Pemrograman PHP

Pesantren PeTIK II YBM PLN
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Pertemuan Ke-11

Materi

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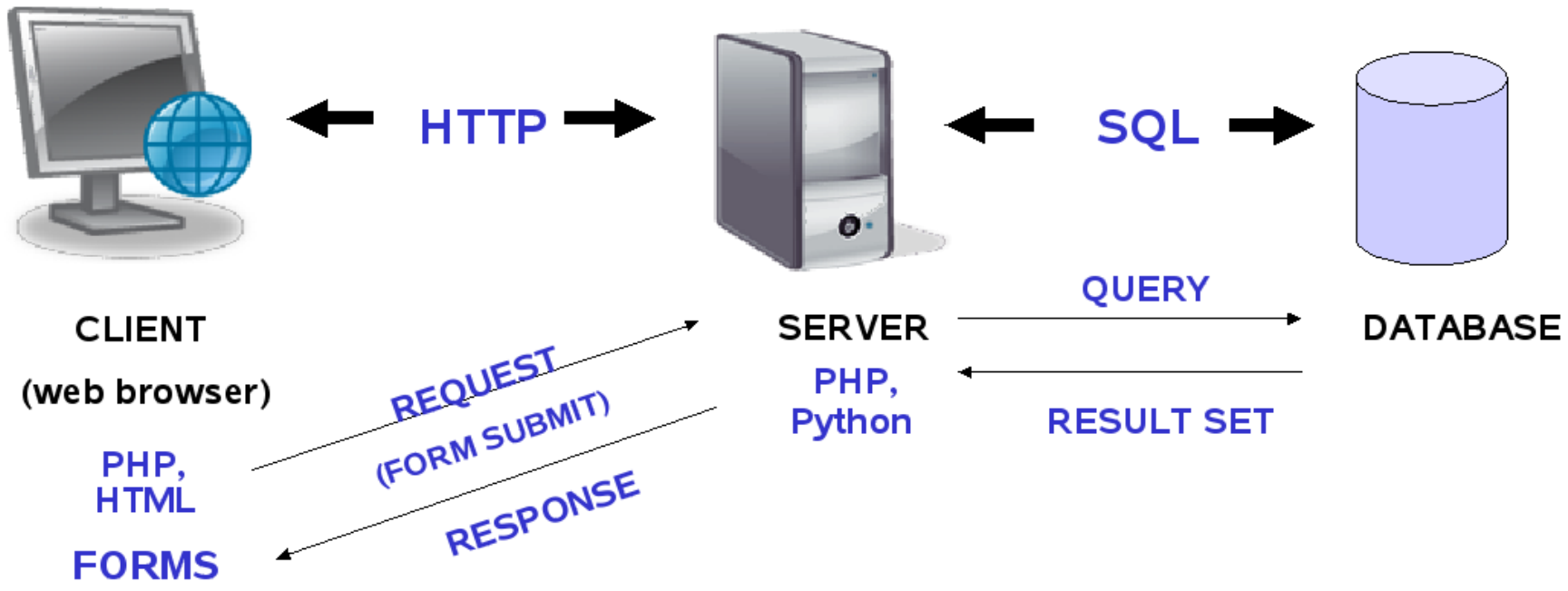
Client – Server - Database



