

Link to video: https://www.youtube.com/watch?v=EY_NroaVgwE

Features used in the implementation:

HTML:

- Forms – to add, update and search values for artists, albums and tracks.
- Tables – to view information and relevant attributes concerning artists, albums and tracks.
- Hyperlinks
- Horizontal rules on page – for aesthetics
- Text on page to assist in user interaction.
- Buttons to perform a specific action, for instance, to insert or delete a row.

CSS:

- Toolbar at the top of the page¹
- Appearance of table through colour choices, alignment of text, padding and border attributes.

JavaScript:

- Form validation through the form border turning red if value is null (blank value) or a numeric value is out of range. Valid values result in a green border.
- Time given on homepage
- Disabling submit button when form border turns red.
- Confirmation boxes appear when the user attempts to delete rows of information from the database and when the user attempts to leave the edit page as a reminder that any unsaved changes will be lost.

PHP:

- Drop down menu – to select an artist for a given album or the album in which the track is present.
- Error message if artist, album or track name is already used.
- Error message when attempting to add a track to album when the album is already full.
- Sanitizing user input using bind parameter to prevent SQL Injection.
- Use of include function to include the database connection file and layout file (for toolbar and table appearance) to minimise code repetition.
- Maintaining a consistent and clear file structure.
- Transferring values and data between pages using the “\$_GET” function.
- Autofill values on edit/update artist, album and track page for accessibility.
- Response to when a button has been clicked.

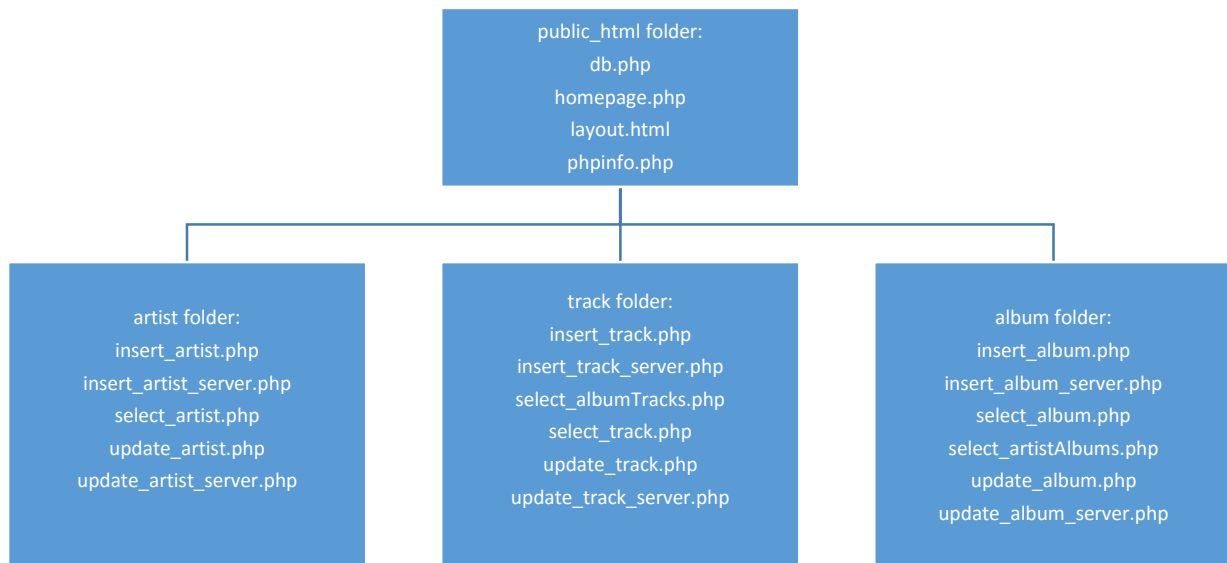
SQL:

- Producing tables (server side) with foreign keys.
- SQL queries using the PHP interface to view, sort, add, edit, delete or verify information.

¹ Code obtained from http://www.w3schools.com/css/css_navbar.asp This has been edited to adapt it for use on the website.

File Structure:

The diagram below shows the file structure that was used and the location of files.

