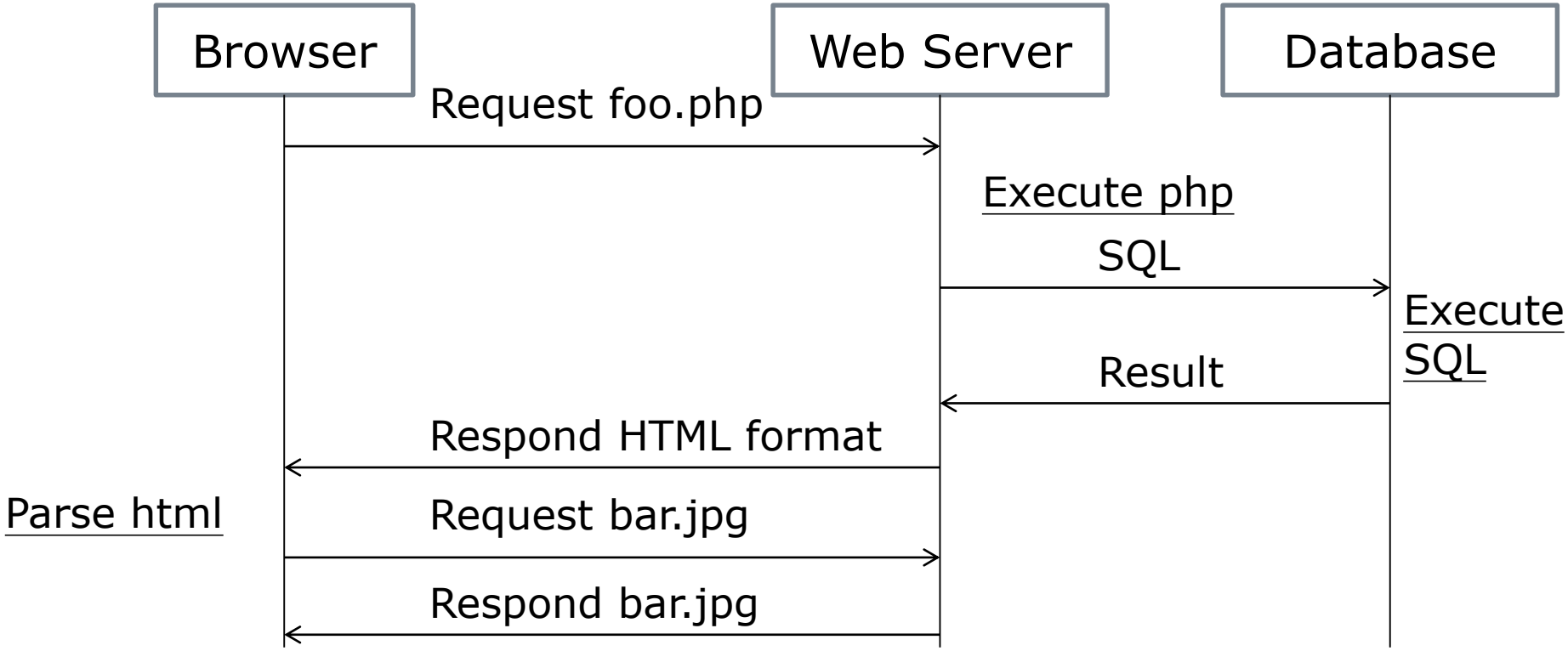
# A Very Brief Introduction to Web Application Development (II)

Jiun-Long Huang (黃俊龍)
Department of Computer Science
National Chiao Tung University

