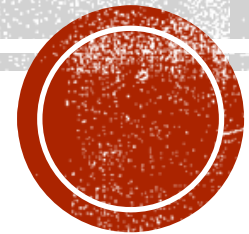# DATABASE CONNECTION TECHNOLOGY

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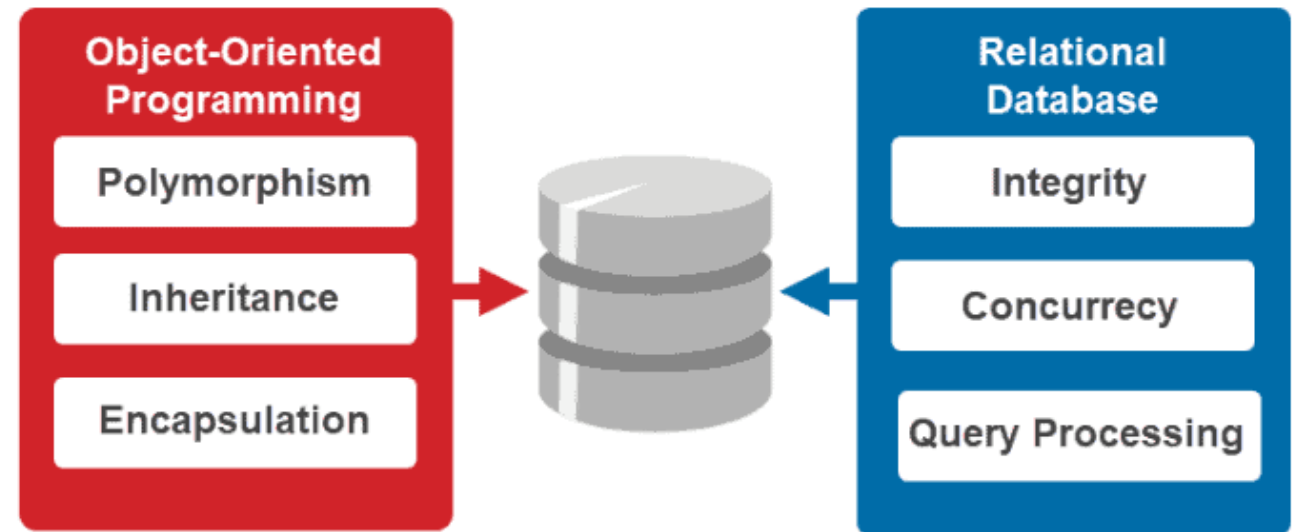
M.Sc Bioinformatics, Part-I

Contents

- What is DBMS?
- Database Connectivity in Java
- Database Connectivity in Python
- Database Connectivity in PHP
- Conclusion
- References

WHAT IS DBMS?

- Serves as Interface

- Organizes data

- Types are
  - Distributed DBMS
  - Hierarchical DBMS
  - Network DBMS
  - Relational DBMS
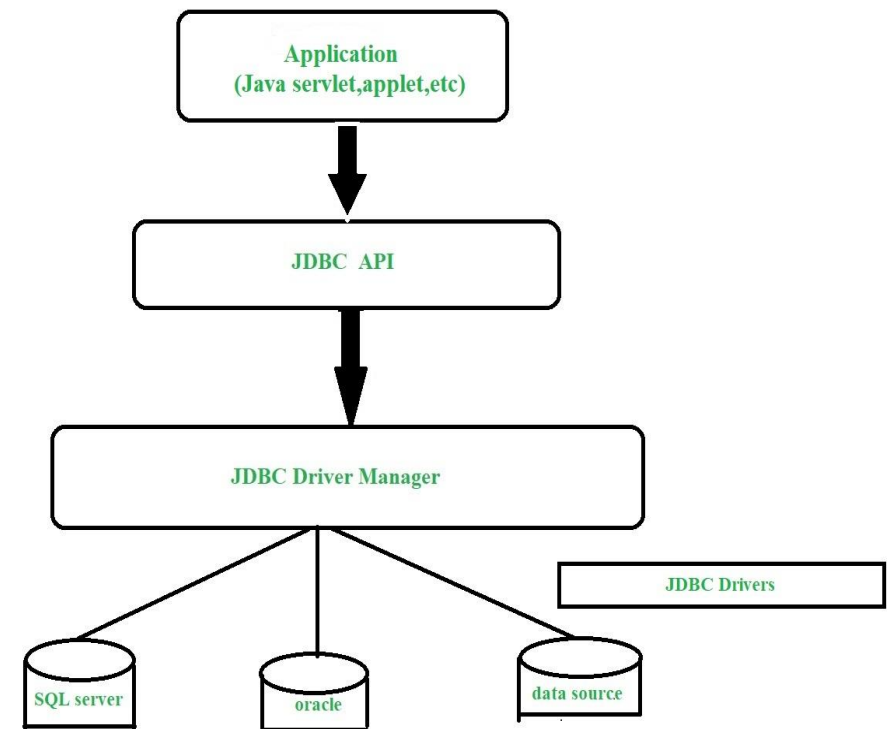 - Object-oriented DBMS

