in a separate document.*
3. ***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.***
4. ***Please ensure you attach an originality report to your assignment if required.***
5. ***Make a copy of your assignment before handing it in.***
6. *Consult the marking rubric to familiarise yourself with the assessment criteria to ensure you understand all the submission requirements.*
7. *This is an individual project unless stated otherwise in the brief.*
8. *Keep a clear copy of your project in the form of a digital back-up/a clear photocopy/a photograph.*
9. *Pay careful attention to the submission format and additional requirements as stated in the brief. Make sure your submission is neat and presented professionally.*
10. *All submissions must include a stamped and signed cover sheet, your name and student number.*
11. *Follow all instructions on the brief front page including the additional instructions added below.*

ACADEMIC HONESTY DECLARATION

Please complete the Academic Honesty Declaration below.
Please note that your assessment will not be marked, and you will receive 0% if you have not completed ALL aspects of this declaration.

Declaration

	SIGN
I have read the assessment rules provided in this declaration.	
This assessment is my own work.	
I have not copied any other student's work in this assessment.	
I have not uploaded the assessment question to any website or App offering assessment assistance.	
I have not downloaded my assessment response from a website.	
I have not used any AI tool without reviewing, re-writing, and re-working this information, and referencing any AI tools in my work.	
I have not shared this assessment with any other student.	
I have not presented the work of published sources as my own work.	
I have correctly cited all my sources of information.	
My referencing is technically correct, consistent, and congruent.	
I have acted in an academically honest way in this assessment.	

Practical Assignment Outcomes

Learning Units 1 to 4 will be covered in this assignment.

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.*

Case Study

Study the following case study and answer the questions that follow:

CHEETAH DELIVERIES operates in the dynamic and competitive courier service industry, emphasising two key priorities:

- Timely delivery of packages to customers.
- Ensuring the secure and safe delivery of packages.

Following a recent customer analysis, 18% of their clientele reported receiving their shipments behind schedule, and 11% noted instances of parcel damage. Currently lacking a structured database system, the company recognises the need for implementation. They believe that adopting a database system will empower them to enhance and monitor various aspects of their operations, including customer relations, employee management, driver performance, billing processes, and overall delivery efficiency. Presently, all data is stored in a flat file system, necessitating a transition to a new, organised relational database management system.

You have been commissioned to lead the design and implementation of a database system tailored for CHEETAH DELIVERIES, and you have opted to implement a solution utilising the Oracle database platform.

The data in flat files has been provided below:

Customers

CUSTOMER_ID	FIRST_NAME	SURNAME	ADDRESS	PHONE_NUM	EMAIL
11011	Bob	Smith	18 Water rd	0877277521	bobs@isat.com
11012	Sam	Hendricks	22 Water rd	0863257857	shen@mcom.co.za
11013	Larry	Clark	101 Summer lane	0834567891	larc@mcom.co.za
11014	Jeff	Jones	55 Mountain way	0612547895	jj@isat.co.za
11015	Andre	Kerk	5 Main rd	0827238521	akerk@mcal.co.za
11016	Wayne	Smith	13 Water rd	0877277522	ws@isat.com
11017	John	Hendricks	29 Water rd	0863257851	jhen@mcom.co.za
11018	Sally	Clark	111 Summer lane	0834567892	sallyc@mcom.co.za
11019	Bridget	Bitterhour	125 Mountain way	0612547896	bb@isat.co.za
11111	Nicole	Kerk	175 Main rd	0827238529	nk@mcal.co.za
11112	Catherine	Smith	19 Water rd	0877277523	cath@isat.com
11113	Mel	Hendricks	5 Water rd	0863257852	melh@mcom.co.za
11114	Lucy	Du Plessis	221 Summer lane	0834567892	ldup@mcom.co.za
11116	Josh	Maverick	155 Mountain way	0612547897	joshm@isat.co.za
11117	Stuart	Jones	35 Main rd	0827238521	sjones@mcal.co.za

Billing

BILL_ID	CUSTOMER_ID	STAFF_ID	BILL_DATE
800	11011	51011	06-Sep-22
801	11012	51013	07-Sep-22
802	11014	51015	10-Nov-22
803	11015	51012	09-Dec-22
804	11013	51014	09-Dec-22
805	11111	51011	06-Sep-22
806	11012	51013	07-Sep-22
807	11014	51015	10-Nov-22
808	11015	51012	09-Dec-22
809	11113	51018	09-Dec-22
810	11011	51011	06-Sep-22
811	11012	51013	07-Sep-22
812	11014	51016	10-Nov-22
813	11117	51012	09-Dec-22
814	11013	51014	09-Dec-22
815	11012	51111	06-Sep-22
816	11012	51019	07-Sep-22
817	11014	51015	10-Nov-22
818	11112	51012	09-Dec-22
819	11013	51014	09-Dec-22
820	11116	51019	09-Dec-22