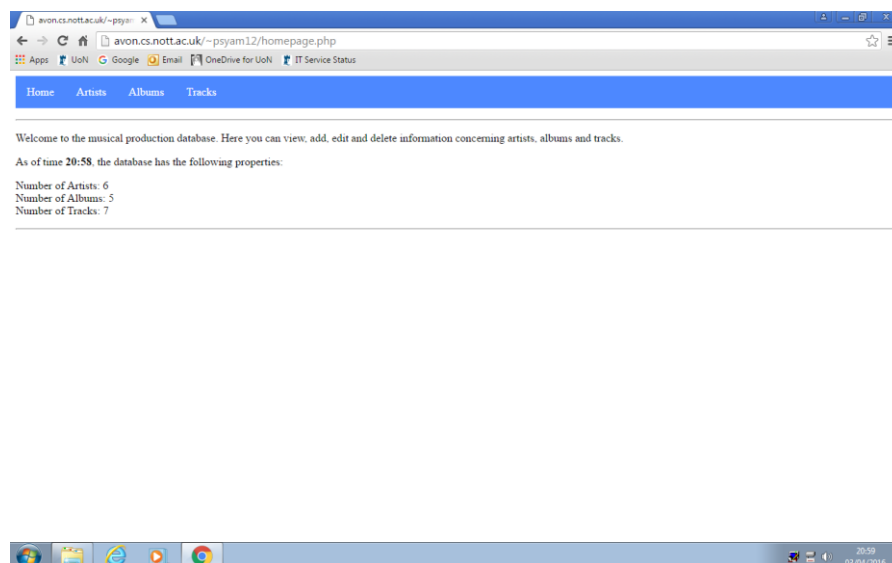


The file layout.html contains the code for the toolbar at the top of the page and table design attributes. In addition, the file db.php has the settings needed to establish a connection to the server. These two files were put in the first level of the “public_html” directory to minimise repetition of code and to make changes easily.

Features present in the implementation (with screenshots of interface and relevant code in appendix):

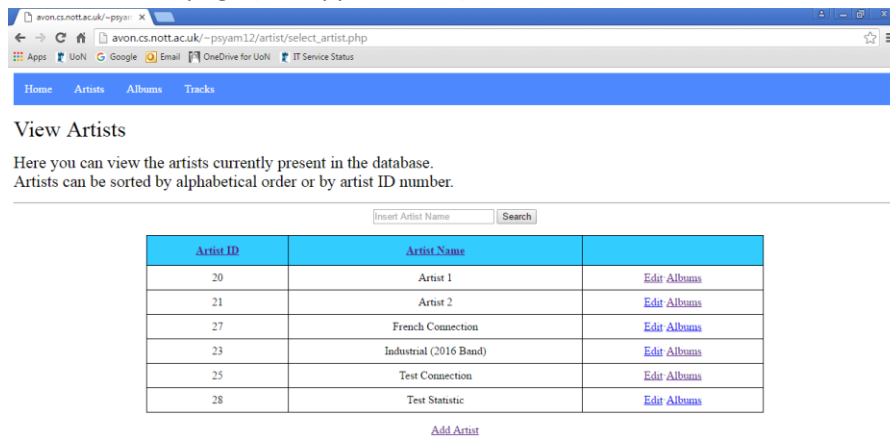
Homepage:

Time and database statistics (see appendix F.1)



Viewing Table:

For artist, album and tracks page (see appendix F.2)



avon.cs.nott.ac.uk/~psyam12/artist/select_artist.php

Home Artists Albums Tracks

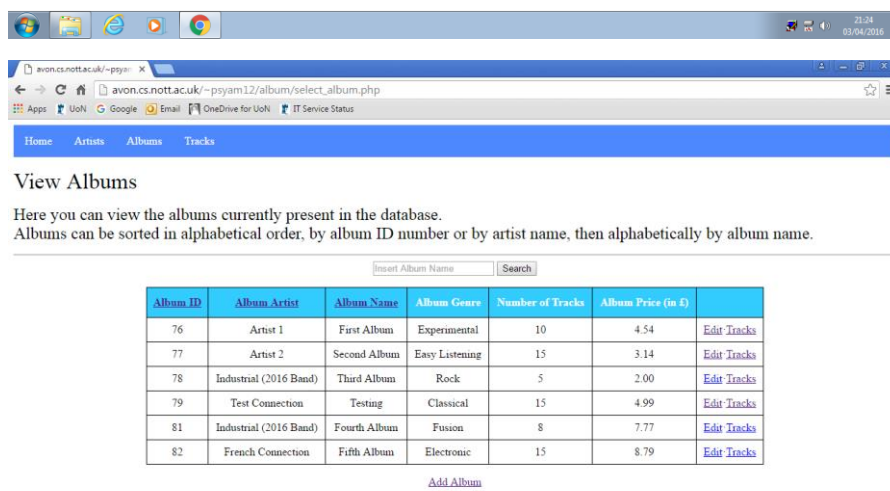
View Artists

Here you can view the artists currently present in the database.
Artists can be sorted by alphabetical order or by artist ID number.

Insert Artist Name

Artist ID	Artist Name	Edit Albums
20	Artist 1	Edit Albums
21	Artist 2	Edit Albums
27	French Connection	Edit Albums
23	Industrial (2016 Band)	Edit Albums
25	Test Connection	Edit Albums
28	Test Statistic	Edit Albums

[Add Artist](#)



