Mentor Details
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 Name : Nitin Manjunath
 Expertise : Building webapplications and Enterprise application.
 WorkExperience : 10+ years of experience

Pre-Requisite
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 a. Core java concepts like (interface,polymorphism,Exception handling and Collections)
 b. Basics of MySQL(covered live)

JEE
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1. Making Java application communicate with database using JDBC-API.
2. Building webapplications using Servlet and JSP by following an architecture called "MVC".
3. Sample project of webapplication (StudentRelationship Manager application).

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Introduction to Database Concepts
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 1. Understand what is Data, Database,Database Management System

Data -> Information about any real world object
            eg:
Chairs,Tables,Mobiles,Computers,Laptop,Student,Employee,Customer,....

Example : If we are considering the college management System of students.
            Student
             RollNo,Name,Branch,Gender,Age (Data -> It is something particular about one student)

Database -> Grouping the data in structured format (or) Grouping of Several students information

Student-1
      Rollo: 10
      Name : sachin
      Branch: CSE
      Gender: Male
      Age: 28

Student-2
      Rollo: 7
      Name : dhoni
      Branch: ECE
      Gender: Male
      Age: 27

Student-3
      Rollo: 18
      Name : Kohli
      Branch: EEE
      Gender: Male
      Age: 27

Database Management Systems(DBMS)
   => It is a technique for Storing and Retreiving the information from Database.

In this Digital Era(Or) In our Day-2-Day Life we are seeing lot of applications such as
      naukri portal,monster portal, Flipkart,Amazon,Myntra, Pwskills portal etc...

End User will interact with the application,Application will be connected to the Server and Gets the data from the Database server.

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Various Techniques for Managing the Data
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 a. Traditional Apporach
      a. Books
            b. Ledger Books
                  C. Collection of Pages
                        d. Each Page

      Problems
      a. Security Challenge
      b. BackUp Issues
      c. Space Issue
      d. Costly
      e. TimeConsuming for Retrieving particular student information.

In early 1940's Computers were discoverd and people are thinking to store this kind of information in computer
After discovering the computer the people are managing the data in the form of Files(or) FileSystem (or) Flat File.

      Problems
      a. Security Challenges
      b. DataRedundancy (Duplication of Data or Repetative Data)
      c. Data Inconsistency(Trying to update StudentId in one file, we may forget to update in another file)
      d. TimeConsuming for Retrieving information from Files(or) FileSystem(or) Flat Files.
      e. We can't maintain the backup of files.
      f. We can Store limited infomration or limited amount of information in files.

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Database Softwares
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 -> Currently in market we ar managing the data of an application in Database Softwares.
      Advantages
            a. Strong Security(Username and Password)
            b. Managing and Storing, Retrieving the information.
            c. We can store huge amount of information in database.
            d. We can maintain the data in database in the Structured format(Tables ---> Rows and Columns)

Rule::
Table >> RealWorld Entity >> Student
Columns>> Fields >> RollNo,Name,Branch,Gender

Rows   >> Values >> 10,Sachin,CSE,MALE

e. No Data Redundancy
f. Data Integrity
g. Associations(1*1, 1*M,M*1,M*M)

Database Softwares
a. Oracle Database >> Oracle Corporation   >> Propertiary Licencse
b. MySQL Database >> Oracle Corpoartation >> Open Source
c. DB2 Database   >> IBM Corporation
d. SQL Server Database >> Microsoft Corporation
e. Derby Database   >> SUNMS

The above mentioned database softwares comes under "RDBS Database Software".

MySQL installation
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1. Open browser of your choice
2. Go to the following link
https://dev.mysql.com/downloads/installer/
3. Scroll down and choose the operating system
click on 2nd link for downloading the software.
4. Double click on the set up file and complete the installation(with just next,next clicks and
provider the password as ::root123,default username is ::root)
5. After installation check for mysql,if properly installed provide the password to login to MySQLDatabase.

SQL
=> It stands for Structured Query Language
=> This language is used by DBA to interact with the database software.

