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. ***Make a copy of your assignment before handing it in.***
3. *Assignments must be typed unless otherwise specified.*
4. *All work must be adequately and correctly referenced.*
5. *Begin each section on a new page.*
6. *Follow all instructions on the assignment cover sheet.*
7. *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:

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CASE STUDY

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

COINS 4 AFRICA is a privately-owned online store producing high quality currency and commemorative coins. COINS 4 AFRICA has grown from strength to strength due to excellent service and a wide variety of coins and delivery options which at present is all stored in a flat file system. The company at present is under pressure due to the increase in customers, employees, deliveries, coins and invoices.

You have been contracted to perform the design and implementation of a database for COINS 4 AFRICA. The company opened their doors to the public five years ago and requires a database to manage all areas of their business.

The data in flat files has been provided:

CUSTOMER TABLE

CUSTOMER_ID	FIRST_NAME	SURNAME	ADDRESS	CONTACT_NUMBER	EMAIL
11011	Mat	Smith	18 Water Rd	0877277521	msmith@isat.com
11012	Julien	Hendricks	22 Water Rd	0863257857	jh@mcom.co.za
11013	Sam	Clark	101 Summer Lane	0834567891	sclark@mcom.co.za
11014	Kevin	Jones	55 Mountain Way	0612547895	kj@isat.co.za
11015	Lucy	Williams	5 Main Rd	0827238521	lw@mcal.co.za

EMPLOYEE TABLE

EMPLOYEE_ID	FIRST_ NAME	SURNAME	CONTACT_ NUMBER	DEPARTMENT	ADDRESS	EMAIL
emp101	Xander	Davis	0877277521	sales	10 Main Road	xand@isat.com
emp102	Steven	Marks	0837377522	marketing	18 Water Road	sm@isat.com
emp103	Jessica	Andrews	0817117523	sales	21 Circle Lane	ja@isat.com
emp104	Wayne	Dryer	0797215244	sales	1 Sea Road	dryer@isat.com
emp105	Xolani	Samson	0827122255	manager	12 Main Road	xosam@isat.com

COIN_DELIVERY TABLE

DELIVERY_ID	DELIVERY_NOTES	DISPATCH_DATE	DELIVERY_DATE
511	Double packaging requested	10 May 2021	15 May 2021
512	Delivery to work address	12 May 2021	15 May 2021
513	Signature required	12 May 2021	17 May 2021
514	No notes	12 May 2021	15 May 2021
515	Birthday present wrapping required	18 May 2021	19 May 2021
516	Delivery to work address	20 May 2021	25 May 2021
517	Double packaging requested	25 May 2021	27 May 2021

COIN TABLE

COIN_ID	PRODUCT	PRICE	QTY
7111	1oz Gold Kruger Rand	R 5 999	10
7112	1oz Silver Kruger Rand	R 12 999	8
7113	Gold Big 5 Uncirculated	R 15 999	8
7114	Silver Big 5 Pack	R 7 999	5
7115	1oz Gold Palaeontology	R 11 999	15
7116	1oz Silver Palaeontology	R 7 999	12

COIN_RETURNS TABLE

RETURN_ID	RETURN_DATE	REASON	CUSTOMER_ID	COIN_ID	EMPLOYEE_ID
ret001	25 May 2021	Customer not satisfied with product	11011	7116	emp101
ret002	25 May 2021	Product missing part	11013	7114	emp103

INVOICE TABLE

INVOICE_NUM	CUSTOMER_ID	INVOICE_DATE	EMPLOYEE_ID	COIN_ID	DELIVERY_ID
8111	11011	15 May 2021	emp103	7111	511
8112	11013	15 May 2021	emp101	7116	512
8113	11012	17 May 2021	emp101	7112	513
8114	11015	17 May 2021	emp102	7111	514
8115	11011	17 May 2021	emp102	7115	515
8116	11015	18 May 2021	emp103	7115	516
8117	11012	19 May 2021	emp105	7112	517
8118	11013	19 May 2021	emp105	7112	517

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)

Management of COINS 4 AFRICA require 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.