avon.cs.nott.ac.uk/~psyam12/album/select_album.php

Home Artists Albums Tracks

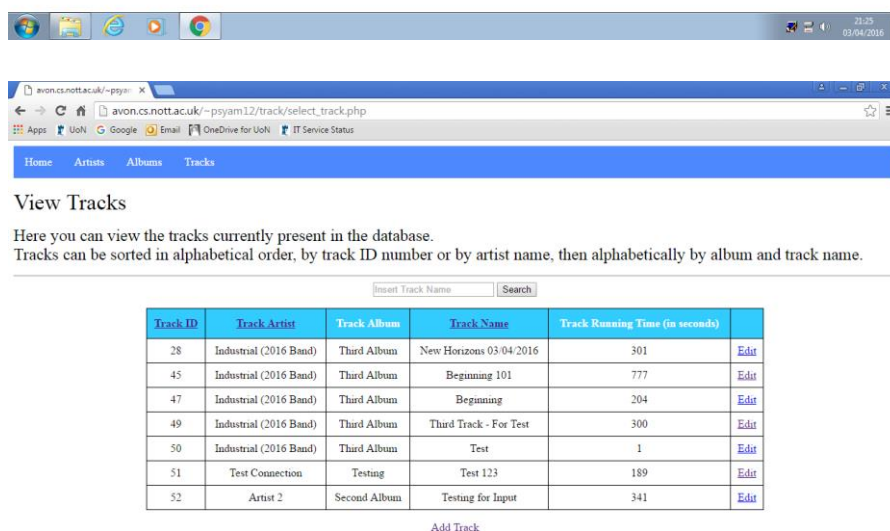
View Albums

Here you can view the albums currently present in the database.
Albums can be sorted in alphabetical order, by album ID number or by artist name, then alphabetically by album name.

Insert Album Name

Album ID	Album Artist	Album Name	Album Genre	Number of Tracks	Album Price (in £)	Edit Tracks
76	Artist 1	First Album	Experimental	10	4.54	Edit Tracks
77	Artist 2	Second Album	Easy Listening	15	3.14	Edit Tracks
78	Industrial (2016 Band)	Third Album	Rock	5	2.00	Edit Tracks
79	Test Connection	Testing	Classical	15	4.99	Edit Tracks
81	Industrial (2016 Band)	Fourth Album	Fusion	8	7.77	Edit Tracks
82	French Connection	Fifth Album	Electronic	15	8.79	Edit Tracks

[Add Album](#)



avon.cs.nott.ac.uk/~psyam12/track/select_track.php

Home Artists Albums Tracks

View Tracks

Here you can view the tracks currently present in the database.
Tracks can be sorted in alphabetical order, by track ID number or by artist name, then alphabetically by album and track name.

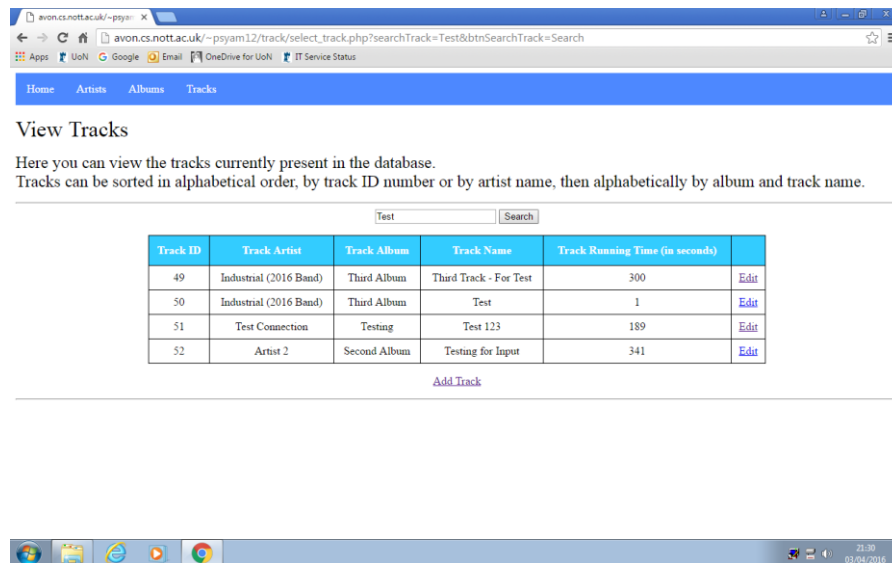
Insert Track Name

Track ID	Track Artist	Track Album	Track Name	Track Running Time (in seconds)	Edit
28	Industrial (2016 Band)	Third Album	New Horizons 03/04/2016	301	Edit
45	Industrial (2016 Band)	Third Album	Beginning 101	777	Edit
47	Industrial (2016 Band)	Third Album	Beginning	204	Edit
49	Industrial (2016 Band)	Third Album	Third Track - For Test	300	Edit
50	Industrial (2016 Band)	Third Album	Test	1	Edit
51	Test Connection	Testing	Test 123	189	Edit
52	Artist 2	Second Album	Testing for Input	341	Edit

[Add Track](#)