PHP – Database Support

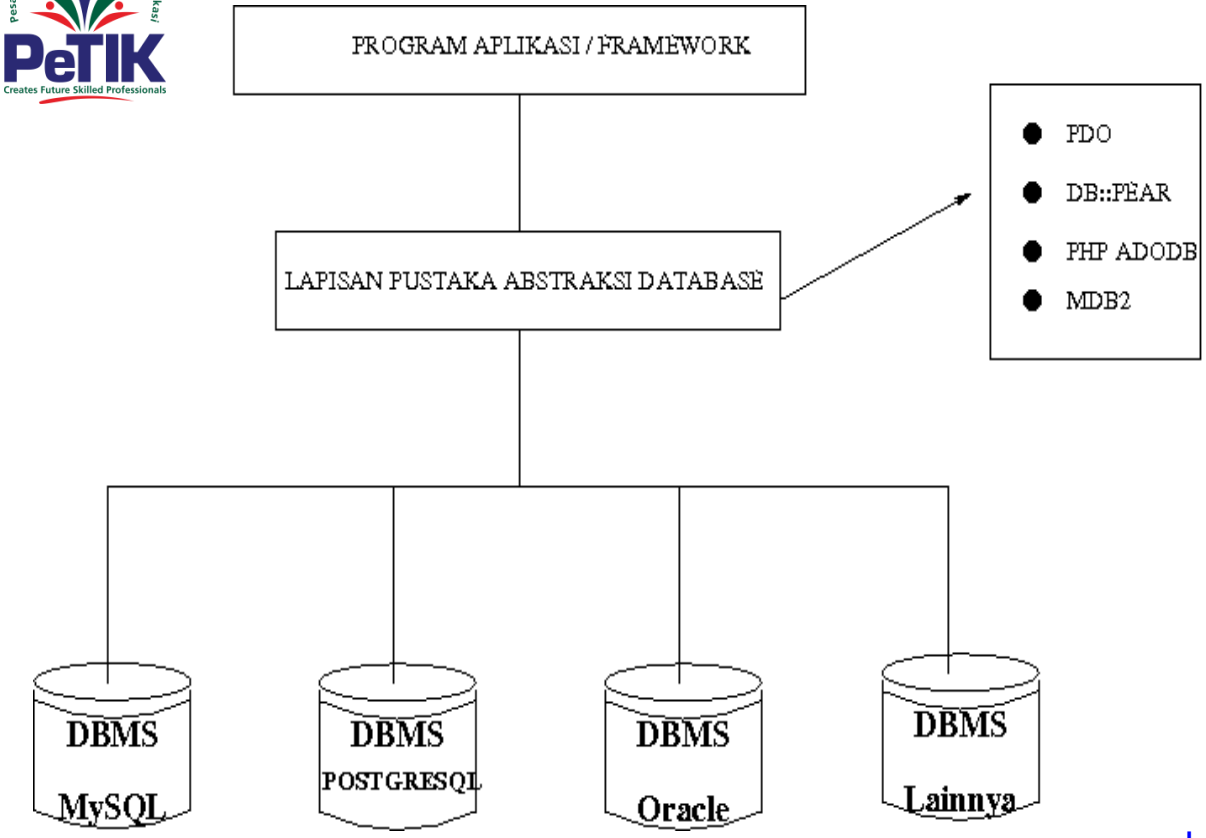
- Vendor Specific Database Extensions
  - CUBRID
  - DB++
  - dBase
  - filePro
  - Firebird/InterBase
  - FrontBase
  - IBM DB2 — IBM DB2, Cloudscape and Apache Derby
  - Informix
  - Ingres — Ingres DBMS, EDBC, and Enterprise Access Gateways
  - MaxDB
  - Mongo — MongoDB driver (legacy)
  - MongoDB — MongoDB driver
  - mSQL
  - Mssql — Microsoft SQL Server
  - MySQL — MySQL Drivers and Plugins
  - OCI8 — Oracle OCI8
  - Paradox — Paradox File Access
  - PostgreSQL
  - SQLite
  - SQLite3
  - SQLSRV — Microsoft SQL Server Driver for PHP
  - Sybase
  - tokyo_tyrant

See also fbsql_pconnect(), ibase_pconnect(), ifx_pconnect(), ingres_pconnect(), msql_pconnect(), mssql_pconnect(), mysql_pconnect(), ociplogon(), odbc_pconnect(), oci_pconnect(), pfsockopen(), pg_pconnect(), and sybase_pconnect().

- Native Library
  - php-mysql
  - php-pgsql
  - php-oci
  - php-odbc
  - …

http://php.net/manual/en/refs.database.php

PHP – Database Abstraksi



Database Extensions

- Abstraction Layers
  - DBA — Database (dbm-style) Abstraction Layer
  - dbx
  - ODBC — ODBC (Unified)
  - PDO — PHP Data Objects

http://php.net/manual/en/refs.database.php

PHP – PDO (PHP Data Object)

PDO – PHP Data Objects – adalah lapisan akses database yang menyediakan metode akses yang seragam ke beberapa database.

Ini tidak memperhitungkan sintaks database spesifik, namun memungkinkan proses peralihan database dan platform menjadi lebih mudah, cukup dengan mengganti string koneksi dalam banyak instance.