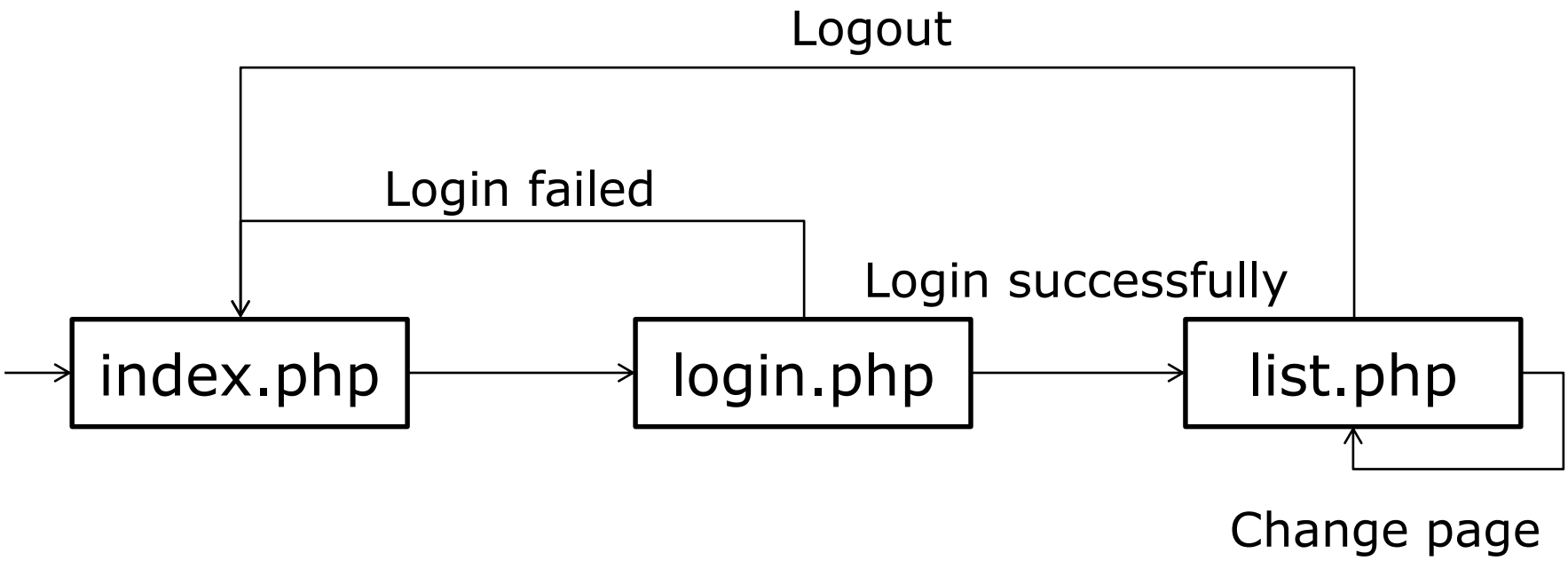
# Dynamic Web Application 1.0: Back End Approach

# Control Flow



- Data transfer between php files
  - GET
  - POST
  - Session
- SQL
  - Prepared statement

# An Example


Logout
Login failed
Login successfully
index.php
login.php
list.php
Change page

# Table users

- Column
  - user_id: bigint(20), AUTO_INCREMENT, Primary Key
  - username: char(40) , Unique
- Index
  - user_id, username

# Table posts

- Column
  - post_id: bigint(20), AUTO_INCREMENT, Primary Key
  - title: char(30)
  - content: char(100)
- Index
  - post_id

# Screenshots

- Login


- Browse

# index.php

```
<?php
  session_start();
  # remove all session variables
  session_unset();
  # destroy the session
  session_destroy();
  $_SESSION['Authenticated']=false;
?>

<!DOCTYPE html>
<html>
<body>

<form action="login.php" method="post">
  User Name:<br>
  <input type="text" name="username"><br>
  <input type="submit" value="Sign In">
</form>

</body>
</html>
```