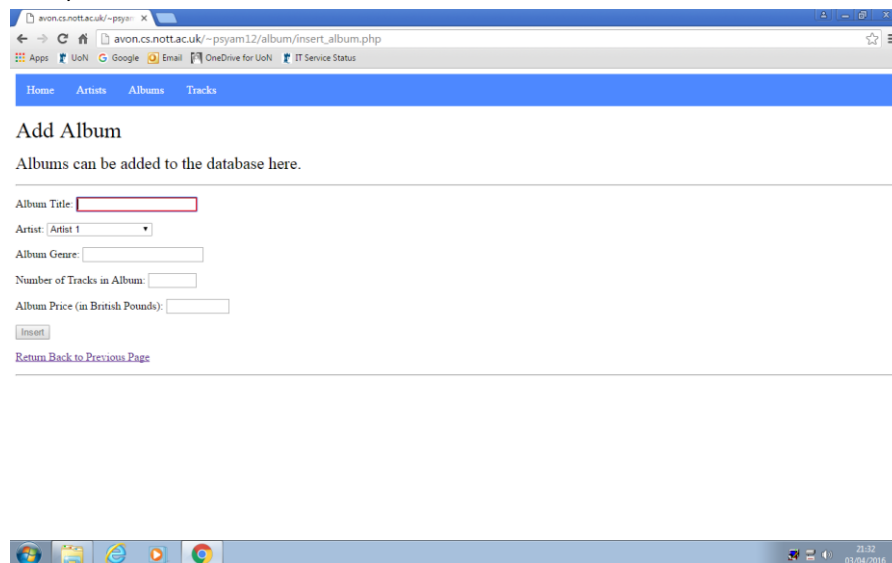
Search Bar and Results:

(See appendix F.3)



JavaScript Form Validation:

(See appendix F.4)



Red border appears for blank values and insert button becomes disabled.

The latter point also applies to numeric values as seen in the next image.

avoncs.nott.ac.uk/~psyam12/album/insert_album.php

Home Artists Albums Tracks

Add Album

Albums can be added to the database here.

Album Title:

Artist:

Album Genre:

Number of Tracks in Album:

Album Price (in British Pounds):

[Return Back to Previous Page](#)

avoncs.nott.ac.uk/~psyam12/album/insert_album.php

Home Artists Albums Tracks

Add Album

Albums can be added to the database here.

Album Title:

Artist:

Album Genre:

Number of Tracks in Album:

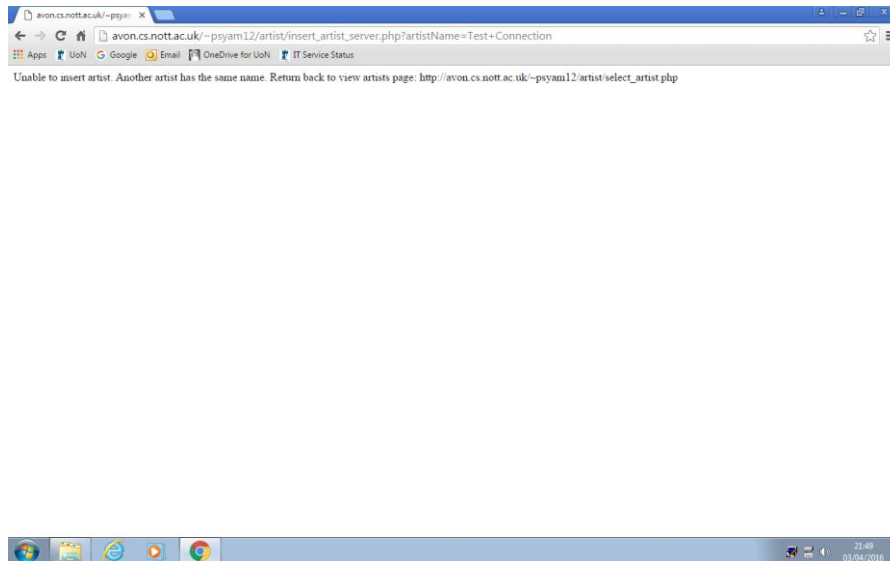
Album Price (in British Pounds):

[Return Back to Previous Page](#)

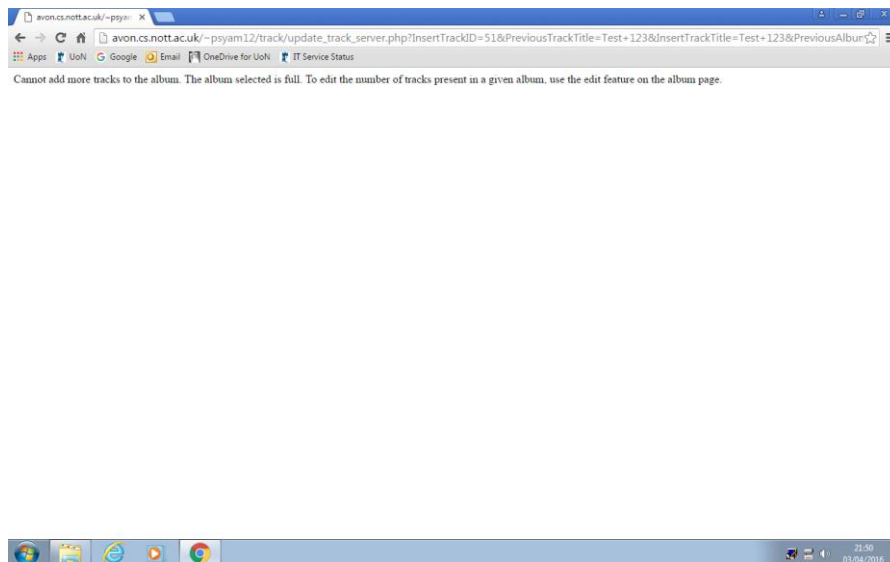
The image above shows the output after valid values have been input into the platform.

