**Week01**

**Relational Database Systems**

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**Student Exercise**

**As part of codebase “fullstack” course, you will need to complete the following exercise.**

**CASE STUDY: FBN**

**Scenario**

You have been asked to design a database for a food franchise called **FreshBurgersNow** which currently has 10 outlets scattered across Scotland. The database proposed is one to cover a specific part of their ordering and employee systems.

So, it must importantly contain a list of the orders taken, this is based on the customers placing an order, however only registered customers are able to make an order either one telephone or app connection. The order is then passed to the kitchen area (i.e., cooks) who will make the various items and package them ready for delivery. Finally, the drivers will deliver these orders to the customer’s home address. The franchise is unique in that it does not take over the counter orders, and only concentrates on deliveries to its current database of customers.

When first registering the customer needs to provide the usual amount of personal information (e.g., name, address, email, mobile number etc.). Customers are also able to receive various promotional information via an email shot by the company that occurs every 2-3 months, this is based on a special menu that is devised by the local manager.

The staff that work for FBN also provide a similar amount of information when they start at the franchise, along with the various training courses they have completed, and skill set they possess. Certain information concerning the staff employment status is also kept e.g., the National Insurance number, scanned copy of their passport and a scanned copy of their driving licence (for drivers). The various employees can be either given a role as a driver, cook, order staff or shift-leader, these are entered into the system and updated when necessary. Also, some details about the basic pay rate for each member of staff will be kept on the system.

One part of the system is so the owner of the franchise can identify which member of staff takes the most orders and what are the most popular orders taken. The owner wants to track if the customer has made their payment by either cash or card. The owner can then collate this information for all the outlets and determine which of the outlets is performing best (and of course which needs to improve its performance).

There are two menus that the customer can chose from — the regular menu and the savers menu. All of the products sold should either be on the regular menu or on the saver’s menu. The regular menu has a breakfast section that finishes at 11am each day. The savers menu has a start and end date and is changed monthly. For example, in December they will have a festive savers menu.

The order system should keep track of the following:

* Which customer places which order.
* All items on that order.
* Customer paid by card of cash.
* Which member of staff took that order?
* Shifts for all staff members.
* Each item should relate to a food/drink product.
* The manager is responsible for keeping the stock up to date.
* The cooks do not take orders directly from customers.

**Naturally NO CASE STUDY can capture all the details of the operations of the franchise; you are permitted to make any assumptions (provided you write these down).**

**Week01: Task 1**

Business Case

**Task 1A.** Explain why a relational database would be suitable information system for the organisation such as the one provided in the case study and provide (3) three reasons to support your recommendation (200 words)

A relational database makes things easy to see in regards to how different data relate to one another. The data is organized in tables formed by rows and columns. These tables are connected to each other by various types of relationships. Due to this, for FreshBurgersNow, a relational database is recommended for the owner’s intentions. The owner wishes to see performance between different outlets, the staff in each outlet as well as customer preferences. This can be set up into different tables and then using SQL to get the desired information quickly and effectively. It’ll also be simple to amend the saver’s menu options each month without causing any issues with the database itself, keeping everything running smoothly within the company and for the customers. The database will also keep the correct people doing the roles they are supposed to be doing. For example, as the cook’s have no interactions with the customers, there will be no interference arising from that. And in the event there was, it would be easy enough to spot when the data is searched and the numbers don’t add up.

**Task 1B.** Explain (3) three **distinct** advantages concerning what a database management system provides to any organisation. Note: Make these relevant to the organisation in the case study (200 words).

In the case of FreshBurgersNow, three advantages of using a relational database would be:

* Quick and Easy to search the database for the desired information
* Amend details without major risks to other areas
* Making sure the business is running properly across all outlets

As I’ve already mentioned, using SQL to search a relational database will provide the desired information quickly and in an easy to understand format. For example, tracking customer preferences based on what each customer ordered in a specified time frame. By searching through all the customers and their ordered, the result will provide a list of the different orders and the number of total orders per item within the given period of time. This will allow the owner to quickly highlight the popular options to leave and the not so popular ones that may need amending.

In the case of making amendments to the database, it’s just a case of amending the correct tables rather than the entire database, so less potential errors while saving time.

If there are discrepancies between number of customer orders and orders taken by staff, this will be able to be easily highlighted. This way, the operations within the business can be glanced through to make sure things are running smoothly.

Requirements Definition

Read the case study carefully, and decide what are the important (i.e., key) features of the system. Construct a basic prototype that will display the following:

**Task 1C.** Design a set of **Initial screens that can be shown to the client** – this allows for the input of information to satisfy the user requirements; you should produce at a minimum (5) five forms. Submit a softcopy that has a set of screen shots that illustrate the screen designs with appropriate narrative for each screen. (200 Words)



Customer table. This is a mock-up of a potential table that will contain customer details. Each customer would have a unique Customer ID, making it the Primary Key of this table. Other details associated could include the customer’s address, phone number, email etc.



The Order table. This table is for the orders placed by the customers to a member of the ordering staff. The primary key will be the Order Number as this will be unique to each order. Other information associated will include the items ordered, the customer ID (which in turn will give us the customer details if requested), payment type etc.



The Store table. Each store has their own unique Store ID which will be the primary key of this table. Other information associated with this table will be the store name, the address, staff ID etc.



The staff table. The primary key for this table will be the Staff ID, which will be unique to each individual staff member. Associated details will include the staff’s name, address, phone number, role etc.



The Role table. This table does not have a primary key since there’s no unique piece of data in this table. It is necessary to have as there are multiple individual roles being performed by different staff. It will be necessary in order to give the correct wage for example.

**Task 1D.** Design a set of typical reports that would be appropriate for the proposed company database – this requires you to assume the role of the user/manager and list three (3) likely reports he/she might need to do their job. It must show the report, its main features, and then populate it with some likely test data. Submit a softcopy that has a set of screen shots that illustrate these proposed screen designs. (200 Words)

Note:

A suitable package to do the above task (A to D) would be Microsoft Word or similar product.