Assignment 9

Group 51 - Topic 26

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CPS510 - 07 Database Systems I
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November 17, 2025

Website Link: **https://webdev.scs.ryerson.ca/~a4ishfaq/index2.php**

Code:

```php
<?php
// CPS510 – Assignment 9

$conn = oci_connect(
    'xxxxxxx',  // replace with your username for Oracle
    '09148719', // replace with your password for Oracle

    '(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(Host=oracle.scs.ryerson.ca)(Port=1521))(CONNECT
_DATA=(SID=orcl)))'
);

if (!$conn) {
    die("<h2>DB Connection Failed</h2><p>Unable to connect to the database. Please try again
later.</p>");
}

function runSqlFile($conn, $filename) {
    $sql = file_get_contents($filename);
    $statements = explode(";", $sql);
    foreach ($statements as $stmt) {
        $trim = trim($stmt);
        if ($trim === "") continue;
        $stid = oci_parse($conn, $trim);
        @oci_execute($stid);
    }
}


function runQuery($conn, $query, $bindings = []) {
    $stid = oci_parse($conn, $query);
    foreach ($bindings as $name => $val) {
        oci_bind_by_name($stid, $name, $val);
    }
    $exec = oci_execute($stid);
    if (!$exec) {
```

```php
            echo "<h2>Database Error:</h2><p>Operation failed. Please check your inputs and try
again.</p>";
            return false;
        }
        return $stid;
    }


    function printTable($stid) {
        if (!$stid) {
            echo "<p>No results to display due to earlier error.</p>";
            return;
        }
        echo "<table border='1' cellpadding='5'>";
        echo "<tr>";
        $ncols = oci_num_fields($stid);
        for ($i = 1; $i <= $ncols; $i++) {
            echo "<th>".htmlspecialchars(oci_field_name($stid, $i))."</th>";
        }
        echo "</tr>";
        $rows = false;
        while ($row = oci_fetch_array($stid, OCI_ASSOC+OCI_RETURN_NULLS)) {
            $rows = true;
            echo "<tr>";
            foreach ($row as $col) {
                echo "<td>".htmlspecialchars($col)."</td>";
            }
            echo "</tr>";
        }
        if (!$rows) {
            echo "<tr><td colspan='$ncols'>No records found.</td></tr>";
        }
        echo "</table><br>";
    }


    if (isset($_GET['action'])) {
        $action = $_GET['action'];

        if ($action == "drop") {
            runSqlFile($conn, "drop_tables.sql");
```

```php
    echo "<h3>Tables dropped successfully.</h3>";


} elseif ($action == "create") {
    runSqlFile($conn, "create_tables.sql");
    echo "<h3>Tables created successfully.</h3>";


} elseif ($action == "populate") {
    runSqlFile($conn, "populate_tables.sql");
    echo "<h3>Tables populated successfully.</h3>";


} elseif ($action == "queries") {
    echo "<h2>Advanced Queries (Part A)</h2>";
    $queries = explode(";", file_get_contents("queries.sql"));
    foreach ($queries as $q) {
        $t = trim($q);
        if ($t == "") continue;
        echo "<h4>Query:</h4><pre>".htmlspecialchars($t)."</pre>";
        $stid = runQuery($conn, $t);
        printTable($stid);
    }


} elseif ($action == "view") {
$table = $_GET['table'] ?? '';
if (empty($table)) {
    echo "<h2>Error: No table specified to view.</h2>";
} else {
    echo "<h2>Viewing Table: ".htmlspecialchars($table)."</h2>";
    $stid = oci_parse($conn, "SELECT * FROM ".$table);
    $exec = @oci_execute($stid);
    if (!$exec) {
        echo "<h3>Table has not been made.</h3>";
    } else {
        printTable($stid);
    }
}



} elseif ($action == "search") {
    $t = trim($_POST['table'] ?? '');
```

```php
        $field = trim($_POST['field'] ?? '');
        $value = trim($_POST['value'] ?? '');

        if (empty($t) || empty($field) || $value === '') {
            echo "<h2>Error: All search fields are required.</h2>";
        } else {
            $t = htmlspecialchars($t);
            $field = htmlspecialchars($field);
            $value = htmlspecialchars($value);