PHP – PDO (PHP Data Object)

- Mulai PHP 5.0 , PDO menjadi Library default untuk koneksi/akses database


```
<?php
 print_r(PDO::getAvailableDrivers());
?>
```

- PDO Database Driver Support:
- 1. PDO_DBLIB, support database FreeTDS / Microsoft SQL Server / Sybase
  2. PDO_FIREBIRD , Firebird/Interbase 6
  3. PDO_IBM , IBM DB2
  4. PDO_INFORMIX , IBM Informix Dynamic Server
  5. PDO_MYSQL , MySQL 3.x/4.x/5.x
  6. PDO_OCI , Oracle Call Interface
  7. PDO_ODBC , ODBC v3 (IBM DB2, unixODBC and win32 ODBC)
  8. PDO_PGSQL , PostgreSQL
  9. PDO_SQLITE , SQLite 3 and SQLite 2

PDO Connection Database

```
// Database Postgresql dengan PDO_POSTGREQL
$dbh=new PDO("pgsql:host=$host;dbname=$dbname",$dbuser,$dbpass);

// Database SQLite
$dbh =new PDO("sqlite:my/database/path/database.db");

// Database Ms.Access
$dbh= new PDO('odbc:Driver={Microsoft Access Driver(*.mdb)};
                        DBQ=C:\database.mdb;Uid=Admin');
```

PDO::Function

- Fungsi : **exec( )**
- Digunakan untuk eksekusi perintah SQL, jika SQL sukses dilakukan akan mengembalikan nilai 0

```
$sql1 = " CREATE TABLE prodi( id integer auto_increment primary key,
kode varchar(2) UNIQUE,nama varchar(50) not null ) ";

$dbh->exec( $sql1 );


$sql2 = " INSERT INTO prodi (kode,nama) VALUES ('TI','Informatika') ";

$dbh->exec( $sql2 );
```

PDO::Function

- Fungsi : **query ( )**
- Digunakan untuk eksekusi perintah SQL dan mengembalikan hasil query berupa object ResultSet (kumpulan baris data/record)

```
$sql = " SELECT * FROM prodi ";
$rs = $dbh->query( $sql );

foreach($rs as $row) {
 echo '<br/>'$row['id'] . ' - ' . $row[‘nama’] ;
}
```

PDO::Function

- Fungsi : **prepare() & execute ( )**
- Digunakan untuk eksekusi perintah SQL menggunakan prepareStatement

```
$sql = " INSERT INTO prodi (kode,nama) VALUES (?,?) ";
$statement1 = $dbh->prepare( $sql );
$ar_data = ['TE', 'Teknik Elektro ']; // array
$statement1->execute( $ar_data );

$statement2 = $dbh->prepare(" DELETE FROM prodi WHERE id=? " );
$statement2->execute( array(2) );
```

PDO::Function

- Fungsi : **fetch( )**
- Digunakan untuk eksekusi perintah SQL menggunakan prepareStatement yaitu untuk mengambil satu baris hasil query

```
$sql = " SELECT * FROM prodi WHERE id=? ";
$statement1 = $dbh->prepare( $sql );
$statement1->execute( array(2) );
$row = $statement1->fetch();

echo 'ID : '. $row['id']. ' -- ' . $row['nama'];
```

PDO::Function

- Fungsi : **fetch( )**
- Dapat memiliki opsi argumen
  - **PDO::FETCH_NUM** returns enumerated array
  - **PDO::FETCH_ASSOC** returns associative array
  - **PDO::FETCH_BOTH** - both of the above
  - **PDO::FETCH_OBJ** returns object
  - **PDO::FETCH_LAZY** allows all three (numeric associative and object) methods without memory overhead.

```
$statement = $dbh->prepare("SELECT * FROM produk");
$row = $statement1->fetch(PDO::FETCH_OBJ);
echo $row->id . ' - ' . $row->nama;
```

PDO::Function

- Fungsi : **fetchAll( )**
- Digunakan untuk eksekusi perintah SQL menggunakan prepareStatement yaitu untuk mengambil kumpulan baris hasil query (resulset)

```
$sql = " SELECT * FROM prodi ";
$statement1 = $dbh->prepare( $sql );
$statement1->execute( );
$rows = $statement1->fetchAll();

echo 'ID : '. $row['id']. ' -- ' . $row['nama'];
```

