Unit:
Databases

Assignment title:
Ace Property Rentals

Summer 2020

Important notes

- Please refer to the Assignment Presentation Requirements for advice on how to set out your assignment. These can be found on the NCC Education *Campus*. Click on Policies and Advice in the left-hand menu and look under the Advice section.
- You must read the NCC Education documents 'What is Academic Misconduct? Guidance for Candidates' and 'Avoiding Plagiarism and Collusion: Guidance for Candidates' and ensure that you acknowledge all the sources that you use in your work. These documents are available on *Campus*. Click on Policies and Advice in the left-hand menu and look under the Policies section.
- You **must** complete the **'Statement and Confirmation of Own Work'**. The form is available on *Campus*. Click on Policies and Advice in the left-hand menu and look under the Policies section.
- Please make a note of the recommended word count. You could lose marks if you write 10% more or less than this.
- You must submit a paper copy and digital copy (on disk or similarly acceptable medium). Media containing viruses, or media that cannot be run directly, will result in a fail grade being awarded for this assessment.
- All electronic media will be checked for plagiarism.

Introduction

This assignment contains THREE (3) parts: design, data and queries, and an assessment. All parts of the assessment relate to the ***Ace Property Rentals*** scenario below.

Ace Property Rentals

Background and Requirements:

Ace Property Rentals (APR) is a growing property rental company that now manages over 200 properties on behalf of owners of the properties.

To date, the company has used a combination of paper-based files and simple spreadsheets to store details of the properties and the tenants who rent the property.

The management of APR would like you to create a database application that stores and processes the data for some of the functions of the company.

APR manages the rental process on behalf of the owners for a set fee.

An owner may own one or more properties.

A tenant rents a property for a period of time, which can vary between 1-24 months.

When a tenant is interested in one of the available properties, they must provide APR with some personal information. Currently, most of this information is recorded on a spreadsheet. If the tenant is successful with the rental request and it is approved and verified, APR will issue a tenancy agreement which contains information about the tenant, property rented, the duration of the rental and the monthly rental fee that the tenant needs to pay. Ace Property Rentals arranges a direct debit for payment of the monthly rental from the tenant's bank details they provide.

Tenant and tenancy records are kept for at least one year after the tenancy has expired as APR sometimes receive reference requests on the conduct of the tenant and if their tenancy was appropriately maintained (i.e. did the tenant pay promptly).

APR will be alerted from their bank if a tenant's direct debit isn't paid. In this instance the spreadsheet held by APR is updated to reflect an unpaid direct debit and a member of staff will contact the tenant to arrange immediate payment – when payment is received the spreadsheet is updated again.

Sometimes properties may need some maintenance due to problems such as leaky taps, faulty locks, issues with the heating system etc.

When a problem or fault arises with a property, the tenant will contact APR and report the issue to a member of staff – the tenants name is recorded on the fault report.. Depending on the nature and urgency of the reported fault, the member of staff at APR who takes the call from the tenant will assign the reported fault with one of four categories that identify the urgency of the fault or repair. The fault type recorded would normally identify how urgent the reported fault, e.g. a burst pipe or broken front door would be very urgent and would require

a response within 4 hours. The member of staff logs the relevant information on a Maintenance Request card and will contact one of the specialist maintenance companies that APR work with, ensuring that the maintenance company can respond to the fault within the allocated time scale that is identified by the category assigned to the fault. The maintenance manager at APR receives a monthly report categorised by fault type so they can easily see the types of fault that are reported frequently.

Fault Categories:

Priority A – 4 hours (eg burst water pipe, broken front door)
Priority B - 1 day (eg broken window, no water)
Priority C - 3 days (eg broken internal door, minor electrical fault)
Priority D - 7 days (plastering / decorating requests)

When the fault is rectified, the maintenance company contacts APR to let them know what has been done to rectify the issue and to let them know if further repairs are required. The information is updated on the maintenance request card. The maintenance company will then send a request for payment to APR for the works completed – that part of the process is dealt with by a different system that doesn't form part of the database you are designing.