Syntax for Creating a Database
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mysql> CREATE DATABASE PWSKILLSBATCH
Query OK, 1 row affected (0.03 sec)

Syntax for Using a Database
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mysql> USE PWSKILLSBATCH
Database changed

Syntax for Performing operations
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a. DML => Data Manipulation Language
eg: insert,update,delete
b. DDL => Data Defnition Language
eg: create,alter,drop
c. DRL => Data Retrieval Language
eg: select
d. TCL => Transaction Control Language
eg: commit,rollback,savepoint

DDL
These commands refers to performing specific operation on the database or an a

table

eg:: Creating a database, dropping a database, creating a table, dropping a table, altering column name of table, altering datatype of column in a table
dropping a column in a datatabase,.....

Drop a database
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```
mysql> drop database pwskillsbatch;
Query OK, 0 rows affected (0.03 sec)
```

Creating a table inside a database
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Syntax:: CREATE TABLE tablename (columname datatype, ,.....);

```
mysql> create database pwskillsbatch;
Query OK, 1 row affected (0.02 sec)

mysql> use pwskillsbatch;
Database changed

mysql> create table student(sid int,sname varchar(20),sage int,saddress
varchar(20));
Query OK, 0 rows affected (0.02 sec)

mysql> show tables;
+-------------------------+
| Tables_in_pwskillsbatch |
+-------------------------+
| student                 |
+-------------------------+
1 row in set (0.00 sec)

mysql> describe student;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| sid      | int         | YES  |     | NULL    |       |
| sname    | varchar(20) | YES  |     | NULL    |       |
| sage     | int         | YES  |     | NULL    |       |
| saddress | varchar(20) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
4 rows in set (0.02 sec)
```

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Syntax for Inserting Single record into table
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Syntax :: INSERT INTO tbl_name (columnames1,columnnames2,....)
VALUES(value1,value2,.....);

```
mysql> insert into student(sid,sname,sage,saddress) values(10,'sachin',50,'IND');
Query OK, 1 row affected (0.03 sec)
```

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Syntax for Inseting Multiple records into table
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Syntax :: INSERT INTO tbl_name(columnanems1,columnnames2,...) values (),(),();

```
mysql> insert into student(sid,sname,sage,saddress) values(7,'dhoni',44,'IND'),
(9,'lara',51,'WI'),(14,'ponting',48,'AUS');
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0

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Syntax for Retrieving record from the table
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  Syntax :: select columnames1,columnnames2,... from tbl_name where column_name =
value;

eg#1.
mysql> select sid,sname,sage,saddress from student;
+------+--------+------+----------+
| sid  | sname  | sage | saddress |
+------+--------+------+----------+
|   10 | sachin |   50 | IND      |
+------+--------+------+----------+
1 row in set (0.00 sec)

eg#2.
mysql> select * from student;
+------+---------+------+----------+
| sid  | sname   | sage | saddress |
+------+---------+------+----------+
|   10 | sachin  |   50 | IND      |
|    7 | dhoni   |   44 | IND      |
|    9 | lara    |   51 | WI       |
|   14 | ponting |   48 | AUS      |
+------+---------+------+----------+
4 rows in set (0.00 sec)


eg#3.
mysql> select sid,sname,sage,saddress from student where sid = 10;
+------+--------+------+----------+
| sid  | sname  | sage | saddress |
+------+--------+------+----------+
|   10 | sachin |   50 | IND      |
+------+--------+------+----------+
1 row in set (0.01 sec)

eg#4.
mysql> select sid,sname,sage,saddress from student where sid = 15;
Empty set (0.00 sec)

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JDBC API
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 => It is an API given by SUNMS to interact with the database.
 => To interact with the database SUNMS had given a jar called rt.jar which is
available for the programmer during the installation of jdk s/w.
 => To use JDBC in java program we take the support of a package called
"java.sql.*" and "javax.sql.*".
 => API refers to set of rules and guideliness which has interfaces.
 => To get the implementation for these interface abstract methods we need to take
the help of "DB-Vendor".
 => DB-Vendor will give the implementation for "SRS" and release those
implementation classes in the form of "jars" to the java
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develop community people.
=> Depending upon the database we use in our project we need to use the respective jars supplied by "DB-Vendor".