            $query = "SELECT * FROM $t WHERE $field = :val";
            $stid = oci_parse($conn, $query);
            oci_bind_by_name($stid, ':val', $value);
            $exec = oci_execute($stid);
            if (!$exec) {
                echo "<h2>Database Error:</h2><p>Operation failed. Please check your inputs and try again.</p>";
            } else {
                echo "<h2>Search Result</h2>";
                printTable($stid);
            }
        }

    } elseif ($action == "update") {
        $t = trim($_POST['table'] ?? '');
        $field = trim($_POST['field'] ?? '');
        $value = $_POST['value'] ?? '';
        $pk = trim($_POST['pk'] ?? '');
        $pkval = $_POST['pkval'] ?? '';

        if (empty($t) || empty($field) || empty($pk) || $pkval === '') {
            echo "<h2>Error: All fields except 'New Value' are required for update.</h2>";
        } else {
            $query = "UPDATE $t SET $field = :newval WHERE $pk = :pkval";
            $stid = oci_parse($conn, $query);
            oci_bind_by_name($stid, ':newval', $value);
            oci_bind_by_name($stid, ':pkval', $pkval);
            $exec = oci_execute($stid);
            if ($exec) {
```

```php
                echo "<h2>Record Updated</h2>";
            } else {
                echo "<h2>Database Error:</h2><p>Operation failed. Please check your inputs and try
again.</p>";
            }
        }

    } elseif ($action == "delete") {
        $t = trim($_POST['table'] ?? ");
        $pk = trim($_POST['pk'] ?? ");
        $val = $_POST['val'] ?? ";

        if (empty($t) || empty($pk) || $val === ") {
            echo "<h2>Error: All fields are required to delete a record.</h2>";
        } else {
            $query = "DELETE FROM $t WHERE $pk = :val";
            $stid = oci_parse($conn, $query);
            oci_bind_by_name($stid, ':val', $val);
            $exec = oci_execute($stid);
            if ($exec) {
                echo "<h2>Record Deleted</h2>";
            } else {
                echo "<h2>Database Error:</h2><p>Operation failed. Please check your inputs and try
again.</p>";
            }
        }
    }
}
?>


<!DOCTYPE html>
<html>
<head>
<title>CPS510 – Menu UI</title>
<style>
body { font-family: Arial; background:#f4f4f4; padding:20px; }
.menu a { display:block; padding:12px; background:#222; color:white;
    width:250px; margin:6px 0; text-decoration:none; border-radius:6px; }
h1 { margin-bottom:5px;}
```

```html
.box { background:white; padding:15px; border-radius:8px; }
</style>
</head>
<body>

<h1>CPS510 Assignment 9 – UI (Regular Part A)</h1>

<div class="menu">
  <a href="?action=drop">Drop Tables</a>
  <a href="?action=create">Create Tables</a>
  <a href="?action=populate">Populate Tables</a>
  <a href="?action=queries">Run Advanced Queries</a>
  <hr>
  <a href="?action=view&table=Department">View Department</a>
  <a href="?action=view&table=Position">View Position</a>
  <a href="?action=view&table=Employee">View Employee</a>
  <a href="?action=view&table=Payroll">View Payroll</a>
  <a href="?action=view&table=Payment">View Payment</a>
  <a href="?action=view&table=Attendance">View Attendance</a>
  <a href="?action=view&table=Deduction">View Deduction</a>
</div>

<div class="box">

<h2>Search Record</h2>
<form method="post" action="?action=search">
  Table: <input name="table">
  Field: <input name="field">
  Value: <input name="value">
  <button type="submit">Search</button>
</form>

<h2>Update Record</h2>
<form method="post" action="?action=update">
  Table: <input name="table">
  PK Field: <input name="pk">
  PK Value: <input name="pkval">
  Field To Change: <input name="field">
  New Value: <input name="value">
```

```
  <button type="submit">Update</button>
</form>


<h2>Delete Record</h2>
<form method="post" action="?action=delete">
  Table: <input name="table">
  PK Field: <input name="pk">
  PK Value: <input name="val">
  <button type="submit">Delete</button>
</form>


</div>


</body>
</html>
```