There are several issues with the current system:

- The spreadsheet of missed payments isn't always updated, and tenants may go months in arrears before it's dealt with.
- When faults are reported and assigned a category, it isn't always dealt with within the allocated time.
- Contractors don't always contact APR with updates of the faults reported.
- It isn't easy to obtain up-to-date reports of which properties are empty, or when tenancy agreements are due to expire.

The database that you are required to develop needs to be efficient and provide APR with immediate, up-to-date information and reports to enable them to offer a better service and to chase any issues that exist.

Samples of the information stored can be found below:

Tenants:

Name	DOB	Contact No	Bank Details	Status	Verified?
Jason Ainscow	12/03/1982	06121232122	09-09-20 11459109	Looking for property	N
Sylvia Burridge	21/09/1992	04124565874	12-25-65 69874122	Active tenant	Y
Mandy Loughbrough	31/10/1986	06236545874	25-32-63 68745887	Looking for property	Y
Steve Newton	01/03/1979	02365478965	54-32-15 87451221	Active tenant	Y
Atif Ibrahim	28/09/1995	04125896542	66-12-98 71000321	Active tenant	Y

Contractors:

Acme Repairs Limited	16 Walverdale Court, Henley Industrial Estate, Watford, WD12 9TT	02887189882
Quality Works Limited	98c Jubilee Gardens, Easham, London, L12 8AC	01887187128
Instant House Repairs	654 Queen Gardens, Walthamstow, London EC12 9AS	01198272891

Property Owners:

Clive Minehead	Highdene, Park Road, London, L1 7DS	04125469874
Olive Small	81 Dalesview Cottage, Lowervale, Cheshire, CH4 1TT	04475452144
Raj Patel	52 Lower River Terrace, Eastbourne, EB6 7QA	03658965412
Michael Simmons	1 Royal View, Windsor, Berkshire, BK12 9HU	05125456985

Properties:

Owner	Property Address	Council Band	Monthly Rent	Property Status:
Clive Minehead	12 Stalybridge Drive, Westminster, London, EC12 9UU	E	£2,500	Rented
Olive Small	681 Scotland Road, Earls Court, London, L41 2SA	B	£1,800	Rented
Raj Patel	91 Manchester Drive, Lewisham, London, E11 4DS	C	£1,550	Rented
Clive Minehead	61b Maidenhead Avenue, Estham, London, E72 7DD	A	£1,250	Available
Raj Patel	3 Court Avenue, Lewisham, London, E18 3SA	B	£1,550	Available
Michael Simmons	8 Alexander Drive, Earls Court, London L41 9JL	C	£1,400	Available

Tenancy Details:

Tenant	Property Address	Tenancy dates	Status	Payment Date
Sylvia Burridge	12 Stalybridge Drive, Westminster, London EC12 9UU	12/11/2019 - 12/05/2021	Up-to-date	12th
Steve Newton	681 Scotland Road, Earls Court, London L41 2SA	22/11/2019 - 22/11/2020	1 Month Arrears	22nd
Atif Ibrahim	91 Manchester Drive, Lewisham, London E11 4DS	01/09/2019 - 01/09/2020	Up-to-date	1st

Maintenance Request Cards:

Reported By(tenant)	Sylvia Burridge
Property	12 Stalybridge Drive, Westminster, London EC12 9UU
Date / time reported	21/06/2020 11:17
Description of Fault	Back door window appears loose
Fault Priority	B - 1 day
Contractor Assigned	Acme Repairs Limited
Status	Awaiting visit

Reported By (tenant)	Steve Newton
Property	681 Scotland Road, Earls Court, London L41 2SA
Date / time reported	19/06/2020 09:01
Description of Fault	Bathroom sink leaking small amounts of water
Fault Priority	A - 4 hours
Contractor Assigned	Quality Works Limited

Status	Resolved
Date / Time Resolved	19/06/2020 14:15
Resolve Notes	Silicone applied to sink edges

Reported By (tenant)	Atif Ibrahim
Property	91 Manchester Drive, Lewisham, London E11 4DS
Date / time reported	20/06/2020 14:45
Description of Fault	Bath hot tap not turning water off
Fault Priority	C - 3 Days
Contractor Assigned	Acme Repairs Limited
Status	Awaiting part

Reported By (tenant)	Steve Newton
Property	681 Scotland Road, Earls Court, London L41 2SA
Date / time reported	22/06/2020 09:15
Description of Fault	Bathroom sink leaking small amounts of water again
Fault Priority	C - 3 Days
Status	Not assigned

Please note: The data shown in the assignment is not necessarily normalised and it is the candidate's task to organise the data in the most optimal way possible. For example, the records shown above will not necessarily map directly to database tables; there may be repeating data; not all data is atomic and it may be that not all unique identifiers are present. The candidate is expected to use these tables as a starting point for their own normalisation and optimisation of the data. Assumptions may be made and must be made explicit.

