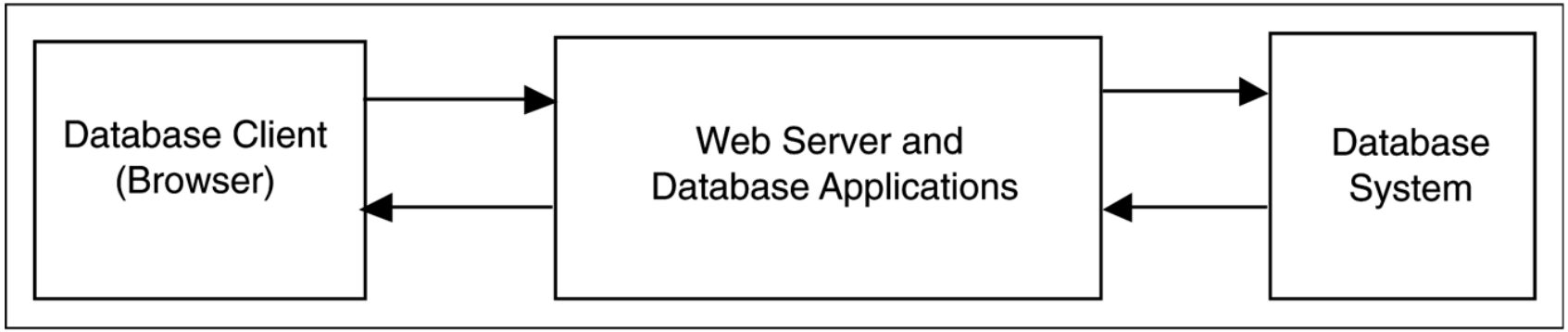
Purpose of Server-Side Scripting

- database access
  - Web page can serve as front-end to a database
    - make requests from browser,
    - passed on to Web server,
    - calls a program to access the database,
    - sends the results back to the browser

Architectures for Database Access



Architectures for Database Access

- PHP & Database Access
  - PHP supports more than 15 databases
  - An API for each specific database system (e.g. MySQL API)
  - Convenient for Web access to databases, because PHP is run on the Web server
  - Most web servers supports php& MYSQL

MySQLi

- The **MySQLi Extension** (MySQL Improved) is a relational database driver used in the PHP programming language to provide an **interface** with MySQL databases.
- **MySQLi** is an **improved** version of the older PHP MySQL driver, offering various benefits.
- The developers of the PHP programming language recommend using MySQLi when dealing with MySQL server versions 4.1.3 and newer (takes advantage of new functionality)

mysqli_connect()

- Before you can access data in a database, you must create a connection to the database.
- this is done with the mysqli_connect() function.

This function returns an object which represents the connection to a MySQL Server. , or FALSE and diplays a warning on failure

Syntax

mysqli_connect**(servername,username,password, dbname,port,socket)**

Parameter	Description
servername	Can be either a host name or an IP address. Passing the **NULL** value or the string "localhost" to this parameter, the local host is assumed
username	The MySQL user name
password	If not provided or **NULL**, the MySQL server will attempt to authenticate the user against those user records which have no password only.
dbname	If provided will specify the default database to be used when performing queries.
port	If provided ,Specifies the port number to attempt to connect to the MySQL server.
socket	If provided ,Specifies the socket or named pipe that should be used.

http://php.net/manual/en/function.mysqli-connect.php

PHP MySQL Connect & disconnect to a Database

- To connect PHP to a database, use **mysqil_connect**,
- Terminate the connection to the database with **mysqli_close**

```
$db = mysqli_connect("localhost","root","");
……
……
mysqli_close($db);
```

die()-exit()

Definition and Usage

The die() function exits the current script

This function is an alias of the exit() function.

void die (int $status)

void die ([string $status])

Syntax

die(message) die(int)

Parameter	Description
Message	If status is a string, this function prints the status just before exiting.
integer	If status is an integer, that value will be used as the exit status and not printed. Exit statuses should be in the range 0 to 254, the exit status 255 is reserved by PHP and shall not be used. The status 0 is used to terminate the program successfully.