Screenshots:

Home screen

CPS510 Assignment 9 – UI (Regular Part A)

| Drop Tables |
| Create Tables |
| Populate Tables |
| Run Advanced Queries |

| View Department |
| View Position |
| View Employee |
| View Payroll |
| View Payment |
| View Attendance |
| View Deduction |

Search Record

Table: [ ] Field: [ ] Value: [ ] Search

Update Record

Table: [ ] PK Field: [ ] PK Value: [ ] Field To Change: [ ] New Value: [ ] Update

Delete Record

Table: [ ] PK Field: [ ] PK Value: [ ] Delete

Viewing table

Viewing Table: Department

DEPARTMENTID	DEPARTMENTNAME	BUDGET
1	Human Resources	500000
2	Finance	750000
3	IT	1000000
4	Sales	800000
5	Marketing	600000

CPS510 Assignment 9 – UI (Regular Part A)

Drop Tables

Create Tables

Populate Tables

Run Advanced Queries

View Department

View Position

View Employee

View Payroll

View Payment

View Attendance

View Deduction

Search function

Search Record

Table: Department   Field: DepartmentID   Value: 2   Search

Search Result

DEPARTMENTID	DEPARTMENTNAME	BUDGET
2	Finance	750000

Example of error handling

Viewing Table: Department

Table has not been made.

Error: All search fields are required.

Database Error:

Operation failed. Please check your inputs and try again.

Advanced Queries

Advanced Queries (Part A)

Query:

```
SELECT e.Name AS "Employee Name", p.NetSalary AS "Net Salary ($)"
FROM Employee e, Payroll p
WHERE e.EmployeeID = p.EmployeeID
AND p.NetSalary > (SELECT AVG(NetSalary) FROM Payroll)
ORDER BY p.NetSalary DESC
```

Employee Name	Net Salary ($)
Frank Miller	3950
Carol White	3800
Henry Adams	3150
Grace Wilson	3000

Query:

```
SELECT d.DepartmentName AS "Department",
       ROUND(AVG(p.NetSalary),2) AS "Avg Net Salary ($)",
       MAX(p.NetSalary) AS "Highest Net Salary ($)"
FROM Department d, Employee e, Payroll p
WHERE d.DepartmentID = e.DepartmentID
AND e.EmployeeID = p.EmployeeID
GROUP BY d.DepartmentName
ORDER BY "Avg Net Salary ($)" DESC
```

Department	Avg Net Salary ($)	Highest Net Salary ($)
IT	3875	3950
Human Resources	2975	3150
Finance	2800	3000
Marketing	2700	2800
Sales	2575	2750

Query:

```
SELECT EmployeeID FROM Payroll
INTERSECT
SELECT EmployeeID FROM Attendance
```

EMPLOYEEID
103
104
105
106
107
108
109
110

Query:

```
SELECT d.DepartmentName AS "Department",
       COUNT(DISTINCT e.EmployeeID) AS "Employees",
       ROUND(AVG(p.NetSalary),2) AS "Avg Salary ($)",
       ROUND(SUM(p.GrossSalary),2) AS "Total Payroll ($)",
       ROUND(SUM(dc.Amount),2) AS "Total Deductions ($)"
FROM Department d, Employee e, Payroll p, Deduction dc
WHERE d.DepartmentID = e.DepartmentID
AND e.EmployeeID = p.EmployeeID
AND p.PayrollID = dc.PayrollID
GROUP BY d.DepartmentName
ORDER BY "Avg Salary ($)" DESC
```

Department	Employees	Avg Salary ($)	Total Payroll ($)	Total Deductions ($)
IT	2	3875	16400	545
Human Resources	2	2975	6300	380
Marketing	2	2733.33	8600	300
Finance	2	2733.33	8600	420
Sales	2	2575	5400	240