**Introduction to Databases – Factsheet**

A database is an electronically stored, systematic collection of data. It can contain any type of data, including words, numbers, images, videos, and files. You can use software called a database management system (DBMS) to store, retrieve, and edit data.

What is structured and unstructured data and how is it stored? - Structured data is organised files or information stored in a controlled manner. What is put into a structured database will have an output to our expectations such as names, ages, payments, time & dates. On the other hand, unstructured data differs in size and volume, unstructured data can have multiple natures in the formats of audio, video and text files, social media are in use of this method to store unorganised data like content, blogs and posts via a management system. There are two main types of databases. The first is a ‘Relational Database’ which stores only structured data, the relational data is linked between each corresponding file of data. For example, an address book has names, numbers and obviously address, each column of data corresponds to one another hence this creates the address book in mention.

Key Terminology: –

* Relation: This is the name of the table that will contain all the properties.
* Attributes: the properties are contained within separate columns that define the relation between each property within each column.
* Tuple: Each row in the relation table is known as a tuple – as in each individual piece of data.

With the above, they are used to link data within a relational database through Primary & Foreign Keys.

Primary Keys (PK) Is used within a database’s table to identify specific or unique rows which is normally an **integer** and is automatically incremented for each newly additional record.

Foreign keys (FK) Is a link of two or more columns that are in different tables within a database. This relationship is upheld by representing a primary key within another table.

Software’s that use relational databases:

* SQLite
* MySQL
* MSSQL

The second is called ‘Non-Relational Databases’ which store both relational and non-relational databases. Data is contained within records which specify further information like appointments or locations, names and more.

Database Indexing - Now it would be good to realise that all the data within your database’s is hard to access or find. With ‘database indexing’ you will be able to create a ‘pseudo-table’ of PK and a selected attribute. Data can be stored in many hardware devices such as Computer RAM or a Hard drive, when using indexing you are able to access data using RAM as it can process large amounts of data faster than from a Hard drive or USB.

Database Querying – Helping users/developers to look in the databases tables as well as return that same information. Querying returns reports from a database whether the range is from high to low or A-Z and more various complexities. An example is a User querying a report based on how many people are present in today’s workplace. Highlighting all those employees that attended work that day.

Database querying has an element called CRUD which stands for Create, Read, Update & Delete, these four operations in database querying represents any input and output.

**CRUD Operation:**

Create – insert into Read – select from

Update – updating the following… Delete – delete the following...