Error Message – Same Name or Title

An error message appears if the user inputs an artist, album or track name that is already present. (see appendix F.5)

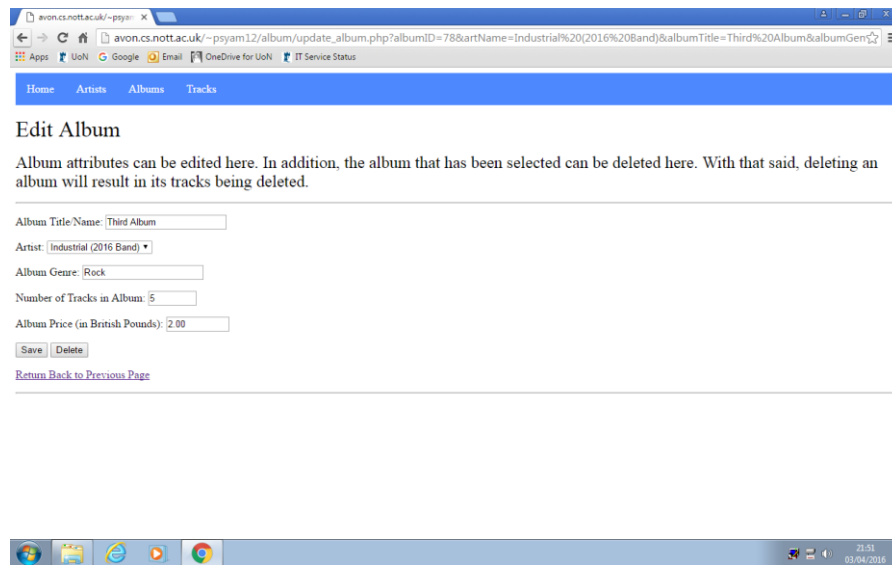
**Error Message – Adding Tracks**

An error message appears if the user attempts to add further tracks into an album after the selected album becomes full. (see appendix F.6)



Autofill Form Values

Values are automatically input into the edit page to enhance user accessibility. (see appendix F.7)



avoncs.nott.ac.uk/~psya

avoncs.nott.ac.uk/~psya12/album/update_album.php?albumID=78&artName=Industrial%20(2016%20Band)&albumTitle=Third%20Album&albumGenre=Rock

Home Artists Albums Tracks

Edit Album

Album attributes can be edited here. In addition, the album that has been selected can be deleted here. With that said, deleting an album will result in its tracks being deleted.

Album Title/Name:

Artist:

Album Genre:

Number of Tracks in Album:

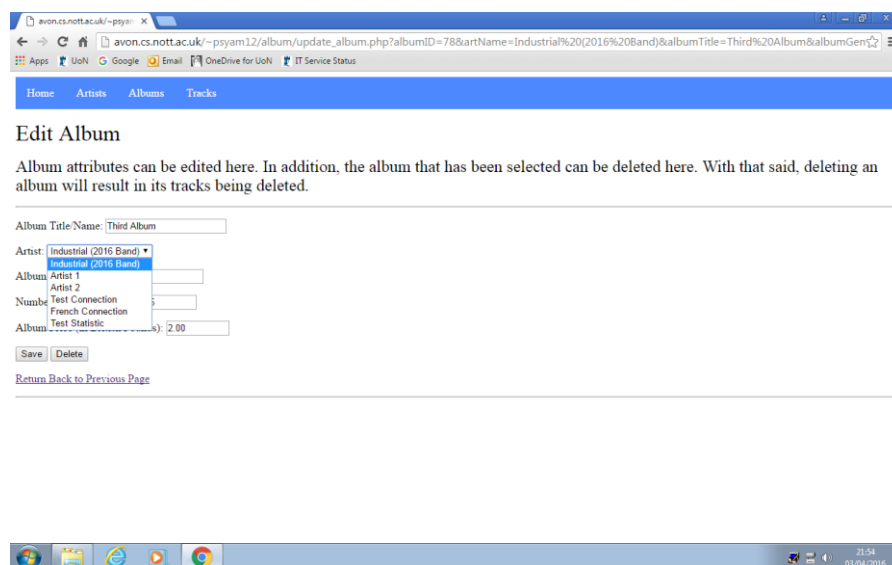
Album Price (in British Pounds):

[Return Back to Previous Page](#)

21:51 03/04/2016

Drop Down Menu

This allows the user to select the relevant artist or album. (see appendix F.8)



avoncs.nott.ac.uk/~psya

avoncs.nott.ac.uk/~psya12/album/update_album.php?albumID=78&artName=Industrial%20(2016%20Band)&albumTitle=Third%20Album&albumGenre=Rock

Home Artists Albums Tracks

Edit Album

Album attributes can be edited here. In addition, the album that has been selected can be deleted here. With that said, deleting an album will result in its tracks being deleted.