Example

Stop executing code if not connected and show a certain message

```
$db = mysqli_connect("localhost","root","") or die (“ can not establish connection ”);
echo “ Connected Successfully to database”
```

mysqli_connect_errno() function

Definition and Usage

The mysqli_connect_errno() function returns the error code from the last connection error, if any

Syntax

mysqli_connect_errno();

Example

```
<?php
$con=mysqli_connect("localhost","wrong_user","my_password","my_db");
// Check connection
if (!$con)
  {
  die("Connection  error: " . mysqli_connect_errno()(;
  }
?>
```

Note:The concatenation operator (.) is used to put two string values together

mysqli_query()

- After connection , excute sql statments using **mysqli_query**.
- Returns **FALSE** on failure.
- For successful ***SELECT, SHOW, DESCRIBE*** or ***EXPLAIN*** queries **mysqli_query()** will return a **mysqli_result** object.
- For other successful queries **mysqli_query()** will return **TRUE**.

Syntax

mysqli_query(*connection,query,resultmode*);

Parameter	Description
connection	A link identifier returned by mysqli_connect() or mysqli_init()
query	The query string.
resultmode	Optional: Either the MYSQLI_USE_RESULT (Use this if we have to retrieve large amount of data) MYSQLI_STORE_RESULT (This is default)

Ref: http://www.w3schools.com/php/func_mysqli_query.asp

mysqli_select_db()

Definition and Usage

The mysqli_select_db() function is used to change the default database for the connection.

Syntax

```
mysqli_select_db(connection,dbname);
```

Parameter	Description
connection	Required. Specifies the MySQL connection to use
dbname	Required. Specifies the default database to be used

mysqli_affected_rows()

Definition and Usage

The mysqli_affected_rows() function returns the number of affected rows in the previous SELECT, INSERT, UPDATE, REPLACE, or DELETE query.

Syntax

```
mysqli_affected_rows(connection);
```

Parameter	Description
connection	Required. Specifies the MySQL connection to use

mysqli_error()

Definition and Usage

Returns a string with the error description. "" if no error occurred

Syntax

mysqli_error(*connection*);

Parameter

Required. Specifies the MySQL connection to use

Parameter	Description
connection	Required. Specifies the MySQL connection to use

Example :creates a database called "my_db":

```
<?php
$con = mysqil_connect("localhost","peter","abc123");

if (!$con)
  {
  die("Connection  error: " . mysqli_connect_errno();
  }

if (mysqli_query($con,  "CREATE DATABASE my_db“))
  {
  echo "Database created";
  }
else
  {
  echo "Error creating database: " . mysqli_error($con);
  }

mysqli_close($con);
?>
```

Example :Creating a database with tables

```
<?php
$con = mysqil_connect("localhost","peter","abc123");
if (!$con){
  die("Connection  error: " . mysqli_connect_errno();}
// Create database
if (mysqli_query($con, "CREATE DATABASE my_db") ) {
  echo "Database created";}
else{
  echo "Error creating database: " . mysqli_error($con);  }
// Create table
mysqli_select_db($con,“my_db");
$sql = "CREATE TABLE Persons
(
FirstName varchar(15),
LastName varchar(15),
Age int
)";
// Execute query
mysqli_query($con, $sql);
mysqli_close($con);
?>
```

Example :inserting record into table

```
<?php
$con = mysqli_connect("localhost","root","") ;
if (!$con)
  {
  die("Connection  error: " . mysqli_connect_errno();
  }
mysqli_select_db($con,"aast") or die(mysqli_error($con));
$statment1="insert into courses (Code ,Title,prerequest)  values('cs234','AI','CS244')";
$flag =mysqli_query($con,$statment1);
if ($flag)
{echo "sql statment excuted";}
else
{
die ("sql statment NOT excuted".mysqli_error($con ));
}

?>
```

