**Database Application Development**

**Assignment**

**Part 1**

**Objective:**

In this assignment, you create a simple HR application using the C++ programming language and MySQL server. This assignment helps students learn a basic understanding of application development using C++ programming and a MySQL database.

**Submission:**

***Your submission will be a single text-based .cpp file including your C++ program for the Database Application assignment.***

AS\_P1\_ID.cpp

Your submission needs to be commented.

**Instruction:**

In this assignment, we use the same database that you use for your labs.

***Connecting to a MySQL database from a C++ Program***

In your function ***main()***, create a connection to your database.

You need to implement the following functions:

***int menu(void);***

The ***menu()***function returns an integer value which is the selected option by the user from the menu. This function displays the following menu options:

1. Find Employee
2. Employees Report
3. Add Employee
4. Update Employee
5. Remove Employee
6. Exit

Before printing the menu, display the following title on the screen

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* HR Menu \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Prompt the user to enter an option. If the user enters an incorrect option, the user is asked to enter an option again. When the user enters a correct option (0 to 5), the function returns the selected value.

If the user selects 0 (Exit), the program terminates.

***int findEmployee(MYSQL \*conn, int employeeNumber, struct Employee \*emp);***

This function receives a MYSQL pointer (a reference variable to a MySQL database), an integer number as the employee number, and a pointer to a variable of type Employee. The function returns 0 if the employee does not exist. It returns 1 if the employee exits.

To store the employee data from the ***findEmployee()*** function, we use a variable of type structure called Employee. The Employee structure has the following members:

**struct Employee{**

**int employeeNumber;**

**char lastName[50];**

**char firstName[50];**

**char email[100];**

**char phone[50];**

**char extension[10];**

**char reportsTo[100];**

**char jobTitle[50];**

**char city[50];**

**};**

The *ReportsTo* member stores the first name and the last name of the employee who is the manager of the given employee number.

If the employee exists, store the employee data into the members of an Employee variable using the third parameter in the ***findEmployee()*** function which references to that variable of type Employee.

**Note**: For this report, you may need to query more than one table (join).

***void displayEmployee(MYSQL \*conn, struct Employee emp);***

If the user selects option 1, this function is called. First, prompt the user to enter a value for the employee number. Then, call function ***findEmployee()*** to check if the employee with the given employee number exists. If the returning value of function ***findEmployee()*** is 0, display a proper error message.

Sample error message:

Employee 1122 does not exist.

Otherwise, call the function ***displayEmployee()*** to display the employee information.

This function receives a MYSQL pointer (a reference variable to a MySQL database) and values of a variable of type Employee and displays all members of the emp parameter.

Display the employee information as follows:

employeeNumber = 1002

lastName = Murphy

firstName = Diane

email = dmurphy@classicmodelcars.com

phone = +1 650 219 4782

extension = x5800

reportsTo =

jobTitle = President

city = San Francisco

***void displayAllEmployees(MYSQL \*conn);***

If the user selects option 2 (Employees Report), call function ***displayAllEmployees().***

This function receives a pointer of type MYSQL (a reference variable to a MySQL database) and displays all employees’ information if exists.

Write a query to select and display the following attributes for all employees.

E Employee Name Email Phone Ext Manager  
------------------------------------------------------------------------------------------------------------------------

1002 Diane Murphy dmurphy@classicmodelcars.com +1 650 219 4782 x5800

1056 Mary Patterson mpatterso@classicmodelcars.com +1 650 219 4782 x4611 Diane Murphy

1076 Jeff Firrelli jfirrelli@classicmodelcars.com +1 650 219 4782 x9273 Diane Murphy

1143 Anthony Bow abow@classicmodelcars.com +1 650 219 4782 x5428 Mary Patterson

1165 Leslie Jennings ljennings@classicmodelcars.com +1 650 219 4782 x3291 Anthony Bow

1166 Leslie Thompson lthompson@classicmodelcars.com +1 650 219 4782 x4065 Anthony Bow

1188 Julie Firrelli jfirrelli@classicmodelcars.com +1 215 837 0825 x2173 Anthony Bow

1216 Steve Patterson spatterson@classicmodelcars.com +1 215 837 0825 x4334 Anthony Bow

1286 Foon Yue Tseng ftseng@classicmodelcars.com +1 212 555 3000 x2248 Anthony Bow

1323 George Vanauf gvanauf@classicmodelcars.com +1 212 555 3000 x4102 Anthony Bow

1102 Gerard Bondur gbondur@classicmodelcars.com +33 14 723 4404 x5408 Mary Patterson

1337 Loui Bondur lbondur@classicmodelcars.com +33 14 723 4404 x6493 Gerard Bondur

1370 Gerard Hernandez ghernande@classicmodelcars.com +33 14 723 4404 x2028 Gerard Bondur

1401 Pamela Castillo pcastillo@classicmodelcars.com +33 14 723 4404 x2759 Gerard Bondur

1702 Martin Gerard mgerard@classicmodelcars.com +33 14 723 4404 x2312 Gerard Bondur

1621 Mami Nishi mnishi@classicmodelcars.com +81 33 224 5000 x101 Mary Patterson

1625 Yoshimi Kato ykato@classicmodelcars.com +81 33 224 5000 x102 Mami Nishi

1088 William Patterson wpatterson@classicmodelcars.com +61 2 9264 2451 x4871 Mary Patterson

1611 Andy Fixter afixter@classicmodelcars.com +61 2 9264 2451 x101 William Patterson

1612 Peter Marsh pmarsh@classicmodelcars.com +61 2 9264 2451 x102 William Patterson

1619 Tom King tking@classicmodelcars.com +61 2 9264 2451 x103 William Patterson

1501 Larry Bott lbott@classicmodelcars.com +44 20 7877 2041 x2311 Gerard Bondur

1504 Barry Jones bjones@classicmodelcars.com +44 20 7877 2041 x102 Gerard Bondur

**Note**: For this report, you may need to query more than one table (join).

If the query does not return any rows, display a proper message:

There is no employees’ information to be displayed.

**Note**: For each query in your assignment, make sure you handle the errors and display the proper message including the error\_code.

Error\_code is a number returned if the query execution is not successful.