

Tyson Duffenais
201021102
Computer Science 4754
Database Project

2. All HTML and PHP files are located in the following directory:

http://www.cs.mun.ca/~tgd187/tgd187_4754/

These files include:

main.html

2a.html & 2a.php

2b.html & 2b.php

2c.html & 2c.php

2d.html & 2d.php

2e.html & 2e.php

Where files names correspond to query questions assigned.

To run the web application, and test the various queries, use the following:

http://www.cs.mun.ca/~tgd187/tgd187_4754/main.html

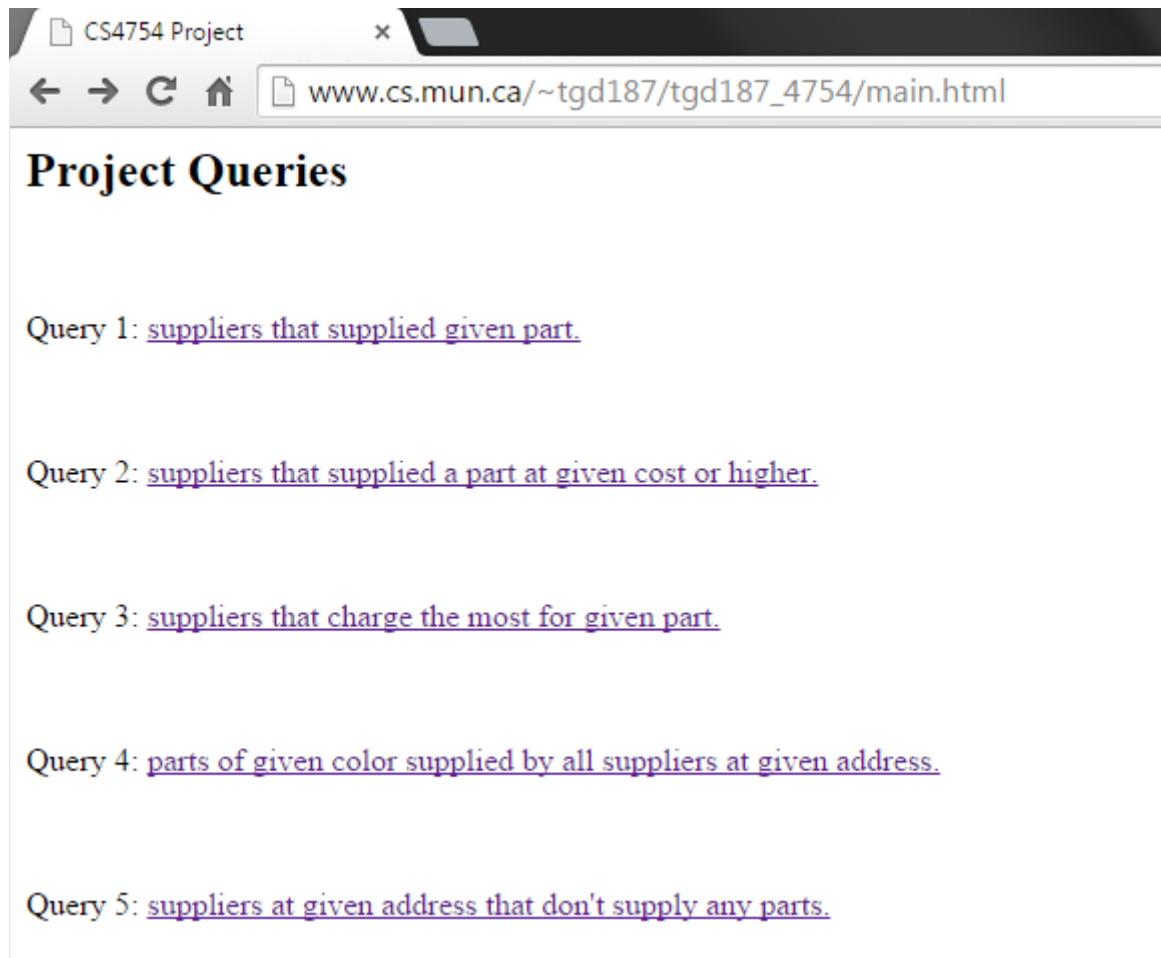
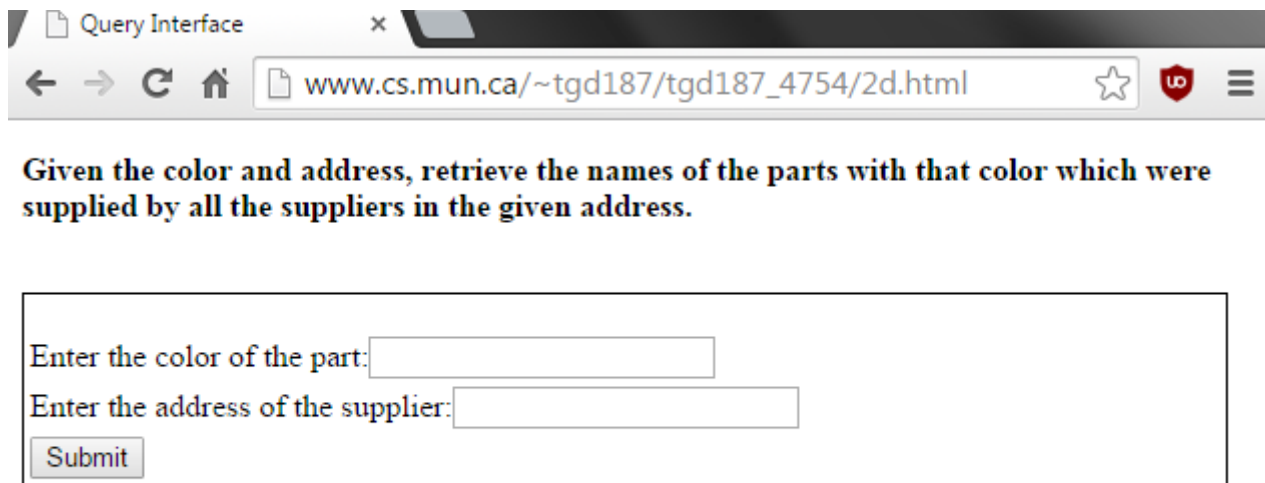


