



12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing 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.**

SURNAME: leewer

FORENAME(S): Ashley G.

1	Student Number	AR198066
2	Title of Examination Paper	Database management Systems
3	Module Code	ACCA501L
4	Date and Time of Examination	09.05am 9/5/19
5	Examination Venue	grauig 862
6	Seat Number	
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use
1	20
2	19
3	19
Total	58

(Gweler yr ochr arall am y fersiwn Cymraeg)

Q1. use PersonalTutor db
go

Create table TutorBooking (

BookingRef int Not Null,

BookingDate Date Not Null,

TutorNo int Not Null,

StudentNo int Null, Unique,

SubjectID Varchar (10) Not Null,

SubjectLevel int Not Null,

HourlyRate Money Not Null, check (hourlyRate != 0),

);

At end of page

Patronage Key?
asking for

Q1. ii. Alter table TutorBooking
Add Constraint [fk_BookingRef] foreign key BookingRef (BookingRef),
Add Constraint [fk_TutorNo] foreign key References Tutor (TutorNo),
Add Constraint [fk_StudentNo] foreign key References Student (StudentNo),
Add Constraint [fk_SubjectID] foreign key References Subject (SubjectID),
);

Q1. iii. use PersonalTutor DB
go

Create table TutorSubject (

TutorNo int not null Constraint [fk_tutorNo] foreign key
References Tutor (TutorNo), check (tutor != 0),

Title Varchar (10) Not Null

for

SubjectID Varchar (10) Not Null Constraint [fk_SubjectID]
foreign key References subject (SubjectID),

KSLever Varchar (5) Null,

A Level Varchar (5) Null,

HE Level Varchar (5) Null,

MinHourlyRate Decimal (5,2) Not Null,

MaxHourRate Decimal (5,2) Not Null,

);

Q1, iii continued

Constraint [Pk_TutorNo] Primarykey (TutorNo),
 Constraint [Pk_SubjectID] Primarykey (SubjectID);

Q1 b, i, Use Personal tutors DB
 Go

Select TutorNo, FirstName, Email, PhoneNo,
 from Tutor,
 where DBSExpiryDate After 'May' 'June',
 go

ii, Use Personal tutor DB
 go

Alter Table Tutor,
 where Status = 'Expired',
 to 'Pending DBS check'.

iii, Use Personal tutor DB
 go

Average:

min Select MinhourlyRate,
 from tutorSubject,
 orderby Desc,

Select MinhourlyRate * MaxhourlyRate
 from tutorSubject

max Select MaxhourlyRate
 from tutorSubject,
 order by ASC,

Q2, a) internal schema relates the physical database storage, and how the data is stored.

external schema refers to the views a user sees when ~~using the~~ accessing the database.

Conceptual schema relates data storage, and is where data validation, and Constraints should be kept.

b, i) the purpose of an Index within a database, is to increase query runtime. often used when a database is distributed between several physical location. data stored at a location would have a better queries return rate

ii) before implementing indexes, the requirement for creating the Index must be checked for. the need for faster query returns as creating unnecessary indexes may have a detrimental effect on the database.

Data repetition occurs when creating an Index, so when a new entry is added onto an Indexed table, a new entry is added onto the Index, and the Index has to be re-indexed, which is a major task when on a large database. using up valuable database resources.

Also primary and any fields named as unique are already Indexed so there is no need to Index these fields.

the types of indexes available are, Index, and Clustered Index

iii. On the tutor table I would create a clustered Index on the Firstname, Surname, Email, PhoneNo and DBS Expirydate.

this is to increase performance on this table as these are the fields that would be the most commonly queried. Also, New data into these fields would only be entered when a new employee starts with the business and so would rarely need updating, which removes the frequency of the Index having to be re-indexed.

Use Personal tutors DB

Go

Create Index (Firstname, Surname, Email, PhoneNo, DBS Expirydate.
From Tutor,

go

γ_1

I would create a secondary index on the column 'Status' on the tutor table to increase the efficiency of data retrieval on this field.

Creating this secondary Index would allow faster notifications of any Invalid or soon to expire DBS checks. As this is a time sensitive issue. And if any tutor with an Invalid DBS would not be able to teach his lessons to the students, which would have a detrimental effect on the business.

✓

Use Personal tutors DB

50

insert into Tutor,

values (06, "mr", "John", "Pawies, Null, Null, Null, Null, Null, Null, Null, }.

Compute

insert into Student,

Values (25, "Mr", "Martin", "Thomas", Null, Null, Null, Null, Null,
Null, Null, Null, Null),

Commit

insert into Subject,

Values (100, "Programming").

Commit

Question No.

V,

use Personal tutors

go

Insert into BookedLesson

Values (1, '30-may-2019', 120, Null, Null, Null, Null),

Values (2, '31-may-2019', 120, Null, Null, Null, Null),

Commit.

BookedLesson

19

A. Some of the risks to a business of having an insecure database are:

that, the risk of having a 3rd party or ex-employee gaining access to sensitive information ✓

fraud, there is a risk of having rival companies to gain access to insecure information, and damaging the business. ✓

loss, having a risk to a database is the loss of information. the cause of this can be natural, or malicious. ✓

Corruption is a risk of having an insecure database as a 3rd party could gain access to the database. Or the cause of corruption could be from faulty backup and retrieval procedures. ✓

B. Authentication, can be used as a form of tracking a person's activities upon a database, and also limiting access to sensitive information, as a user would be required to log in with valid username + password to gain access to sensitive information. ✓

Access Controls and user privileges.

Privileges can be set on a database to restrict access to certain tables or even fields on a specific table. this controls what a user sees when accessing or executing a query. ✓

b, Views. Views can be ~~se~~ configured to limit what a user can access, this increases the security on the database

using all methods above adds to the security of the database as users access to sensitive data is easily tracked and monitored on the database

G Use personal tutors DB
eg

Create View Tutors,

Select firstname, email, City,
from tutors,

Select SubjectID, kSlevel, Alevel, HElevel, minhourlyRate,
maxhourlyRate,

from TutorSubject,

go;

where?
Select?

Question 1, ii

add the primary key to the table.

ii Use PersonalTutorDB.
Go

Alter table TutorBooking,

ADD constraint [Pk_StudentNo] Primary key (BookingRef),

✓✓