PDO::Function

- Fungsi : **rowCount( )**
- Digunakan untuk mendapakan jumlah baris dari hasil query (affected rows) dari perintah SQL : INSERT, UPDATE atau DELETE

```
$sql = " DELETE FROM prodi ";
$statement1 = $dbh->prepare( $sql );
$statement1->execute( );
$jml = $statement->rowCount();

echo 'Jumlah Data Yang DIHAPUS : '. $jml;
```

PDO::Function

- Fungsi : **fetchColumn( )**
- Dapat digunakan untuk mengambil data dari fungsi aggregate : COUNT, MAX, MIN, AVG pada perintah query

```
$sql = "SELECT COUNT(id) FROM prodi";
$jumlah = $dbh->query($sql)->fetchColumn();
echo 'Jumlah Data : ' . $jumlah ;
```

PDO :: Transaction

- Kumpulan query dapat di eksekusi dalam block transaction
- Pada transaction harus dipastikan perintah query tidak terjadi kesalahan (error exception)
- Berikut method untuk transaction menggunakan PDO
  - **beginTransaction()** to start a transaction
  - **commit()** to commit one
  - **rollback()** to cancel all the changes you made since transaction start.

PDO :: Transaction

```
try {
    $dbh->beginTransaction();
    $stmt = $dbh->prepare("INSERT INTO users (name)
VALUES (?)");
    foreach (['Indra','Rio`, 'Edo'] as $name)
    {
        $stmt->execute([$name]);
    }
    $dbh->commit();
}catch (Exception $e){
    $dbh->rollback();
    throw $e;
}
```

PDO :: Data Source Name (DSN)

- Konfigurasi untuk akses database :
  - **database driver**
  - **Host**
  - **Dbname**
  - **port**
  - **username** and **password**;
- Opsi pengaturan dalam format data array

PDO :: Data Source Name (DSN)

- Konfigurasi untuk akses database :

```php
<?php
   $host = '127.0.0.1';
   $db   = 'dblatihan';
   $user = 'root';
   $pass = '';
   $charset = 'utf8mb4';

   $dsn = "mysql:host=$host;dbname=$db;charset=$charset";
?>
```

Script Koneksi Database MySQL Menggunakan Pustaka PDO

```
<?php
    $dbh = new PDO(
        'mysql:host=localhost;dbname=dbproduk',
        "root","password"
    );
?>
```

Menangkap Eksepsi Kesalahan (1)

Kesalahan bisa terjadi pada saat melakukan koneksi ke database ataupun pada saat eksekusi sebuah query. Pada Pustaka PDO, class PDO akan melempar sebuah eksepsi kesalahan Bernama PDO Exception, eksepsi ini harus ditangkap untuk mengetahui jenis kesalahan yang terjadi. Berikut kode lengkapnya untuk menangkap eksepsi dari Class PDO Exception.

PDO :: Data Source Name (DSN)

- all other options go into options array.

```
$opt = [
    PDO::ATTR_ERRMODE            => PDO::ERRMODE_EXCEPTION,
    PDO::ATTR_DEFAULT_FETCH_MODE => PDO::FETCH_ASSOC,
    PDO::ATTR_EMULATE_PREPARES   => false,
];
```

PDO Object :: new PDO()

- Create Connection :: PDO Instance Class

```php
<?php
  $host = '127.0.0.1';
  $db   = 'dblatihan';
  $user = 'root';
  $pass = '';
  $charset = 'utf8mb4';

  $dsn = "mysql:host=$host;dbname=$db;charset=$charset";


$opt = [
    PDO::ATTR_ERRMODE            => PDO::ERRMODE_EXCEPTION,
    PDO::ATTR_DEFAULT_FETCH_MODE => PDO::FETCH_ASSOC,
    PDO::ATTR_EMULATE_PREPARES   => false,
];


$dbh = new PDO($dsn, $user, $pass, $opt);

?>
```