Delivery_Items

DELIVERY_ITEM	DESCRIPTION	STAFF_ID
71011	House relocation	51011
71012	Delivery of specialized consignments	51017
71013	Delivery of specialized consignments	51015
71014	Office relocation	51012
71015	Delivery of specialized consignments	51014

Driver

DRIVER_ID	FIRST_NAME	SURNAME	DRIVER_CODE	PHONE_NUM	ADDRESS
81011	Buthelezi	Marshall	C1	0725698547	18 Leopard creek
81012	Tina	Mtati	C	0636984178	12 Cape rd
81013	Jono	Mvuyisi	EC1	0725648965	15 Circle lane
81014	Richard	Smith	C1	0623116598	18 Beach rd
81015	Brett	Smith	EB	0883521457	55 Summer lane

Driver_Deliveries

DRIVER_DELIVERY_ID	VIN_NUMBER	DRIVER_ID	DELIVERY_ITEM_ID
91011	1ZA55858541	81011	71011
91012	1ZA35858543	81012	71013
91013	1ZA17851545	81011	71015
91014	1ZA35868540	81013	71015
91015	1ZA15851545	81014	71012

Staff

STAFF_ID	FIRST_NAME	SURNAME	POSITION	PHONE_NUM	ADDRESS	EMAIL
51011	Sally	Du Toit	Logistics	0825698547	18 Main rd	sdut@isat.com
51012	Mark	Wright	CRM	0836984178	12 Cape Way	mwright@isat.com
51013	Harry	Sheen	Logistics	0725648965	15 Water Street	hsheen@isat.com
51014	Jabu	Xolani	Logistics	0823116598	18 White Lane	jxo@isat.com
51015	Roberto	Henry	Packaging	0783521451	55 Cape Street	rhenry@isat.com
51016	Pat	Durant	Logistics	0825698542	1 Main rd	pd@isat.com
51017	Steve	Maritz	CRM	0836984173	2 Cape Way	sm@isat.com
51018	Maxwell	Dube	Logistics	0725648964	5 Water Street	max@isat.com
51019	Shane	Mane	Logistics	0823116595	8 White Lane	smane@isat.com
51111	Bob	Truth	Packaging	0783521456	35 Cape Street	btruth@isat.com

Vehicle

VIN_NUMBER	VEHICLE_TYPE	MILEAGE	COLOUR	MANUFACTURER
1ZA55858541	Cutaway van chassis	115352	RED	MAN
1ZA51858542	Flatbed truck	315856	BLUE	ISUZU
1ZA35858543	Medium Standard Truck	789587	SILVER	MAN
1ZA15851545	Flatbed truck	555050	WHITE	TATA
1ZA35868540	Cutaway van chassis	79058	WHITE	ISUZU
1ZA65858541	Cutaway van chassis	215352	RED	MAN
1ZA61858542	Flatbed truck	215856	BLUE	ISUZU
1ZA65858543	Medium Standard Truck	889587	SILVER	MERC
1ZA65851545	Flatbed truck	155050	WHITE	MAN
1ZA65868540	Cutaway van chassis	19058	WHITE	ISUZU
1ZA75858541	Cutaway van chassis	315352	RED	MAN
1ZA71858542	Flatbed truck	115856	BLUE	ISUZU
1ZA75858543	Medium Standard Truck	989587	SILVER	MAN
1ZA17851545	Flatbed truck	755050	WHITE	TATA
1ZA75868540	Cutaway van chassis	29058	WHITE	ISUZU
1ZA85858541	Cutaway van chassis	515352	RED	MERC
1ZA81858542	Flatbed truck	715856	BLUE	ISUZU
1ZA85858543	Medium Standard Truck	789587	SILVER	MAN
1ZA85851545	Flatbed truck	955050	WHITE	TATA
1ZA85868540	Cutaway van chassis	39058	WHITE	MERC

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 Practical Assignment 1 – Student Number"**.

Refer to Appendix A at the end of the assignment for all Marking Rubrics.

Question 1 **(Marks: 20)**

An Entity Relationship Diagram (ERD) based on the above flat files is needed for presenting to the management of CHEETAH DELIVERIES. All of the provided entities and attributes, as well as the relationships between the entities, must be included in your Entity Relationship Diagram. To guarantee that the data in the flat files may be effectively imported, a suitable design is necessary.

