1. (20 pts) For each of the following, give a short description of what it is, its typical use and its main benefit.

   (a) PHP
   (b) MySQL
   (c) JavaScript
   (d) CSS

2. (12 pts)

   (a) Insert an image taken from file `utepPicture.png` in the same directory as this html file. The image should be displayed by the browser above the welcome sentence.

   ```html
   <html>
   <body>
   Welcome to UTEP!
   </body>
   </html>
   ``

   (b) Change the following to display “Welcome to UTEP!” and “The University of Texas at El Paso” on different lines.

   ```html
   <html>
   <body>
   Welcome to UTEP! The University of Texas at El Paso.
   </body>
   </html>
   ``

   (c) Make the form use the “post” method, add a field with label “E-mail address:” and have the string “Submit e-mail address” displayed on the button instead of the default button string.

   ```html
   <html>
   <body>
   <form action="check_address.php" method="get">
   <input type="submit">
   </form>
   </body>
   </html>
   ```
3. (16 pts)

(a) What is the difference between include and include_once in PHP?

(b) What is the difference between include and require in PHP?

(c) What is printed by the following PHP program?

```php
<?php
    $object1 = new Student();
    $object1->name = "Marco";
    $object2 = $object1;
    $object2->name = "Amelia";
    echo "object1 name = " . $object1->name . "<br>"
    echo "object2 name = " . $object2->name;

    class Student {
        public $name;
    }
?>
```

(d) What is printed by the following PHP program?

```php
<?php
    $s = new Student();
    $s->name="Jose";
    $s->printObject();

    class Student {
        public $name;
        public $id;
        function printObject(){
            $name="Arturo";
            echo $this->name."\n"
            echo $name;
        }
    }
?>
```

4. (15 pts) Consider example 10-6 from the cheat sheet.

What would you need to add a button at the end that says “DELETE ALL RECORDS”. When the user clicks on the button, all records are deleted from the database. Indicate where in the example you would insert your addition.
5. (20 pts) What is displayed by following page?

```php
<?php
$head = <<< _END
<html>
<head><title>User Data</title></head>
<body>
<h1>Books</h1>
<p>
<ul>
</ul>
_END;
$v1=12;
$b1="The Southwest";
$a1='Arthur';
$y1=1999;
$v2='$v1+1';
$b2="$b1 before and now";
$a2='$a1 Ashe';
$y2=$y1++;
$v3="$v1+1";
$b3="$b1 from now on";
$a3=0;
$y3="$y1+$y2";

$book1=array("title"=>$b1,"author"=>$a1,"year"=>$y1);
$book2=array($b2,$a2,$y2);
$book3=array($b3,"author"=>$a3,$y3);

$books[$v1]=$book1;
$books[$v2]=$book2;
$books[$v3]=$book3;

echo $head;
echo "<ol>";
foreach($books as $v => $b){
echo "<li>book $v <ul”;
foreach($b as $index => $value)
echo " <li>$index: $value</li>
";
echo "</ul></li>";
}
echo " </ol>";
echo "  </p>
</body>
</html>
?>
```
6. (20 pts) SQL injection is one of the top web application vulnerabilities.

(a) What is SQL injection? Explain with an example

(b) PHP provides the following methods to help in sanitizing user inputs. For each one, write a statement describing what it does, and give an relevant example of a $var string (before and after) that illustrates its use:

i. $var = stripslashes($var);

ii. $var = htmlentities($var);

iii. $var = strip_tags($var);

iv. $var = $connection->real_escape_string($var);