Database: aast

Table :courses

http://127.0.0.1/insertDemo/insertDemo.php

N.B: The code to connect to server and use a certain database can be in a separate PHP file and embedded using **require**

Example : using mysqli_affected_rows();

```
<?php
$con = mysqil_connect("localhost","mysql_user","mysql_pwd");
if (!$con)
  {
  die("Connection error: " . mysqli_connect_errno();
  }

mysqli_select_db($con,"mydb");
mysqli_query($con, "DELETE FROM mytable WHERE id < 5");
$rc = mysqli_affected_rows($con);
echo "Records deleted: " . $rc;

mysqli_close($con);
?>
```

Dealing with the result

mysqli_fetch_array (result,result_type)

- This function returns a row from the recordset resulted from mysqli_query() function
- The row is returned as an array of strings on success,
- each call to this function causes a pointer to move on to next row
- The function returns FALSE on failure or when there are no more rows,
- The array type can be MYSQL_ASSOC - Associative array, with keys equal to column names
- MYSQL_NUM - Numeric array
  MYSQL_BOTH - Default. Both associative and numeric array

```
$sql = "SELECT * from Person WHERE Lastname='Ahmed'";
$result = mysqli_query($sql,$con);
$data=(mysqli_fetch_array($result));
echo $data[0]; echo $data[1];echo $data[2]; //A B  C
//echo $data["column1"]; echo $data["colum2"];echo $data["column3"];
$data=(mysqli_fetch_array($result));
echo $data[0]; echo $data[1];echo $data[2]; // C D  E
```

	Column 1	Column2	Column 3
→ row1	A	B	C
row2	C	D	E
row3			

Example :Dealing with the result

```
<?php
$con = mysqli_connect("localhost","root","")
or die (" can not establish connection ");
mysqli_select_db($con,"aast") or
die(mysqli_error($con));

$statment1= "SELECT * FROM courses ";
$result=mysqli_query($con,$statment1);
if(!($result)){echo  ("Error:
".mysqli_error($con));}
while ($row = mysqli_fetch_array($result))
{
echo $row["Code"]."-";
echo $row["Title"]."-";
echo $row["Prerequest"];
echo "<br/>";
}

?>
```

Database: aast

Table :courses

Code	Title	Prerequest
CS433	Web Programming	IS373
CS244	Advance Progra...	CS243
CC231	Networks	CS143

http://localhost/selectDemo/selectDemo.php

mysqli_num_rows() function

Definition and Usage

The mysqli_num_rows() function returns the number of rows in a recordset. This function returns FALSE on failure.

Syntax

```
mysqli_num_rows(data)
```

Parameter	Description
data	Required. Specifies which data pointer to use. The data pointer is the result from the mysqli_query() function

Example

```
<?php
$con = mysqli_connect("localhost",  "peter", "abc123");
if (!$con)
  {die('Could not connect: ' . mysql_error());}
$db_selected = mysqli_select_db($con,"test_db");
$sql = "SELECT * FROM person";
$result = mysqli_query($con,$sql);
echo mysqli_num_rows($result);
mysqli_close($con);
?>
```

Example :Dealing with the result using mysql_num_rows function

```
<?php
$con = mysqli_connect("localhost","root","") or die (" can
not establish connection ");
mysqli_select_db($con,"aast") or die(mysqli_error($con));

$statment1= "SELECT * FROM courses ";
$result=mysqli_query($con ,$statment1);

$num_rows = mysqli_num_rows($result);
 for ($row_num = 0; $row_num < $num_rows;
$row_num++) {
    $row = mysqli_fetch_array($result);
    print "<p> Result row number" .
            ($row_num + 1) .
            " Code: ";
    echo($row["Code"]);
 echo " Title: ";
 echo ($row["Title"]);
 echo " Prerequest : ";
 echo ($row["Prerequest"]);
 echo "</p>";
}
?>
```