Question 2 **(Marks: 10)**

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

Question 3 **(Marks: 10)**

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

Username	Password	Privileges
John	Johnch2024	SELECT ANY TABLE
Hannah	Hannahch2024	INSERT ANY TABLE

Q.3.1	Create the required users and permissions.	(8)

	Note: Additional research might be required in line with the installed Oracle XE version.	
Q.3.2	Explain the importance of separation of duties for the different users.	(2)

Question 4 (Marks: 15)

Q.4.1	Management of CHEETAH DELIVERIES requires 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.	Explain the differences between a flat file database model and a relational model. Elaborate why you believe a relational model will better suit CHEETAH DELIVERIES.	(5)

Question 5 (Marks: 25)

Q.5.1	The Operations Manager of CHEETAH DELIVERIES 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 count of the deliveries that they have processed.	(10)

Sample Output:

STAFF ID: 51014

FIRST NAME: Jabu

SURNAME: Xolani

DELIVERIES PROCESSED: 2

Q.5.2	PL/SQL blocks consist of three components. Explain each of these sections, along with how the query you constructed in **Q.5.1** implements them.		(5)
Q.5.3	You would want to ensure that management is 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 the managers' understanding. Provide a screenshot of your output.	(7)

Question 6 (Marks: 20)

Q.6.1	You have been tasked with showcasing your understanding of PL/SQL cursors and their attributes. Complete the following: 1. Motivate how and why you would use: a. Implicit cursor attributes b. Explicit cursor attributes 2. Provide an example and working code based on the case study to show how to implement any one attribute of each type of cursor. **Note: Your motivation should refer and be linked to your example code. Additional research might be required.**	(15)
Q.6.2	Explain how you could make use of a sequence in your database. Provide code to create the sequence you propose and show the relevant output.	(5)

PRACTICAL ASSIGNMENT : Appendix A

Assessment Sheet (Marking Rubric)

Please note: Tear off this section and attach it to your work when you submit it!

MODULE NAME: ADVANCED DATABASES	**MODULE CODE: 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 is imported into each table from CSV files; some improvement is 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 & Passwords	Users and passwords were created successfully; Insignificant to no errors in code.	Users and passwords were 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**	
Privileges implementation	All privileges successfully implemented with insignificant. to no errors	Privileges implemented with minor modifications required in the code	Privileges implemented with Major modifications required in code	Not provided 0	
Q.3.2	**2**	**1**	**½**	**0**	
Segregation of Duties.	SOD is well explained in relation to the scenario.	SOD is theoretically explained.	SOD partially explained with no appropriate reference to the scenario.	Not provided	

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

Q.4.1:	**2**	**1**	**½**	**0**	
Output	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**	
Discussion	The flat file model and relational model are well explained, and reasoning is given as to why the relational model would be beneficial.	The flat file model and relational model are well explained within context. However, needs more clarity.	The flat file model and relational model are well explained, but there is no reasoning on why the relational model would be beneficial in the scenario.	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 was 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 were used and linked correctly. All sections of code are implemented correctly.	At least two of the following are inadequate/not implemented: Correct cursor implemented; SELECT statement correctly used; Correct tables were 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 were discussed, including their implementation.	At least one block was discussed, including their implementation.	Not provided	
Q.5.3.1: Motivation	**3**	**2**	**1**	**0**	
	View adequately explained; considering the audience, benefit adequately provided	The view is adequately explained, but the explanation is technical, and the benefit is 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 were provided to aid the user's understanding (3).	Code provided with minor modifications required; Some comments were 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. Motivation (Theory)	**3**	**2**	**1**	**0**	
Implicit cursor attributes	Motivation provided, well explained, and linked to case study.	Motivation provided; minor changes required.	Motivation provided; major improvements required.	Not provided.	
Q.6.1: .Motivation (Theory)	**3**	**2**	**1**	**0**	
Explicit cursor attributes	Motivation provided, well explained and linked to case study.	Motivation provided; minor changes required.	Motivation provided; major improvements required.	Not provided.	
Q.6.1: Example Code:	**4-5**	**3**	**1-2**	**0**	
Implicit Cursor Attribute	• Any correct Implicit Cursor attribute implemented. • Relevant to Case study. • Linked to motivation. • Code functions well and is useful. • Evidence of adequate research and understanding showing.	Minor changes required.	Major changes required	Not provided.	

Q.6.1: **Example Code:**	**4-5**	**3**	**1-2**	**0**	
Explicit Cursor Attribute	• Any correct Explicit Cursor attribute implemented. • Relevant to Case study. • Linked to motivation. • Code functions well and is useful. • Evidence of adequate research and understanding showing.	Minor changes required.	Major changes required	Not provided.	
Q.6.2 : Sequences	**3 – 4**	**2**	**1**	**0**	
	Sequences are explained well, and a good example is given and coded with the correct output;	Sequences are explained adequately. However, the example given is too generic.	Sequences are explained, but the sequence is coded incorrectly	Not provided	

[TOTAL MARKS: 100]