Figure 1. main webpage, “main.html”

3. If the user clicks one of the queries listed on the main webpage, they will be brought to a new webpage that contains the query and a small form to fill out. For example, query 4 (2d).



Query Interface

www.cs.mun.ca/~tgd187/tgd187_4754/2d.html

Given the color and address, retrieve the names of the parts with that color which were supplied by all the suppliers in the given address.

Enter the color of the part:

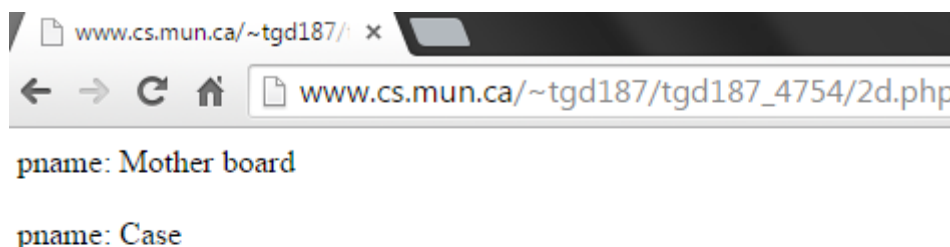
Enter the address of the supplier:

[< Home >](#)

Figure 2. Query 4 example, “2d.html”

The home button allows the user to go back to the main webpage. If the form is filled out, and the user clicks submit, the results of the query will appear on a new webpage. For example:

Color = Grey Address = 1 Elizabeth Ave



www.cs.mun.ca/~tgd187/tgd187_4754/2d.php

pname: Mother board

pname: Case

[< Home >](#) [< Back >](#)

Figure 3. Results of query 4

On the query results webpage, the user may either click <Back> to go back to fill in the form again, or click <Home> to go back to the main webpage.