Question 2 (Marks: 5)

One of the junior database developers has encountered some errors in a query they are working on. The junior developer has requested some assistance from you to solve their errors.

Consider the following PL/SQL query:

```
turn serveroutput on
declaring
  cust customer.first_name%Type;
  prod product.product%Type;
cursor info is
  select cust.first_name || ', ' || cust.surname CUSTOMER, p.product
  from customer cust, billing b, product_billing pb, product p
  where cust.customer_id = b.customer_id
  where b.bill_id = pb.bill_id
  and p.product_id = pb.product_id
  and p.price > 10000
  ordering by p.price;
begins
for rec in info
looping
```

```
 cust:= rec.CUSTOMER;
 prod:= rec.product;
 dbms_output.put_line('CUSTOMER:    ' || cust || chr(13) ||
                      'PRODUCT:     ' || prod);
 dbms_output.put_line('-------------------------------------');
end loop;
end;
```

Q.2.1	The code above has errors. Identify the errors and rewrite the code so that it would produce a valid output for the junior database developer.	(5)

Question 3 (Marks: 15)

Using the Entity Relationship Diagram you have created in Question 1, create the tables and insert the values supplied in each table.

Question 4 (Marks: 5)

Create a SQL query to display the combined customer name, employee id, delivery notes, coin ordered and invoice number. In your query only display the results that have any invoice date from 18th May 2021.

Sample Output:

CUSTOMER	EMPLOYEE_ID	DESCRIPTION	COIN	INVOICE_NUM	INVOICE_DATE
Lucy, Williams	emp103	Delivery to work address	1oz Gold Palaeontology	8116	18-MAY-21
Julien, Hendricks	emp105	Double packaging requested	1oz Silver Kruger Rand	8117	19-MAY-21
Sam, Clark	emp105	Double packaging requested	1oz Silver Kruger Rand	8118	19-MAY-21

Question 5 (Marks: 10)

Create a View to display the employee id, first name and surname. In your query include the coin price and a 10% commission for the sales made by the employees.

Sample Output:

EMPLOYEE_ID	FIRST_NAME	SURNAME	COIN_PRICE	COMMISSION
emp105	Xolani	Samson	R 25998	R 2599.8
emp102	Steven	Marks	R 17998	R 1799.8
emp101	Xander	Davis	R 20998	R 2099.8
emp103	Jessica	Andrews	R 17998	R 1799.8

Question 6 (Marks: 10)

Create a PL/SQL query to display the combined customer name, coin purchased, coin price and the delivery notes. In your query only display the coins purchased with a price less than or equal to R 8 000.

Sample Output:

CUSTOMER: Mat, Smith
COIN: 1oz Gold Kruger Rand
PRICE: R 5 999
NOTES: Double packaging requested

CUSTOMER: Lucy, Williams
COIN: 1oz Gold Kruger Rand
PRICE: R 5 999
NOTES: No notes

CUSTOMER: Sam, Clark
COIN: 1oz Silver Palaeontology
PRICE: R 7 999
NOTES: Delivery to work address

Question 7 (Marks: 10)

Create a PL/SQL query to display the customer name, employee name and the coin product returned. In your query also display the reason why the customer returned the coin along with the return date.

Sample Output:

CUSTOMER: S.Clark
EMPLOYEE: J.Andrews
PRODUCT: Silver Big 5 Pack
RETURN REASON: Product purchased was incorrect
RETURN DATE: 25 May 2021

CUSTOMER: M.Smith
EMPLOYEE: X.Davis
PRODUCT: 1oz Silver Palaeontology
RETURN REASON: Customer not satisfied with product
RETURN DATE: 25 May 2021

Question 7 Mark Allocation	**Levels of Achievement**				**Feedback**
	Excellent	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Correct declare statements with variables used.	**5**	**3 – 4**	**1 – 2**	**0**	
Solution includes correct PL/SQL statement.	**3**	**2**	**1**	**0**	

Correct table statements and output achieved.	**2**	**1**	**0**	**0**	

Question 8 **(Marks: 10)**

Create a PL/SQL query to display the invoice number, coin name, coin price and delivery notes. In your query determine whether the coin product is a premium or standard product. All coins that are valued at R10 000 and above are considered Premium coins. In your query use invoice number 8115 only.