OBJECT - ORIENTED DATABASE

Object-Oriented Programming
- Polymorphism
- Inheritance
- Encapsulation

Relational Database
- Integrity
- Concurrecy
- Query Processing

DATABASE CONNECTIVITY IN JAVA

- **What is Java?**
  - Object Oriented Programming language
  - Syntax derived from C
  - Functionality derived from C++
  - Portable
  - Embeddable
  - Platform Agnostic

OVERVIEW OF JBDC

- API to access databases

- Translator

- Various types:
  - Type 1: JDBC-ODBC
  - Type 2: Native API
  - Type 3: Network Protocol
  - Type 4: Thin Native API

CONNECTING TO DATABASE

- Load Driver

- Open Connection

- Create statement

- Return error messages

- Terminate connection

- Class.forName(com.mysql.cj.jdbc.Driver);

- Connection conn = DriverManager.getConnection (url, username, password);

- Statement st = con.createStatement();

- catch(SQLException se){se.printStackTrace();
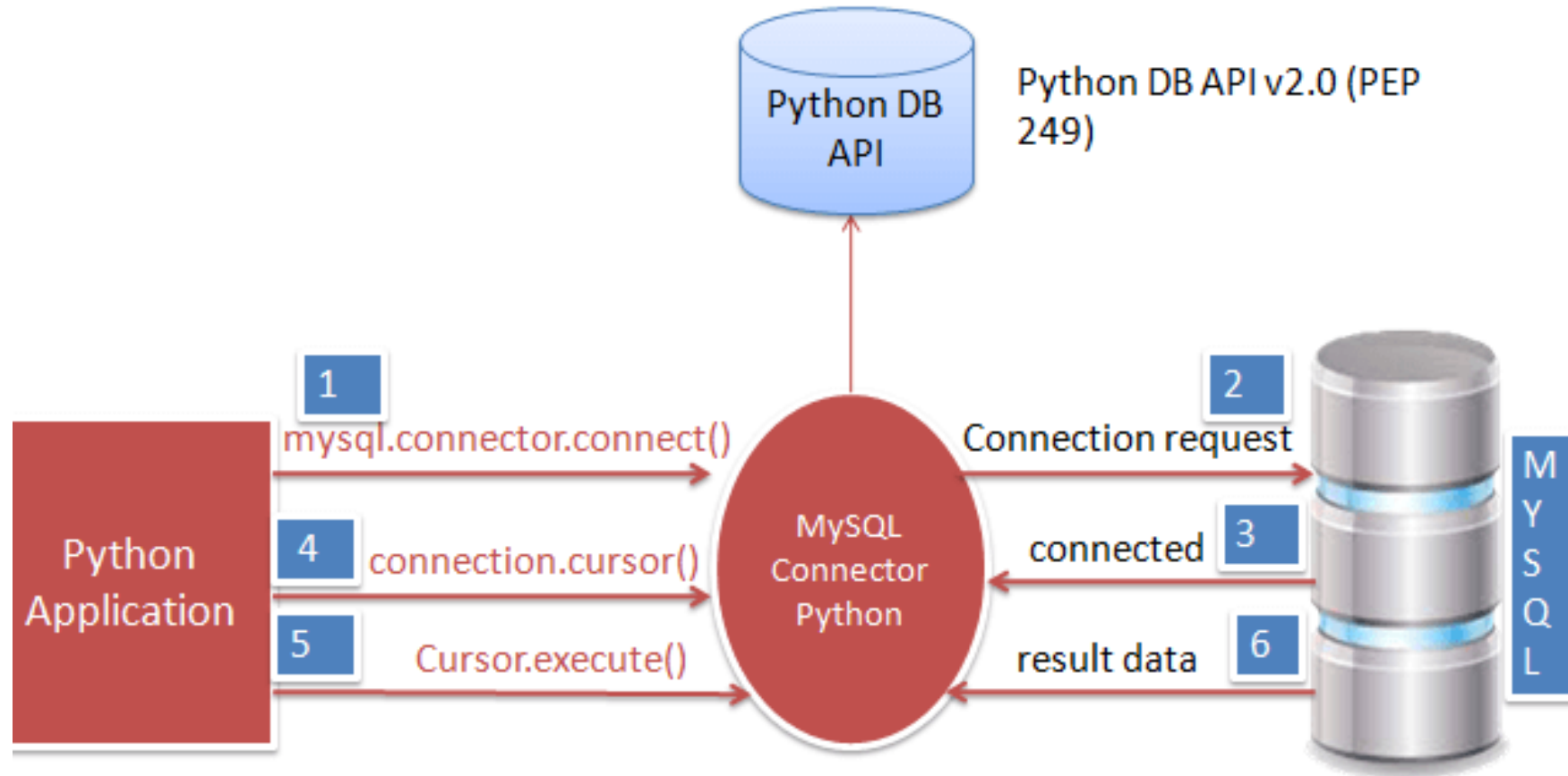
- conn.close();