Album Title/Name:

Artist:

Album Genre:

Number of Tracks in Album:

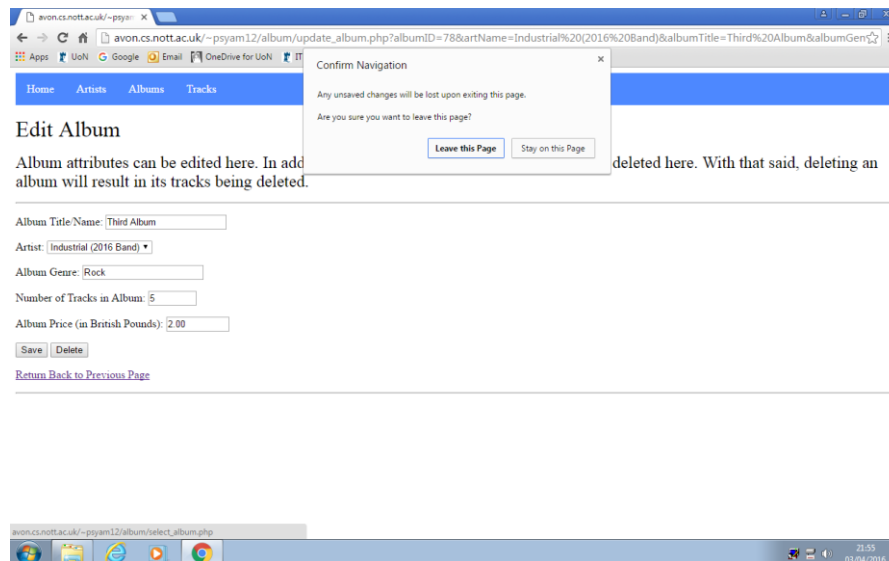
Album Price (in British Pounds):

[Return Back to Previous Page](#)

21:54 03/04/2016

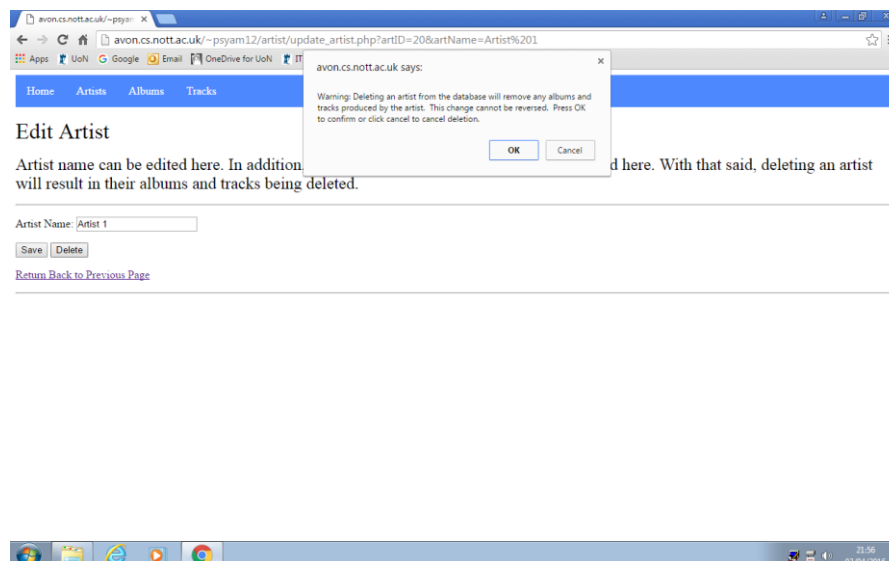
Confirmation Box – Leaving Edit Page

A confirmation box appears when the user attempts to leave the edit page. This reminds the user that any unsaved changes will be lost upon leaving the page. (see appendix F.9)



Confirmation Box – Deleting a row from the database

A confirmation box appears when the user attempts to delete an artist, album or track from the database. (see appendix F.10)



As seen above, when an artist is deleted, any albums and tracks produced by the artist are also deleted.

Appendix

F.1

```
<html><body>
<?php
include 'layout.html';
include 'db.php';
?>

    <hr>
    <p>Welcome to the musical production database. Here you can view, add, edit and delete information concerning
artists, albums and tracks.</p>

    <p id="demo"> <script>
    var currentTime = new Date()
    var hours = currentTime.getHours()
    var minutes = currentTime.getMinutes()

    if (minutes < 10)
    minutes = "0" + minutes

    document.write("As of time <b>" + hours + ":" + minutes + "</b>, the database has the following properties:")
    </script>
    </p>

    <?php
        $result1 = mysql_query('SELECT COUNT(*) AS artistCount FROM Artists');
        $row1 = mysql_fetch_assoc($result1);

        $result2 = mysql_query('SELECT COUNT(*) AS albumCount FROM Albums');
        $row2 = mysql_fetch_assoc($result2);

        $result3 = mysql_query('SELECT COUNT(*) AS trackCount FROM Tracks');
        $row3= mysql_fetch_assoc($result3);

        echo "Number of Artists: " . $row1['artistCount'] . "<br>";
        echo "Number of Albums: " . $row2['albumCount'] . "<br>";
        echo "Number of Tracks: " . $row3['trackCount'] . "<br>";

    ?>
    <hr>
</body></html>
```