4. Source code: I've omitted parts of the *.php code to save paper. Only the differences between the php files are included (i.e. input from form & query to database).

main.html

```
<html>
<head><title>CS4754 Project</title>
</head>
<body>
<h2><b>Project Queries</b></h2>
<br><br>
Query 1: <a href="2a.html">suppliers that supplied given part.</a>
<br><br><br><br>
Query 2: <a href="2b.html">suppliers that supplied a part at given cost or higher.</a>
<br><br><br><br>
Query 3: <a href="2c.html">suppliers that charge the most for given part.</a>
<br><br><br><br>
Query 4: <a href="2d.html">parts of given color supplied by all suppliers at given address.</a>
<br><br><br><br>
Query 5: <a href="2e.html">suppliers at given address that don't supply any parts.</a>
</body>
</html>
```

2a.html

```
<!doctype html>
<html>
<head><title>Query Interface</title>
</head>
<body>
<p><b>Given the name of a part, retrieve the information about each supplier who supplied it.</b></p>
<br>
<form method="post" action="2a.php" style="border:solid 1px; width:600px">
<table><br>
<tr><td>Enter the name of the part:<input type="text" name="pname"></td></tr>
<tr><td>Select the information you want to retrieve:</td></tr>
<tr><td><input type="checkbox" name="sid" value="sid">Supplier ID</td></tr>
<tr><td><input type="checkbox" name="sname" value="sname">Supplier name</td></tr>
<tr><td><input type="checkbox" name="address" value="address">Supplier address</td></tr>
<tr><td><input type="checkbox" name="cost" value="cost">Part cost</td></tr>
<tr><td align="left"><input type="submit" value="Submit"></td></tr>
</table>
</form>
<!--Back button-->
<p style="position: fixed; bottom: 0; width:100%; text-align: left">
<a href="main.html">&lt; Home &gt;</a></p>
</body>
</html>
```

2a.php

```
<html>
<body>
<?php
    //Global database variables
    define('HOST', 'mysql.cs.mun.ca');
    define('USER' , 'tgd187');
    define('PASS', 'MKhIIOVg');
    define('NAME' , 'cs4754_tgd187');

    //Connect to, & select, database
    $db = new mysqli(HOST, USER, PASS, NAME);
    if(!$db) { die('Cannot connect to database: ' . mysql_error()); }
```

```

//Get input from form
$name = $_POST['pname'];
$checkedAttr = []; //Array of selected attributes to return

//Check if attribute is selected; if so, add to array
if (array_key_exists('sid', $_POST)){
    array_push($checkedAttr, 'S.'.$_POST['sid']);
}
if (array_key_exists('sname', $_POST)){
    array_push($checkedAttr, 'S.'.$_POST['sname']);
}
if (array_key_exists('address', $_POST)){
    array_push($checkedAttr, 'S.'.$_POST['address']);
}
if (array_key_exists("cost", $_POST)){
    array_push($checkedAttr, 'C.'.$_POST['cost']);
}

//Function to convert array to string
function arrayToString($array){
    $aString = "";
    for($i = 0; $i < count($array); $i++){
        $aString .= $array[$i];    //Concatenate
        if ($i != count($array) - 1){
            $aString .= ',';    //Concatenate
        }
    }
    return $aString;
}

//Query the database
$sql = "SELECT ".arrayToString($checkedAttr)."
        FROM Suppliers S, Catalog C, Parts P
        WHERE S.sid = C.sid AND C.pid = P.pid AND P.pname = '$pname'";

//Query result
$result = mysqli_query($db, $sql);
if (!$result){ die('Invalid query: ' . mysqli_error()); }

//Output
if ($result->num_rows > 0){
    while($row = $result ->fetch_assoc()){
        foreach ($row as $info => $value){
            echo $info . ": $value <br>";
        }
        echo "<br>";
    }
} else{ echo 'No results found'; }

//Close database
$db->close();
?>

<!--Back buttons-->
<p style="position: fixed; bottom: 0; width:100%; text-align: left">
<a href="main.html">&lt Home &gt</a>
<a href="2a.html">&lt Back &gt</a></p>
</body>
</html>

