If you want to store data in persistent storage, so that it will remain available till you delete it, then there 2 options

1. Store the data in file.
2. Store the data in database

Drawbacks of files

1. It is sequential access storage. Hence performing CRUD operation is tedious on files. Hence we use databases for storage of data

Types of databases

1. SQL
    a. If you need structured data
    b. It stores the data in tabular format
    c. Its secure
    d. Usually used in financial applications
    e. Examples: MYSQL,Oracle, Postgresql, SQL server
2. NOSQL
    a. It is unstructured database.
    b. Stores the data in json(javascript object notation) format
    c. But less secure than SQL
    d. Usually used in media type applications
    e. Examples – MongoDB, Cassandra, CouchbaseDB
3. GrapDB
    a. If you want to store data in graphs format(like networks)
    b. Example Neo4J
4. Memory database
    a. If you need very fast access to database, and if size of data is very small, then we may use memory database
    b. Example-MemDB,VoltDB

Where we use database

1. Single user application
2. Web Application---- this application return data in HTML format, o/p includes view
3. Web Services / Microservices----- the application which returns only data, usually in json format.
4. Mobile Applications

To create database in mysql

Create database mydb

Types of keys in table

1. Primary key
    a. Minimal set of columns which identifies the row uniquely is called as primary key
    b. It cannot contain any null value

sid	Sname	M1	M2	M3	subid

oid	itemid	name
1	1	tshirt
1	2	books
2	1	tshirt

Booking

Roomno	custno	name	bkdate	rate
1	1		1 Apr23	
1	1		10 apr	
2	1		1 Apr 23	

2. Foreign key→ referential integrity
   If for checking correctness of data in a column, we are referring the column in same table or in another table then it is called as foreign key. And the column which we refer has to be primary key of the table.
   Primary key deptid

Deptid	dname	location
12	HR	Mumbai
13	Purchase	Pune
14	sales	Pune

Primarykey –empid

Foreign key--- deptid references dept(deptid)

Foreign Key----Manager no refences emp(empid)

Empid	Ename	Sal	deptid	address	Manager no
1	xxx		12		3
2	yyy		13		
3	zzz		14		
4	Ddd				

3. Candidate key --- any minimal set of columns which identifies the row uniquely is called as candidate key
   For a table there can be more candidate keys for a table but only one primary key will be there
   (stdid, mobile, passport, adhar no)

Stud id	Sname	mobile	passportno	Adahar num	address				
1			1234567						
2									

3			2345678						

4. Super key→ any combination of columns which identifies the row uniquely is called as super key.
   (studid, stuid+sname, studid+sname+mobile
5. Unique key-→any column which has unique values, but it is not primary key.
   Unique key may contain many null values, but all not null values should be unique.

RDBMS- Relational Database management system

Data models

1. Hierarchical Model- if your data is stored in parent and child node format then it is called as hierarchical model.
2. Network model-→ if any node is connected to any other node then it is called as network model
3. Relational model--→ if the data is stored in the form of tables, then it is called as relational model

synonyms

Table-→ relation

Fields-> attributes,columns

Rows-→ record,tuple

Why to use database

1. Databases are secure.
2. Networking is possible.
3. Sharing of data is very easy.
4. It stores the data in correct form.
5. Redundancy is reduced.

Acno	Custid	Type	balance
1	100	Saving	2345
2	100	Demat	3456
3	100	Current	5555
4	200	Saving	7777

customer

Custid	Cname	Mobile
100	Kishori	22222
200	Rajan	5555

Install MySQL

https://dev.mysql.com/downloads/installer/

to start mysql

1. On windows start button type mysql > mysql command line client >enter root password
   Or
   Open terminal/cmd prompt on the machine and use following command

   mysql -u root -p

   mysql> create database DACmarch23
   -> ;
   Query OK, 1 row affected (0.04 sec)

   mysql> use DACmarch23
   Database changed
   mysql>source d:\mysql_database\demobldmysql.sql

   to drop the tables
   mysql> drop table dept;

   to find list of table names
   show tables;

   to see the columns in the tables(table structure)
   mysql>desc emp;
   mysql>desc dept;

   to see the data in the table
   mysql> select * from emp;

Types of statement	Full form	statements
DDL	Data definition language	Create table, alter table, drop, truncate
DML	Data Manipulation language	Insert, update, delete
DQL	Data query language	select
DCL	Data control language	grant , revoke
TCL	Transaction Control statement	Commit, rollback, savepoint