PDO Exception

```php
<?php
try{
  // Database MySQL dengan PDO_MYSQL
  $host = '127.0.0.1';
  $dbname = 'dblatihan';
  $dbuser = 'root';
  $dbpass = '';
  $dbh=new
PDO("mysql:host=$host;dbname=$dbname",$dbuser,$dbpass);
  $dbh->setAttribute(PDO::ATTR_ERRMODE,PDO::ERRMODE_EXCEPTION);
 }catch(PDOException $e){
     echo $e->getMessage();
}
?>
```

Menangkap Eksepsi Kesalahan (2)

```
<?php
    $dsn = 'mysql:dbname=dbbarang;host=localhost';
    $user = 'root';
    $password = 'password';

    try {
        $dbh = new PDO($dsn, $user, $password);
        $dbh->setAttribute(PDO::ATTR_ERRMODE,
                           PDO::ERRMODE_EXCEPTION);
        $dbh->setAttribute(PDO::MYSQL_ATTR_USE_BUFFERED_QUERY,
                           TRUE);
        echo 'Alhamdulillah Sukses Koneksi Database';
    } catch(PDOException $e){
        echo 'Gagal Koneksi dengan Sebab : '.$e->getMessage();
    }
?>
```

Masuk ke MySQL pada Xampp

```
Setting environment for using XAMPP for Windows.
Dosen 2@DOSEN_2 d:\xampp
# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 90
Server version: 10.4.24-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
```

Tampilkan Banyak Database

```
MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| db_restore         |
| dbkoperasi         |
| dbpos              |
| dbproduk2          |
| dbview             |
| information_schema |
| latihan14          |
| latihan2           |
| mysql              |
| performance_schema |
| phpmyadmin         |
| pmbt_petik         |
| test               |
+--------------------+
13 rows in set (0.001 sec)
```

Membuat Database dbbarang

```
MariaDB [(none)]> CREATE DATABASE dbbarang;
Query OK, 1 row affected (0.001 sec)
```

Menggunakan Database dbbarang

```
MariaDB [(none)]> USE dbbarang;
Database changed
MariaDB [dbbarang]>
```

Membuat Table jenis

```
MariaDB [dbbarang]> CREATE TABLE jenis(
    -> id INT PRIMARY KEY AUTO_INCREMENT,
    -> nama VARCHAR(30) NOT NULL UNIQUE);
Query OK, 0 rows affected (0.020 sec)
```

Deskripsi Table jenis

```
MariaDB [dbbarang]> DESC jenis;
+-------+-------------+------+-----+---------+----------------+
| Field | Type        | Null | Key | Default | Extra          |
+-------+-------------+------+-----+---------+----------------+
| id    | int(11)     | NO   | PRI | NULL    | auto_increment |
| nama  | varchar(30) | NO   | UNI | NULL    |                |
+-------+-------------+------+-----+---------+----------------+
2 rows in set (0.003 sec)
```

Membuat Table produk

```
MariaDB [dbbarang]> CREATE TABLE produk(
    -> id INT PRIMARY KEY AUTO_INCREMENT,
    -> kode char(5) NOT NULL UNIQUE,
    -> nama VARCHAR(30) NOT NULL,
    -> kondisi enum('Baru','Second') NOT NULL,
    -> harga DOUBLE NOT NULL,
    -> stok INT NOT NULL,
    -> idjenis INT NOT NULL REFERENCES jenis(id),
    -> foto varchar(30));
Query OK, 0 rows affected (0.012 sec)
```

```
MariaDB [dbbarang]> DESC produk;
+---------+----------------------+------+-----+---------+----------------+
| Field   | Type                 | Null | Key | Default | Extra          |
+---------+----------------------+------+-----+---------+----------------+
| id      | int(11)              | NO   | PRI | NULL    | auto_increment |
| kode    | char(5)              | NO   | UNI | NULL    |                |
| nama    | varchar(30)          | NO   |     | NULL    |                |
| kondisi | enum('Baru','Second') | NO   |     | NULL    |                |
| harga   | double               | NO   |     | NULL    |                |
| stok    | int(11)              | NO   |     | NULL    |                |
| idjenis | int(11)              | NO   |     | NULL    |                |
| foto    | varchar(30)          | YES  |     | NULL    |                |
+---------+----------------------+------+-----+---------+----------------+
8 rows in set (0.004 sec)
```

Deskripsi Table produk

TERIMA KASIH
ATAS SEGALA PERHATIAN
SEMOGA BERMANFAAT...