```

2b.html

```
<!doctype html>
<html>
<head><title>Query Interface</title>
</head>
<body>
<p><b>Given the cost, retrieve the names of the suppliers who have ever supplied a part with that cost or higher.
</b></p><br>
<form method="post" action="2b.php" style="border:solid 1px; width:600px">
<table><br>
<tr><td>Enter the cost of the part:<input type="text" name="cost"></td></tr>
<tr><td align="left"><input type="submit" value="Submit"></td></tr>
</table>
</form>
<!--Back button-->
<p style="position: fixed; bottom: 0; width:100%; text-align: left">
<a href="main.html">&lt Home &gt</a></p>
</body>
</html>
```

2b.php

```
<html>
<body>
<?php
    //Global database variables
    ...
    //Connect to, & select, database
    ...
    //Get input from form
    $cost = $_POST['cost'];

    //Query the database
    $sql = "SELECT S.sname
            FROM Suppliers S
            WHERE S.sid IN ( SELECT S.sid
                            FROM Suppliers S, Catalog C
                            WHERE S.sid = C.sid AND C.cost >= $cost )";

    //Query result
    ...
    //Output
    ...
    //Close database
    ...
?>
<!--Back buttons-->
    ...
</body>
</html>
```

2c.html

```
<!doctype html>
<html>
<head><title>Query Interface</title>
</head>
<body>
<p><b>Given the pid, retrieve the names and addresses for the suppliers who charge the most for that part.
</b></p><br>
<form method="post" action="2c.php" style="border:solid 1px; width:600px">
<table><br>
<tr><td>Enter the pid of the part:<input type="text" name="pid"></td></tr>
<tr><td align="left"><input type="submit" value="Submit"></td></tr>
</table>
</form>
<!--Back button-->
<p style="position: fixed; bottom: 0; width:100%; text-align: left">
<a href="main.html">&lt Home &gt</a></p>
</body>
</html>
```

2c.php

```
<html>
<body>
<?php
    //Global database variables
    ...
    //Connect to, & select, database
    ...
    //Get input from form
    $pid = $_POST['pid'];

    //Query the database
    $sql = "SELECT S.sname, S.address
            FROM Suppliers S, Catalog C, Parts P
            WHERE C.pid = P.pid AND C.sid = S.sid AND P.pid = '$pid' AND C.cost = (
                SELECT MAX(C1.cost)
                FROM Catalog C1
                WHERE C1.pid = P.pid)";

    //Query result
    ...
    //Output
    ...
    //Close database
    ...
?>
<!--Back buttons-->
    ...
</body>
</html>
```

2d.html

```
<!doctype html>
<html>
<head><title>Query Interface</title>
</head>
<body>
<p><b>Given the color and address, retrieve the names of the parts with that color which were supplied by all the
suppliers in the given address. </b></p><br>
<form method="post" action="2d.php" style="border:solid 1px; width:600px">
<table><br>
<tr><td>Enter the color of the part:<input type="text" name="color"></td></tr>
<tr><td>Enter the address of the supplier:<input type="text" name="address"></td></tr>
<tr><td align="left"><input type="submit" value="Submit"></td></tr>
</table>
</form>
<!--Back button-->
<p style="position: fixed; bottom: 0; width:100%; text-align: left">
<a href="main.html">&lt Home &gt</a></p>
</body>
</html>
```

2d.php

```
<html>
<body>
<?php
    //Global database variables
    ...
    //Connect to, & select, database
    ...
    //Get input from form
    $address = $_POST['address'];
    $color = $_POST['color'];

    //Query the database
    $sql = "SELECT P.pname
            FROM Parts P
            WHERE NOT EXISTS (SELECT S.sid
                                FROM Suppliers S
                                WHERE S.address = '$address' AND
                                NOT EXISTS
                                    (SELECT C.sid
                                     FROM Catalog C
                                     WHERE C.pid = P.pid AND C.sid = S.sid AND P.color = '$color'))";

    //Query result
    ...
    //Output
    ...
    //Close database
    ...
?>
<!--Back buttons-->
    ...
</body>
</html>
```


