



Examination Answer Books

12 Pages

Instructions to Candidates

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.

Complete, fold and seal
(see note 2 below)

SURNAME: Houlden

FORENAME(S): Oliver

1	Student Number	04136977
2	Title of Examination Paper	Database Management Systems
3	Module Code	ACCA 5014
4	Date and Time of Examination	9 th May 9:05 AM 2019
5	Examination Venue	G42
6	Seat Number	
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use
Q1	21
Q2	14
Q3	15
Total	50

67% ✓
66.6

Q2

- a. An external Schema is ~~an~~ a view that the client would see. The external schema shows specific data to the client/user that they would need to see. AKA, to show results of a query.

An Internal Schema is a view where the database is created using SQL. This would include creating indexes, the tables and columns themselves and the relationships.

A Conceptual Schema is ~~a way you~~ like a bridge between the internal and external views. It would be to add the data ~~to~~ in the database to a query so the user, in the external schema, can view and understand the data. So, if you wanted to see clients from Swansea this view would be created here for the external schema.

- b. The purpose of an index is to uniquely identify a specific column. An example would be ~~an example~~ if you ~~would~~ had an id on the customer id, this is what would be indexed.

It is a number or sequence of characters that you would use to quickly find specific data or a set of data in a table.

- ii It is important to analyse transactions before indexing as if you do not know what the database is about, how would you know what data you want to find?

The type of data you should be looking for when deciding on what should be indexed ~~it~~ would be ~~cases~~ payments and to index the dates they went in or out, which would show the incomings and outgoings for the month.

Another data set to look out for is to find out which business is doing better than the other, say in shop branches. You would index the name of the branch/store with the incomings and outgoings to show how well the branch is doing and to know if changes need to be made.

Q2

b.

iv ~~iii~~ In the tutor table 'TutorNo' is the default index another index that could be used on this table is the 'DBSExpiryDate'. I chose this as the Secondary index because it may be useful to list all tutors who have their expiry date soon or have already expired.

To ~~create a secondary index~~ add secondary index you would write this:

Use Personal_Tutors

go

Select Tutor.DBSExpiryDate

Add Secondary_Index;

iii

The clustered index in the Tutor table is 'TutorNo'. ~~the~~ Another index that could have been used instead would be the ^{status} 'Status' column as it would allow the table to be ordered by expired and valid DBS certificates.

Use Personal_Tutors

go

Select Tutor.Status

as Clustered_index

v

Using Personal_Tutors

go

Insert into Tutor_Booking

(BookingRef, StudentNo, SubjectID, TutorNo, BookingDate, HourlyRate)

Where (500; 25; 100; 66; 2019 May 30, 10.00; 2);

(500; 25; 100; 66; 2019 May 31 10.00; 2)

~~Insert into Tutor_Booking~~

Q3

a. The first threat could be unauthorised access to the database where ~~any~~ any student could access the student table and change all students details or find out where a particular student lives. This would be a risk as it would breach the data protection act and if data was changed the institution may not be able to get in contact with the student.

The second threat would be data loss without backup. The risk here could mean the difference between tutors/staff getting paid or not as all data would be lost. Any loss of data though would be catastrophic as the data would need to be typed out from scratch.

The third threat would be having unnecessary data in a table that could breach the data protection act. This could be where a patients payment details are in the same tables as appointments that are viewed by the receptionist.

The fourth threat could be if any one can manipulate data as they please. This could happen if ~~the~~ the receptionist could change their own payments and how much they receive. Allowing this would make the organisation go out of business.

b.

i. The DBA could/should use Authentication Security to stop data to be manipulated without first checking with their superior officer first. Another way this could be used is ~~the~~ allowing staff onto view certain data ~~to~~ by asking/requesting permission to do so first, as in to view an exam or student information.

ii. Access controls are used to allow access to data that the staff would need to see. As in the staff would not need to check or view information on other staff members, but the manager would. The manager would not need to be able to change ~~the~~ their own pay grade.

Section B

- ii Information which would come under user privileges where staff would be able to control all other staff under them but not their own.
- iii Finally views could help provide security where a receptionist would be able to input and pull data from a form but would not be able to see data or write out queries using SQL. SQL code view would be seen and manipulated by the DBA only as if this view was to be used by anyone else they could create entire tables and change anything they wanted, which would be a security risk for if anyone outside of the organisation got hold of it, they could easily steal data.

C

use personal - Tutors

go

~~select first name~~~~select first name~~

Create view

Select First^{Surname}name, ~~Last name~~, Email, City

From Tutor

Select Subject ID, KS Level, A Level, HE Level, Min Hourly Rate, ~~Max Hourly Rate~~

From Tutor-Subject

Select Status From Tutor

If Status = "Active"

Q1

a. Use Personal - Tutors

go

Drop Table if EXISTS TutorBooking;

i Create Table TutorBooking(

BookingRef int NotNull check(≥ 1000);

BookingDate DateTime NotNull,

TutorNo int NotNull,

StudentNo int NotNull,

SubjectID int NotNull,

SubjectLevel varchar(7) NotNull,

HourlyRate int NotNull check(≥ 3)

);

ii Alter table TutorBooking

Values PK-BookingRef Primary key (BookingRef);

iii Alter table TutorBooking

Values Fk-TutorNo Foreign key (TutorNo)

References (Tutor.TutorNo)

Values Fk-StudentNo Foreign key (StudentNo)

References (Student.StudentNo)

Values Fk-SubjectID Foreign key (SubjectID)

References (Subject.SubjectID)

Q4 Use Personal_Tutors go

Drop table if exists TutorSubject;

IV Create table TutorSubject (

~~TutorNO int not null,
Title char(4) not null check(>=4),
FirstName varchar(15) not null,
Surname varchar(15) not null,
DOB date not null,
Email varchar(30) null,
City varchar(20) not null,
PostCode char(8) not null,
PhoneNO char(11) not null check(=11),~~

Create table TutorSubject (

TutorNO int not null,
Subjectid int not null,
KLevel char(5) not null,
ALevel char(5) null,
HELevel char(5) null,
MinHourlyRate int not null check(>=1),
MaxHourlyRate int not null check(<=4)

)

Alter table TutorSubject

Values PK_TutorNO Primary key (TutorNO)

Values FK_Subjectid Foreign key (Subjectid)

References (Subject Subjectid);

b. Use Personal-Tutors
go

i
Select (TutorNo, ~~Name~~ Firstname, Surname, Email, phoneNo, DBSEpirydate)
From Tutor
Where DBSEpiryDate = "1 June 2019";

ii Select (Status, TutorNO, Firstname, Surname)
From Tutor
~~Where~~ if Status = "Expired"
~~Alter table Tutor Status~~
~~Values (expired)~~

insert into statusC
Pending DBScheck

)

iii

Select Min (Duration mins)
from BookedLesson

Select max (Duration mins)
from BookedLesson

Select Avg (Duration mins)
From BookedLesson.