F.2

Artist:

```
echo "<div style='overflow-x:auto;'"
    <table border='1', table align='center', id='tableAttributes'>
    <tr>
    <th><a href='select_artist.php?sort=aID'>Artist ID</th>
    <th><a href='select_artist.php?sort=aName'>Artist Name</th>
    <th></th>
    </tr>;

    while($row = mysql_fetch_array($result))
    {
        echo "<tr>";
        echo "<td align='center'>" . $row['artID'] . "</td>";
        echo "<td align='center'>" . $row['artName'] . "</td>";
        echo "<td align='center'> <a href='\"update_artist.php?artID=" . $row['artID'] . "&artName="
        . $row['artName'] . "\">Edit</a> <a href='\"http://avon.cs.nott.ac.uk/~psyam12/album/select_artistAlbums.php?artID="
        . $row['artID'] . "\">Albums</a></td>";
        echo "</tr>";
    }
    echo "</table>";
}
```

Album:

```
echo "<div style='overflow-x:auto;'"
    <table border='1', table align='center', id='tableAttributes'>
    <tr>
    <th><a href='select_album.php?sort=aID'>Album ID</th>
    <th><a href='select_album.php?sort=aArtist'>Album Artist</th>
    <th><a href='select_album.php?sort=aName'>Album Name</th>
    <th>Album Genre</th>
    <th>Number of Tracks</th>
    <th>Album Price (in £)</th>
    <th></th>
    </tr>;

    while($row = mysql_fetch_array($result))
    {
        echo "<tr>";
        echo "<td align='center'>" . $row['albumID'] . "</td>";
        echo "<td align='center'>" . $row['artName'] . "</td>";
        echo "<td align='center'>" . $row['albumTitle'] . "</td>";
        echo "<td align='center'>" . $row['albumGenre'] . "</td>";
        echo "<td align='center'>" . $row['albumNumOfTracks'] . "</td>";
        echo "<td align='center'>" . $row['albumPrice'] . "</td>";
        echo "<td align='center'> <a href='\"update_album.php?albumID=" . $row['albumID'] . "&artName="
        . $row['artName'] . "&albumTitle=" . $row['albumTitle'] . "&albumGenre=" . $row['albumGenre'] . "&albumNumOfTracks="
        . $row['albumNumOfTracks'] . "&albumPrice=" . $row['albumPrice'] . "\">Edit</a> <a
        href='\"http://avon.cs.nott.ac.uk/~psyam12/track/select_albumTracks.php?albumID=" . $row['albumID'] . "\">Tracks</a> </td>";
        echo "</tr>";
    }
    echo "</table>";
}
```

Track:

```
echo "<div style='overflow-x:auto;'"
    <table border='1', table align='center', id='tableAttributes'>
    <tr>
    <th><a href='select_track.php?sort=tID'>Track ID</th>
    <th><a href='select_track.php?sort=tArtist'>Track Artist</th>
    <th>Track Album</th>
    <th><a href='select_track.php?sort=tName'>Track Name</th>
    <th>Track Running Time (in seconds)</th>
    <th></th>
    </tr>;

    while($row = mysql_fetch_array($result))
    {
        echo "<tr>";
        echo "<td align='center'>" . $row['trackID'] . "</td>";
        echo "<td align='center'>" . $row['artName'] . "</td>";
        echo "<td align='center'>" . $row['albumTitle'] . "</td>";
        echo "<td align='center'>" . $row['trackTitle'] . "</td>";
        echo "<td align='center'>" . $row['trackRunningTime'] . "</td>";
        echo "<td align='center'> <a href='\"update_track.php?trackID=" . $row['trackID'] . "&albumID="
        . $row['albumID'] . "&albumTitle=" . $row['albumTitle'] . "&trackTitle=" . $row['trackTitle'] . "&trackRunningTime="
        . $row['trackRunningTime'] . "\">Edit</a> </td>";
        echo "</tr>";
    }
    echo "</table>";
}
```

F.3

```
<form align="center">
  <input type="text" id="searchTrack" name="searchTrack" placeholder="Insert Track Name">
  <input type="submit" id="btnSearchTrack" name="btnSearchTrack" value="Search">
</form>

<?php
    if(isset($_GET['btnSearchTrack']))
    {
        $trackTitle = (isset($_GET['searchTrack']) ? $_GET['searchTrack'] : null);
        $trackTitleInput = mysql_real_escape_string($trackTitle);

        $result = mysql_query("SELECT * FROM Tracks INNER JOIN Albums USING (albumID) INNER JOIN Artists USING (artID) WHERE trackTitle LIKE '%" . $trackTitleInput . "%'");

        echo "<div style='overflow-x:auto;'>
        <table border='1', table align='center', id='tableAttributes'>
        <tr>
        <th>Track ID</th>
        <th>Track Artist</th>
        <th>Track Album</th>
        <th>Track Name</th>
        <th>Track Running Time (in seconds)</th>
        <th></th>
        </tr>";

        while($row = mysql_fetch_array($result))
        {
            echo "<tr>";
            echo "<td align='center'>" . $row['trackID'] . "</td>";
            echo "<td align='center'>" . $row['artName'] . "</td>";
            echo "<td align='center'>" . $row['albumTitle'] . "</td>";
            echo "<td align='center'>" . $row['trackTitle'] . "</td>";
            echo "<td align='center'>" . $row['trackRunningTime'] . "</td>";
            echo "<td align='center'> <a href='\"update_track.php?trackID=" . $row['trackID'] . "&albumID=" . $row['albumID'] . "&albumTitle=" . $row['albumTitle'] . "&trackTitle=" . $row['trackTitle'] . "&trackRunningTime=" . $row['trackRunningTime'] . ">Edit</a> </td>";
            echo "</tr>";
        }
        echo "</table>";
    }
}
```

