



12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold the book in half and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiner will be charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

1	Student Number	170 1153
2	Title of Examination Paper	database management systems
3	Module Code	ACCA5014
4	Date and Time of Examination	09/03/19 9:00AM
5	Examination Venue	IQ building 310
6	Seat Number	6024
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use
1	20.25
3	18.5
4	10
Total	48.75

(Gweler yr ochr arall am y fersiwn Cymraeg)

6.75

2) ALTER TABLE TwoBooking
ADD CONSTRAINT PK_TwoBooking PRIMARY KEY (BookingRef)

iii) ALTER TABLE Tutor/Booking C
ADD CONSTRAINT FK_Tutor FOREIGN KEY (Tutor/NO)
REFERENCES Tutor (Tutor/NO)

1

✓
messy other 2

(AIV) CREATE TABLE TutorSubject (

~~TutorNo CHAR(4) CONSTRAINT PRIMARY KEY~~
~~PK_TutorSubject~~

~~CONSTRAINT~~
~~NOT NULL~~

TutorNo CHAR(4) [↓] CONSTRAINT PK_TutorSubject
 PRIMARY KEY

CONSTRAINT CHK_TutorNo
 CHECK (TutorNo LIKE ('T' || [0-9][0-9][0-9])),

~~Subj~~
~~CREATE TABLE~~

incorrect PK
 missing PKs

SubjectID INT(4) NOT NULL,

KSLevel INT(2), ~~NOT NULL~~,

ALevel INT(2), ~~NOT NULL~~,

HELevel INT(2),

MinHourlyRate DECIMAL NOT NULL,

MaxHourlyRate DECIMAL NOT NULL,

);

16ii) `SELECT (TutorNo, FIRST Name, Surname, Email, PhoneNo)
FROM Tutor WHERE DBSEpiryDate
31/06/19 && DBSEpiryDate >
31/06/19`
ORDER BY (DBSEpiryDate);

↑
unperson
AND
✓ (2)

16iii) `INSERT 'Pending DBS check' INTO Tutor (Status)
WHERE DBSEpiryDate <= GETDATE();`

not quite 0.5

16iiii) `SELECT MAX (HourlyRate) FROM Tutor/Booking;
SELECT MIN (HourlyRate) FROM Tutor/Booking;
SELECT AVG (HourlyRate) FROM Tutor/Booking;`

(2)
can be written as 1 stat.

20/14

Q1-20.2

3)A Four examples of security threats are
Theft of equipment - If equipment was stolen
the information on the equipment could be compromised.

Improper security settings - If security wasn't configured
correctly people could gain access to parts
of the database outside of their authorisation.

Compromised user account - If a user account was
compromised the account could be used
to gain unauthorised access to the database.

Poor data integrity - If data integrity was
poor transactions could fail due to inaccurate
information causing performance issues.

(6)

36)

I. authentication can be used to determine who if someone is who they say they are then authentication can be used to verify they have correct access privileges.

II. access controls and user privileges can be used to deny or allow users to perform ~~or~~ actions or view certain parts of the database. for example Bob in marketing may be allowed to select the staff table but he may not be allowed to insert. this is done by

GRANT SELECT ON staff TO user 'Bob'; (7)

III. views can be used to hide certain columns in a table from unauthorised users for example Bob may require a list of staff for a fire drill but does not require to see the staff salary so this should be hidden using a view

CREATE VIEW ~~for~~ fireDrill
SELECT staffID, firstName, surname FROM staff

);

3 (7)

3) CREATE VIEW PersonalTutorsC

SELECT T.TutorNO, FIRSTNAME, SURNAME, CITY,
 S.SUBJECTID, TS.KSLEVEL, TS.ALLEVEL, TS.HELEVEL,
 TS.MIN. hourly rate, TS.MAX hourly rate

FROM Tutor

JOIN Tutor ON TutorSubjects = T.Tutors not quite right

];

missed join
and where

(5.5)

Q3 - 18.5
 18 1/2

4)

A) A - Atomicity ✓

C - consistency ✓

(1)

I - Independence ✗

D - ✗

b) Concurrency control makes sure that data
 has been put in the correct place and
 is accurate so that performance of the
 database doesn't decrease. ✗

(0)

c)

i) Lost updates - If updates are done in the
 incorrect order then they may not be added
 to the database. not quite

(2)

Inconsistent analysis - If a user requests some
 data while data is being added then they will
 be receiving old data therefore when the next
 person requests the same data it will be different.

3) C) JLL

Time	T ₁	T ₂	balx (£500)
T ₁		begin trans	500
T ₂	begin trans	read balx	500
T ₃	read balx	balx = balx + 100	500
T ₄	balx = balx - 50	write balx	500
T ₅		commit	600
T ₆	write balx		600
T ₇	commit		550 450

The transactions are running at different times so when T₁ requests the balance it's 500 whereas T₂ hasn't yet committed its deposit of 100 which would then make it 600 so when T₁ is committing the balance is actually 600 and not 500 making the information inconsistent. So when T₁ commits its making balx which it thinks is 500 - 50 making the final balance 450 where in reality with T₂ deposit the final balance should be 550. but as they are run at different times this information is inconsistent.

30.

I

T₂ T₃ T₄ all need to be redone as the transaction was before was ~~begin~~ hasn't yet committed making the information they will requesting inaccurate.

302

- I. T_3 needs to be rolled as the checkpoint runs in the middle of its transaction.
- II. T_3 needs to be undone as it requested the information before the checkpoint. Also T_1 needs to be rolled as it failed.
- III. T_3 and T_2 are not effected by the crash as they run before T_1 (2)

Q4-10

10