Sample Output:

INVOICE NUMBER: 8115
COIN PRODUCT: 1oz Gold Palaeontology
PRICE: R 11999
DELIVERY NOTE: Birthday present wrapping required
COIN TYPE: Premium

Question 9 **(Marks: 15)**

Create a PL/SQL query to display the customer name, coin id and coin price. In your query display a 25% discount for the invoice dates 18 May 2021 to 20 May 2021.

Sample Output:

FIRST NAME: Lucy
SURNAME: Williams
COIN ID: 7115
PRICE: R 11 999
DISCOUNT: R 8 999.25
DELIVERY DATE: 25-MAY-21
INVOICE DATE: 18-MAY-21

FIRST NAME: Julien
SURNAME: Hendricks
COIN ID: 7112
PRICE: R 12 999
DISCOUNT: R 9 749.25
DELIVERY DATE: 27-MAY-21
INVOICE DATE: 19-MAY-21

FIRST NAME: Sam
SURNAME: Clark
COIN ID: 7112
PRICE: R 12 999
DISCOUNT: R 9 749.25
DELIVERY DATE: 27-MAY-21
INVOICE DATE: 19-MAY-21

Appendix A

Assessment Sheet (Marking Rubric)

MODULE NAME:	MODULE CODE:
ADVANCED DATABASES	ADDB7311

STUDENT NAME:
STUDENT NUMBER:

Question 1 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Entities represented in the ERD as per the flat file supplied.	6 – 7	4 – 5	2 – 3	0 – 1	
Attributes represented in the ERD as per the flat file supplied.	6 – 7	4 – 5	2 – 3	0 – 1	

Relationships represented in the ERD as per the flat file supplied.	**6**	**4 – 5**	**2 – 3**	**0 – 1**	

Question 2 Mark Allocation	**Levels of Achievement**				**Feedback**
	Excellent	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Correctly identified the errors present in the supplied code.	**4 – 5**	**3 – 4**	**2 – 1**	**0**	

Question 3 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
New database schema created and tables created correctly.	7 – 6	4 – 5	2 – 3	0 – 1	
Insert statements per table inserted correctly.	8 – 6	4 – 5	2 – 3	0 – 1	

Question 4 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Correct select statements used.	**2**	**1**	**0**	**0**	
Correct tables and where statements used.	**3**	**1 – 2**	**0**	**0**	

Question 5 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
View created correctly.	5	3 – 4	1 – 2	0	
Correct SQL statements and tables used.	5	3 – 4	1 – 2	0	

Question 6 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Correct PL/SQL statements used.	5	3 – 4	1 – 2	0	
Correct tables used and output achieved.	5	3 – 4	1 – 2	0	

Question 7 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Correct declare statements with variables used.	5	3 – 4	1 – 2	0	
Solution includes correct PL/SQL statement.	3	2	1	0	
Correct table statements and output achieved.	2	1	0	0	

Question 8 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Correct declare statements with variables used.	5	3 – 4	1 – 2	0	
Solution includes correct PL/SQL statement.	3	2	1	0	
Correct table statements and output achieved.	2	1	0	0	

Question 9 Mark Allocation	Levels of Achievement				Feedback
	Excellent	Good	Developing	Poor	
	Score Ranges Per Level (½ marks possible)				
Correct declare statements with variables used.	6	3 – 5	1 – 2	0	
Solution includes correct PL/SQL statement.	3	2	1	0	
Correct table statements, output and date range.	6 – 5	4 – 3	2 – 3	0 – 1	

[TOTAL MARKS: 100]