# login.php

```
<?php
session_start();
$_SESSION['Authenticated']=false;

$dbservername='localhost';
$dbname='examdb';
$dbusername='';
$dbpassword='';

if (isset($_POST['username']))
{
  $username=$_POST['username'];
  try {
    $conn = new
PDO("mysql:host=$dbservername;dbname=$dbname", $dbusername,
$dbpassword);
    # set the PDO error mode to exception
    $conn->setAttribute(PDO::ATTR_ERRMODE,
PDO::ERRMODE_EXCEPTION);
```

```
    $stmt=$conn->prepare("select username from users
where username=:username");
    $stmt->execute(array('username' => $username));

    if ($stmt->rowCount()==1)
    {
      $row = $stmt->fetch();
      $hashvalue=hash('sha256', $username);
      $_SESSION['Authenticated']=true;
      $_SESSION['Username']=$row[0];
      header("Location: list.php?page=1");
      exit();
    }
```

```
    else
    {
      session_unset();
      session_destroy();
      echo <<<EOT
         <!DOCTYPE html>
          <html>
          <body>
            <script>
              alert("Login failed.");
                window.location.replace("index.php");
             </script>
EOT;
    }
  }
```

```
  catch(PDOException $e)
  {
    $msg=$e->getMessage();
    session_unset();
    session_destroy();

    echo <<<EOT
      <!DOCTYPE html>
      <html>
      <body>
        <script>
          alert("Internal Error.");
            window.location.replace("index.php");
         </script>
EOT;
  }
}
?>
</body>
</html>
```

# list.php

```
<?php
  session_start();

  $dbservername='localhost';
  $dbname='examdb';
  $dbusername='';
  $dbpassword='';

  if (isset($_SESSION['Authenticated']) &&
$_SESSION['Authenticated']==true)
  {

    if (isset($_GET['page']))
      $page=$_GET['page'];
    else
      $page=1;
    $postperpage=2;
```

```
    try {
      $conn = new
PDO("mysql:host=$dbservername;dbname=$dbname", $dbusername,
$dbpassword);
      $conn->setAttribute(PDO::ATTR_ERRMODE,
PDO::ERRMODE_EXCEPTION);
      $stmt=$conn->prepare("select count(*) from posts");
      $stmt->execute();
      $row=$stmt->fetch();
      $totalpage=ceil($row[0]/$postperpage);

      echo <<<EOT
       <!DOCTYPE html>
       <html>
       <body>
        <button type="button"
onClick="window.location.replace('index.php');">Logout</butto
n><br>
EOT;
```

```
      if ($totalpage>0)
      {
        for($i=1;$i<=$totalpage;$i++)
        {
          if ($i==$page)
            echo "$i ";
          else
            echo "<a href='list.php?page=$i'>$i</a> ";
        }
        echo '<br>';
        $startrow=($page-1)*$postperpage;
        $stmt=$conn->prepare("select title, content from
posts limit $startrow,2");
        $stmt->execute();
        echo '<ul>';
        while($row=$stmt->fetch())
          echo '<li> ' . $row['title'] . '<br>' .
$row['content'] . '<br><br> </li>';
      }
        echo '</ul></body></html>';
    }
```

```
    catch (PDOException $e)
    {
      session_unset();
      session_destroy();

      echo <<<EOT
        <!DOCTYPE html>
        <html>
        <body><script>
          alert("Internal Error. $msg");
            window.location.replace("index.php");
        </script></body>
        </html>
EOT;
    }
  }
```

```
  else
  {
      session_unset();
      session_destroy();

      echo <<<EOT
        <!DOCTYPE html>
        <html>
        <body><script>
          alert("Internal Error.");
            window.location.replace("index.php");
      </script></body>
      </html>
EOT;
  }
?>
```

# PHP Database Access

- PDO
- MySQLi
  - 'i' means improvement
- MySQL (deprecated in PHP 5.5.0)
  - mysql_connect, mysql_select_db

# Hash

- Do not use MD5 and SHA-1 for authentication
  - MD5 has been broken by Tao Xie and Dengguo Feng in 2009
  - SHA-1 has been broken by Google in 2017
- SHA-2 is preferred
  - SHA-224、SHA-256、SHA-384、SHA-512、SHA-512/224、SHA-512/256
- salt

# Web Development Framework

- Framework
  - CodeIngiter
  - Laravel