Database: aast

Table :courses

Code	Title	Prerequest
CS433	Web Programming	IS373
CS244	Advance Progra...	CS243
CC231	Networks	CS143

http://localhost/selectDemo/selectDemo2.php

Example : Inserting records using a form

insertForm.html

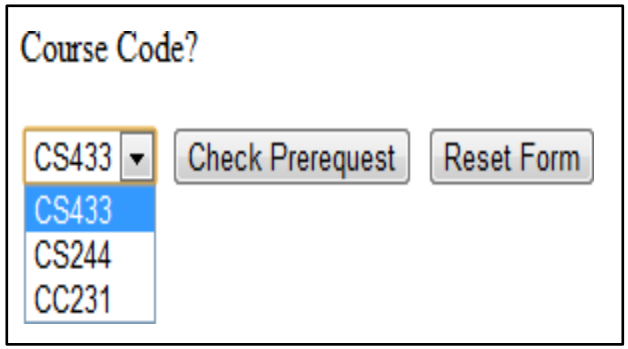
```
<form method="post"  action="insertForm.php">
<table border="1">
<tr>
<td>Course ID </td>
<td><input type="text"  name="ID"> </td>
</tr>
<tr>
<td>Course Title </td>
<td><input type="text"     name="title" ></td>
</tr>
<tr>
<td>Prerequest </td>
<td><input type="text"     name="Prerequest" ></td>
</tr>
<tr>
<td><input type="submit"  value="Add Course"/>
</td>
<td><input type="reset"  /></td>
</tr>
</table>
</form>
```

http://localhost/Insert_Form/insertForm.html

insertForm.php

```
<?php
$id=$_POST["ID"];
$title=$_POST["title"];
$prequest=$_POST["Prerequest"];
$con = mysqli_connect("localhost","root","") or die (" can not establish connection ");
mysqli_select_db($con,"aast");
$statment1= "insert into  courses (Code ,Title,Prerequest) values('$id','$title','$prequest')";
$flag =mysqli_query($con,$statment1);
if ($flag)
{
echo "Record added Successfully";}
else
{
die ("Can not add Record ".mysqli_error());
}
```

Example : querying database using a form



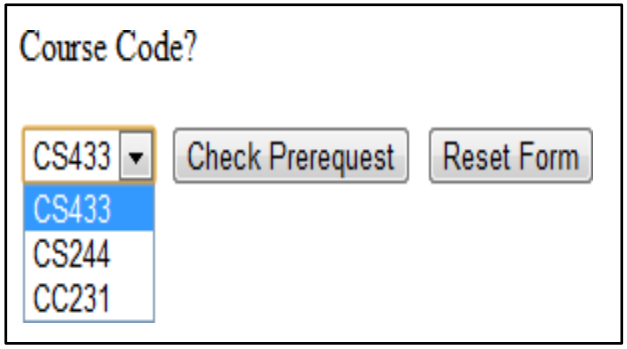
Database: aast

Table :courses

Code	Title	Prerequest
CS433	Web Programming	IS373
CS244	Advance Progra...	CS243
CC231	Networks	CS143

http://localhost/FormQuery/FormQuery.php

FormQuery.php




```
<form method="post"  action="FormQuery.php">
<p>Course Code?</p>
<select name="Course_Code">
<option >CS433 </option>
<option>CS244 </option>
<option>CC231</option>
</select>
<input type = "submit“ value = "Check Prerequest" />
<input type = "reset“ value = "Reset Form" />
</form>
……
```

FormQuery.php

```
<?php
$con = mysqli_connect("localhost","root","","aast") or die (" can not establish
connection ");
 ?>

 <?php
    if (isset($_POST["Course_Code"]))
    {
          $courseCode=$_POST['Course_Code'];
          $query = "SELECT Prerequest from courses  where Code= '$courseCode' ";
     $result = mysqli_query($con,$query);
     if(!($result))
      {echo ("Error: ".mysqli_error($con));
            die ("Can not execute".mysqli_error());
          }
     $row = mysqli_fetch_array($result);
     $answer=$row ["Prerequest"];
     echo "<p> The Prerequest for $courseCode is $answer <p>";
     }
   ?>
</html>
```