DATABASE CONNECTIVITY IN PYTHON

- What is Python?
  - Object Oriented Programming Language
  - Interpreted
  - Portable
  - Syntactically simple

OVERVIEW OF DATABASE CONNECTION IN PYTHON

CONNECTING TO DATABASE

- Import MySQL connector
- Use connect() method

- Use cursor() method
- Use execute() method

- Read result using fetchall()
- Close cursor() and connect()

- import mysql.connector
- connection = mysql.connector.connect(host, database, user,password)

- cursor = connection.cursor()

- cursor.execute("select database();")

- record = cursor.fetchall()
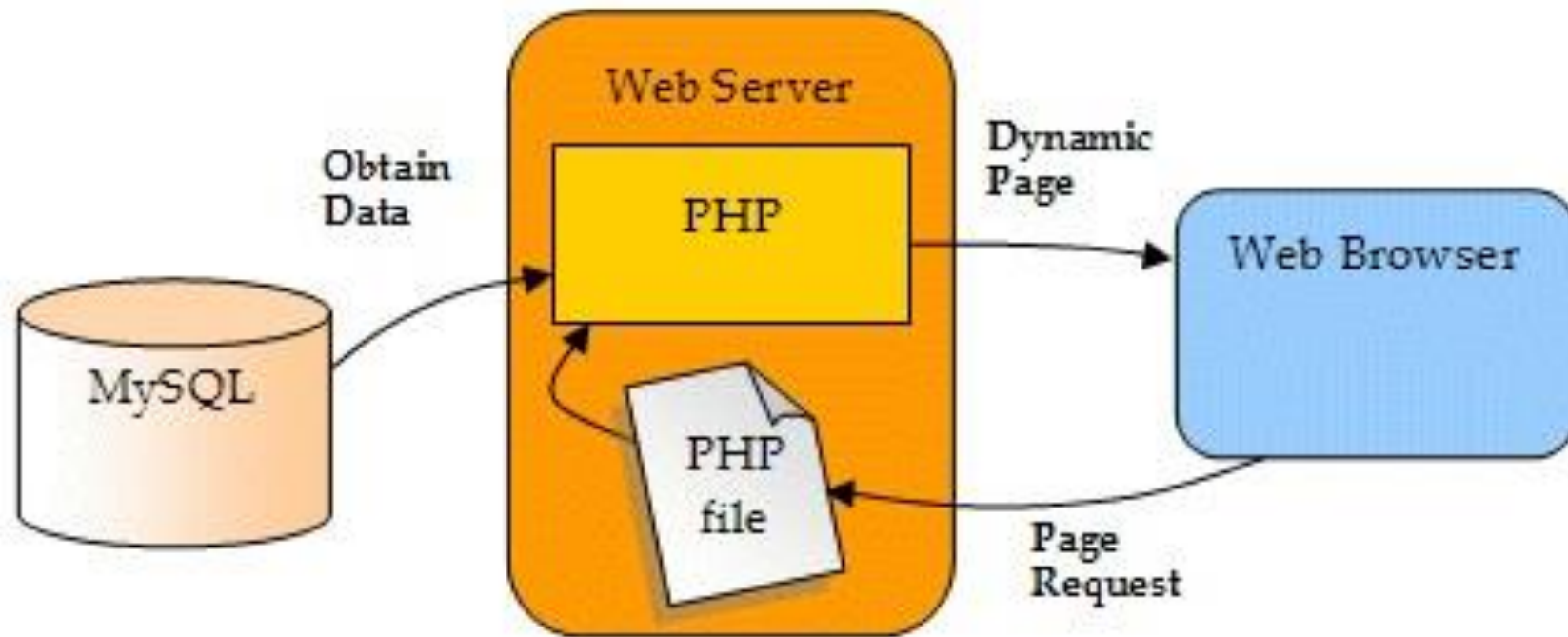
- Cursor.close()
  Connection.close()

DATABASE CONNECTION IN PHP

- What is PHP?
  - PHP is the backbone of Web 2.0
  - Service Oriented
  - Specifically for webapps
  - Backed by IT giants

OVERVIEW OF DATABASE CONNECTION IN PHP

CONNECTING TO DATABASE

- Connected using:
  - MySQLi (OOP)
  - MySQLi (Procedural)
  - PDO

- The difference only lies in Syntax

- Steps remain the same:
  - Initiate connection
  - Check Connection

- $conn = mysqli_connect($servername, $username, $password);

- if (!$conn) {die("Connection failed: " . mysqli_connect_error());}

CONCLUSION

- Learned how to connect Database to client Side Applications using various technologies