2e.html

```
<!doctype html>
<html>
<head><title>Query Interface</title>
</head>
<body>
<p><b>Given the address, retrieve the sids and names of the suppliers in that address who do not supply any part.
</b></p><br>
<form method="post" action="2e.php" style="border:solid 1px; width:600px">
<table><br>
<tr><td>Enter the address of the supplier:<input type="text" name="address"></td></tr>
<tr><td align="left"><input type="submit" value="Submit"></td></tr>
</table>
</form>
<!--Back button-->
<p style="position: fixed; bottom: 0; width:100%; text-align: left">
<a href="main.html">&lt Home &gt</a></p>
</body>
</html>
```

2e.php

```
<html>
<body>
<?php
    //Global database variables
    ...
    //Connect to, & select, database
    ...
    //Get input from form
    $address = $_POST['address'];

    //Query the database
    $sql = "SELECT S.sid
            FROM Suppliers S
            WHERE S.address = '$address' AND S.sid NOT IN (SELECT C.sid
                                                            FROM Catalog C )";

    //Query result
    ...
    //Output
    ...
    //Close database
    ...
?>
<!--Back buttons-->
<p style="position: fixed; bottom: 0; width:100%; text-align: left">
<a href="main.html">&lt Home &gt</a>
<a href="2e.html">&lt Back &gt</a></p>
</body>
</html>
```

5. The relation instances for the three relations, Suppliers, Parts, & Catalog:

```
mysql> select * from Suppliers;
```

sid	sname	address
111	John Smith	1 Elizabeth Ave
222	Linda Wang	20 Main Street
333	Paul Justin	150 Water Street
444	Andy Brown	1 Elizabeth Ave
555	Bob Lee	10 Governor Road
666	Lisa Reed	10 Governor Road

6 rows in set (0.00 sec)

```
mysql> select * from Parts;
```

pid	pname	color
P1	Mother board	Grey
P2	CPU-AMD	White
P3	Case	Grey
P4	Monitor	White
P5	Cable	Red

5 rows in set (0.00 sec)

```
mysql> select * from Catalog;
```

sid	pid	cost
111	P1	300.00
111	P3	50.00
111	P4	500.00
222	P1	350.00
222	P2	200.00
222	P3	70.00
222	P5	30.00
333	P2	210.00
333	P3	56.00
444	P1	350.00
444	P2	300.00
444	P3	48.00
444	P4	550.00
444	P5	29.00
555	P3	65.00
555	P4	600.00

16 rows in set (0.00 sec)

Figure 4. Relation instances taken from MySQL

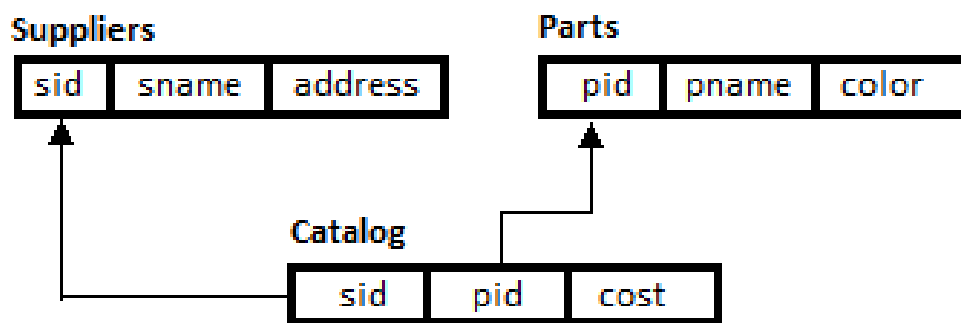


Figure 5. Relational schema for the database