F.4

```
<input type="text" name="InsertAlbumTitle" id="InsertAlbumTitle" maxlength="255" required />
<script type="text/javascript">
    document.getElementById("InsertAlbumTitle").addEventListener("keydown", controlBorderColor, false);
    document.getElementById("InsertAlbumTitle").addEventListener("keyup", controlBorderColor, false);

    function controlBorderColor()
    {
        if (this.value.length == 0)
        {
            this.style.borderColor = "red";
            document.getElementById("albumInsert").disabled = true;
        }
        else if (this.value.length >= 255)
        {
            this.style.borderColor = "red";
            window.alert("Album name length cannot be greater than 255 characters.");
            document.getElementById("albumInsert").disabled = true;
        }
        else
        {
            this.style.borderColor = "green";
            document.getElementById("albumInsert").disabled = false;
        }
    }
}
</script>
```

F.5

```
$result = mysql_query("SELECT * FROM Albums WHERE albumTitle='" . $albumTitle . "'");
$num_rows = mysql_num_rows($result);

if ($num_rows > 0)
{
    echo "Unable to insert album. Another album has the same name.";
    echo " Return back to view albums page: http://avon.cs.nott.ac.uk/~psyam12/album/select_album.php";
}
else
{
    $sql = "INSERT INTO Albums (albumTitle, artID, albumGenre, albumNumOfTracks, albumPrice) VALUES (?, ?, ?, ?, ?)";
    $stmt = $conn->prepare($sql);
    $stmt->bind_param('sisid', $albumTitle, $artID, $albumGenre, $albumNumOfTracks, $albumPrice);
    $result = $stmt->execute();
    if (!$result) echo "failed to insert record";
    else header("Location: http://avon.cs.nott.ac.uk/~psyam12/album/select_album.php");
}
```

F.6

```

$albumfull1 = mysql_query("SELECT COUNT(*) FROM Tracks WHERE albumID=" . $albumID);
$albumfull2 = mysql_query("SELECT albumNumOfTracks FROM Albums WHERE albumID=" . $albumID);

$albumfullvalue1 = implode(mysql_fetch_row($albumfull1));
$albumfullvalue2 = implode(mysql_fetch_row($albumfull2));

if ($albumfullvalue1 >= $albumfullvalue2)
{
    echo "Cannot add more tracks to the album. The album selected is full. To edit the number of tracks present in a
given album, use the edit feature on the album page.";
}

```

F.7

```

<input type="hidden" name="InsertAlbumID" value="<?php echo $_GET['albumID'] ?>"/>
<input type="text" name="InsertAlbumTitle" id="InsertAlbumTitle" value="<?php echo $_GET['albumTitle'] ?>" maxlength="255"
required/>
<input type="text" name="InsertAlbumGenre" id="InsertAlbumGenre" value="<?php echo $_GET['albumGenre'] ?>" maxlength="63"
required/>
<input type="number" name="InsertAlbumNumOfTracks" id="InsertAlbumNumberofTracks" min=1 max=300 step=1 value="<?php echo
$_GET['albumNumOfTracks'] ?>" required/>
<input type="number" name="InsertAlbumPrice" id="InsertAlbumPrice" min=0.01 max=999.99 step=0.01 value="<?php echo
$_GET['albumPrice'] ?>" required/>

```

F.8

```

<?php
include '../db.php';

$sql = "SELECT artName, artID FROM Artists ORDER BY artName='". $_GET['artName']. "' DESC";
$result = mysql_query($sql);

echo '<select name="InsertArtistName" id="InsertArtistName">';

while ($row = mysql_fetch_array($result))
    echo "<option value=$row[artID]>$row[artName]</option>";
echo '</select>';
?>

```

F.9

```

<?php
echo '
<script type = "text/javascript">
    window.onbeforeunload = function ()
    {
        return "Any unsaved changes will be lost upon exiting this page.";
    };
</script>';
?>

```

F.10

```

<input type="submit" id="btnDelete" name="btnDelete" onclick="window.onbeforeunload = null; return confirm('Warning: Deleting
an artist from the database will remove any albums and tracks produced by the artist. This change cannot be reversed. Press
OK to confirm or click cancel to cancel deletion.')" value="Delete" />

<input type="submit" id="btnDelete" name="btnDelete" onclick="window.onbeforeunload = null; return confirm('Warning: Deleting
an album from the database will also remove any tracks present in the album. This change cannot be reversed. Press OK to
confirm or click cancel to cancel deletion.')" value="Delete" />

<input type="submit" id="btnDelete" name="btnDelete" onclick="window.onbeforeunload = null; return confirm('Warning: Deleting
a track from the database will permanently remove it from the database. Press OK to confirm or click cancel to cancel
deletion.')" value="Delete" />

```