Please note also that all SQL scripts should be shown along with their results

Task 1 – Design (40 Marks)

a) Produce an entity relationship model for the proposed database system for *Ace Property Rentals*. This should be a fully normalised model to 3rd normal form.

(20 Marks)

b) Discuss how normalisation of each of the samples of data in the scenario contributed to your finished ER diagram.

(10 Marks)

c) Produce a data dictionary for the entity relationship model showing all attributes, with data types and identifying primary and foreign keys and any additional information relating to attributes that you may have identified from the scenario.

(10 Marks)

Task 2 – Data Entry and Data Manipulation (45 Marks)

1. Create all the normalised tables in SQL. Show your SQL scripts and the finished tables. (10 Marks)

2. Enter all data relating to Owners. (1 Mark)

3. Enter all data relating to Properties. (1 Mark)

4. Enter all data relating to Contractors. (1 Mark)

5. Enter all data relating to Tenants. (1 Mark)

6. Enter all Tenancy data. (1 Mark)

7. Enter all data relating to Fault Priority. (1 Mark)

8. Enter all data relating to Faults. (1 Mark)

9. Write a query that selects all the properties owned by Clive Minehead sorted by Post Code.

(4 Marks)

10. Write a query that returns a list of all the faults that have been reported since 20th June 2020. The results should show the name of the person who reported the fault, the address it corresponds to and the details of the fault. This should be in date ascending order.

(4 Marks)

11. Write a query that shows the tenancy agreements that are due to end in the period between 1st June 2020 and the 1st December 2020. Include the address of the property, the date the tenancy is due to expire and the name of the tenant. This should be in order of when the tenancy expires.

(4 Marks)

12. Write a query that shows the Tenants name, their bank details, property address where the tenancy status shows '1-month arrears'.

(3 Marks)

13. Write a query that shows all the faults where Acme Repairs Limited have been allocated to resolve the fault.

(2 Marks)

14. Update the bank details for tenant Steve Newton to 11-99-89 66109809.

(1 Mark)

15. Update the fault for the property on 681 Scotland Road so that the assigned contractor is now Instant House Repairs and update the status on the fault to Awaiting Visit.

(4 Marks)

16. Delete the tenant Mandy Loughbrough.

(2 Marks)

17. Delete the owner Michael Simmons and all the properties that they own.

(4 Marks)

Task 3 – Assessment (15 Marks)

Provide an assessment of how the work you have done has met the requirements of *Ace Property Rentals.*

Your discussion should include:

- Your understanding of the requirements explaining any assumptions made.

(5 Marks)

- Initial design to meet the requirements including your design decisions and justifications.

(5 Marks)

- How the requirements have been met.

(5 Marks)

Submission guidelines

- Your submission should be in the form of a single word-processed document that includes any necessary diagrams.
- The word count for the document is **1250 words** (excluding text in any diagrams). You should explain any assumptions you have made.
- A digital version must be submitted on a CD, USB flash drive or other similarly acceptable medium, **along with a copy of the developed database**.

Candidate checklist:

Please use the following checklist to ensure that your work is ready for submission.

Have you read the NCC Education documents 'What is Academic Misconduct? Guidance for Candidates' and 'Avoiding Plagiarism and Collusion: Guidance for Candidates' and ensured that you have acknowledged all the sources that you have used in your work?	❑
Have you completed the 'Statement and Confirmation of Own Work' form and attached it to your assignment? **You must do this.**	❑
Have you ensured that your work has not gone over or under the recommended word count by more than 10%?	❑
Have you ensured that your work does not contain viruses and can be run directly?	❑