Java : it is mostly used to develop a Business Application.

Business Application:
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Business Organization: main objective for any Business organization is Profit.

1. Small scale Business Organization (grossary shop, petrol pump)

2.Large Scale business orgnization (HDFC bank, indian railway, SBI,Pepsico, Mastercard,)
Enterprise

--These BO provides their services to the client/customer, and to computerize those services whatever computer application we develop is known as Business application.

Common general things in any business organization:
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1. storing and maintaing business data in a secure and easily retrival manner.

2. processing that data according to the business rule.

3.presenting the data in user-understanable format.

Note: In realtine application we keep/maintain business data inside RDBMS s/w

Data and information:

Data : it is a collection of raw and isolated facts.

Infromation: when we process the data, then we gets meaningfull result , this is called as information.

Datastores:
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--it is a store where we can store or keep our business related data.

1. normal books and papers

2. flat files in computer system(notepad, excel sheet, word files)

disadv of the flat files:
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1. data maintainace.
2. data redundency
3. data integrity/ inconsistency
4.security
5.data retrival

--to overcome these problems we need to store the data in the DBMS s/w (RDBMS s/w)

Database : It is a organized collection of interrelated data or structured collection of data.

DBMS: It is a type of s/w there we can manage multiple databases.

RDBMS: It is a s/w which follow a relational model. In this model, the data is stored in 2 dimentional tables.

we have multiple RDBMS s/w are there:

Mysql s/w (Oracle corp)
Oracle s/w
Postgres
sql-server(microsoft)
DB2 (IBM)
etc..

RDBMS is an extension of DBMS s/w.

Note: every RDBMS is a DBMS but reverse is not true.

--MongoDB : json nosql : it is a DBMS but it is not a RDBMS.

SQL:

--In order to work with RDBMS we need to use SQL (structured query language), it is an interface by using which we can work with any kind of RDBMS s/w.

Note: Whenever we install any RDBMS s/w then at physical level (in harddisk) some databases will be created automatically,

*****Each RDBMS s/w has one main component is there which is called as "Database engine". which will execute the sql commands.**

--to execute any sql command with Database engine we need a client application:

--along with the mysql installation we get the mysql command line client, from where we can execute any type sql with database engine.

--we can install some GUI client for mysql as well for example, mysql-workbench

--sql is a case insensetive language. but some reservered keywords are case sensitive(user, table,).

--sql language is a collection of predefined commands.

these commands are categoriesed into following category:

1. DDL (Data defination language)
(create, alter, drop, truncate, rename)

2.DML (data manipulation language)
(insert, update, delete)

3.DRL (Data retrival language)
(select)

4. TCL (Transaction control language)
(commit, rollback, savepoint)

5.DCL (Decision control language)
(grant, revoke)

>show databases;

--to list out all the databases in our mysql

>create database web20sb101db;

--after creating the db inside the mysql rdbms s/w we need to move inside that DB.

>use web20sb101db;

>show tables;

> create table student(roll int,name varchar(12),marks int);

>drop table student;

```
>create table student
(
roll int,
name varchar(12),
marks int
);
```

>desc student;

1. DDL (Data defination language)
(create, alter, drop, truncate, rename)
==========

datatypes in mysql:

1.numerics types:

2.string types

3.date and time types

1.numerics types:
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tinyint : 1byte
smallint: 2 byte
mediumint: 3 byte
int : 4 byte
bigint: 8byte

floating point:
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float(6,2): the column can store 6 digit with 2 decimal places

2 string types:
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1. char : fixed length of string range bt 0 to 255 char

2.varchar : variable length of argument bt 1 to 65500, here we must define the length.

char(4)
varchar(4)

value char(4) storage_requited

'a' ----------> 4 bytes

'ab' ----------> 4 bytes

'abcdef' ----------> error, data is too long

value varchar(4) storage_requited

'a' ----------> 1 bytes

'ab' ----------> 2 bytes

'abcdef' ----------> error, data is too long

Note: in the term of efficiency, if we r storing with variable length of argument then we should use varchar, and it the length is always fixed then we should use char, here char is slightly faster than varchar.

3. date and time:
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a. date : yyyy-mm-dd
b. datetime: yyyy-mm-dd hh:mm:ss

2. alter :

--it is used to change the structure of the existing table.

--this command having 4 sub-commands:

1. add
2. modify
3. drop
4. change

a. add: it is used to add a new column in the existing table.

ex:-

>alter table student add address varchar(15);

b. modify : it is used to change the column datatype or size.

ex:

>alter table student modify address varchar(20);

c. drop: to drop a single or multiple columns from a table.

ex:

>alter table student drop column address;

d. change: to rename a column.

ex:

>alter table student change name sname varchar(12);

3. drop :
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--to drop/delete the entire table from the database.

>drop table student;

4.truncate :
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--this command is used to truncate/clean all the rows/recored from the table permanently.(Here table structure will not be deleted)

Note: all the DDL command can not be rolledback.

5. rename:
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--it is used to rename a table.

ex:

>rename table student to student1;

2.DML (data manipulation language)
(insert, update, delete)
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>select * from student; // getting all the columns and all the rows from a table

1. insert :
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--inserting the record in the table:

inserting all the column values:

>insert into student values(10, 'Ram', 850);

inserting partial column values:

>insert into student values(13, 'manoj',null);

or

> insert into student(roll,marks) values(22, 600);