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| --- | --- | --- | --- | --- | --- | --- | --- |
| Project | 1 | 2 | 3 | 4 | 5 | 6 | TOTAL |
| *Maximum Points* | 100 points | 0 points | 0 points | 0 points | 0 points G | 0 points G | 100G101010 pointsG |
| *Your Score* |  |  |  |  |  |  |  |

**PROJECT Database Application: Key Entrance Security System**

**Objective** To create a database application in MS Access, MySQL, MS SQL Server, IBM DB2 or Oracle.

***PROJECT DESCRIPTION***

Your company has appointed you design a database application that tracks the settings and activities of a newly installed security system. This system provides each company employee a proximity card that allows access to certain locations in the firm’s facility.

This company has seven types of employees and five areas that they restrict to certain employees.

Here are the types of employees and their restrictions:

**(i)** Managers require access to the executive lounge and the executive washroom.

**(ii)** Administrative assistants need access to the supply closet, executive lounge and employee lounge.

**(iii)** Information Technology employees require access to the server room and the employee lounge.

**(iv)** Clerks have access to the supply closet and the employee lounge.

**(v)** Collegiate interns have access to only the employee lounge.

**(vi)** The maintenance crew has access to all areas in the workplace.

**(vii)** Visitors from other divisions of the company are restricted to any washrooms and lounges. Visitors usually are accompanied by managers if they require special access to certain areas.

Design a database application for this project and determine how current and new employees will be interacting with your database system.

# Information about this Project

This project requires you to create database objects and / or ERD models.

***Steps to Complete this Project***

**STEP 1 ( Examine the Business Requirements )**

Examine the above business requirements and create an MS Excel activity worksheet that lists, in a tabular row by column fashion, the various employee classes and the various locations that are access card protected. Your worksheet could indicate with an " x " mark, for example, under a location column for which the employee class has access to that zone. Refer to **Figure 1** below.

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Use MS Excel techniques to design a Pivot Table based on the access card activities. Your pivot table worksheet is to show a summary of your row labels and their corresponding counts. The pivot table worksheet will show the row labels with the various employee classes and then their associated counts in the next column.

**Row Labels Count of Employee\_Class**

Generate a pie graph based on these two pivot table summary columns.

**STEP 2 ( Design Your Database Scheme )**

Examine the project description for this application and your activity worksheet and create at least two tables for your schema.

For your database schema, you can design one table to be a static holder for the data that defines the security systems authorization requirements, i.e. the table will contain the overall security entrance settings for each class of employee.

Then, you can create another table that will hold the employee data profiles.

**STEP 3 ( Populate the Tables )**

Populate the static table with the access authorization entries that were defined in the project description. Here, you would only insert records for the settings of each employee class. For example, for the management class, you would indicate that they have access to only the executive lounge and to the executive washroom.

Now place records into the employee profile table. Include at least ten records in this table. You can use these records for your first seven rows in this table.

Of course, the table you create for the employee profiles table could have a few more different fields depending on your own schema design. Include your own name as an an employee in one of these ten records.

|  |  |  |  |
| --- | --- | --- | --- |
| **EmpID** | **LName** | **YearsOfService** | **EmpClass** |
|  |  |  |  |
| 101 | Pappas | 8 | Manager |
| 102 | George | 12 | Clerk |
| 103 | Chang | 3 | IT |
| 999 | Davidson | 0 | Visitor |
| 105 | Emerson | 1 | Clerk |
| 106 | Little | 0 | Intern |
| 107 | Rodriguez | 4 | IT |

**STEP 4 ( Utilize the Database Application )**

After you design and populate your tables for this database application, you can now perform each of these tasks, which are listed below.

• Perform a query that lists all employees that do not have access to the server room.

• Construct a query that lists all employees that have access to the supply closet or the executive lounge.

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• Determine the count of all the employees that are of the intern type.

• List all employees that have an " L " or an " N " as the first letter in their last name.

• Design a database report that shows the distribution of the employees according to employee class. You can use a pie chart or other graphic image to show the distribution.

**STEP 5 ( Extra Credit )**

For extra credit, you can modify your database application such that it can track, in real - time, the usage of the proximity cards. That is, for each time that a card is used, create a transaction that indicates the card user and the location that was accessed.

**STEP 6 ( Submit Your Database Application )**

Submit your MS Excel activity worksheet for credit. Also, submit an MS Word document showing snapshots of your database schema for this application. Within the Word document also show the results of performing the actions that were listed in the prior step.

**Figure 1 Access Areas ( Rights )**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Employee Class** | **Executive Lounge** | **Executive Washroom** | **Supply Closet** | **Employee Lounge** | **Server**  **Room** |
|  |  |  |  |  |  |
| **Managers** |  |  |  |  |  |
| **Administrative Assistants** |  |  |  |  |  |
| **IT Employees** |  |  |  |  |  |
| **Clerks** |  |  |  |  |  |
| **Collegiate Interns** |  |  |  |  |  |
| **Maintenance Crew** |  |  |  |  |  |
| **Visitors** |  |  |  |  |  |

**STEP 7 ( Questions and Reflections Concerning this Database Project )**

Now that you have completed this lab project, review the questions below to reflect on the procedures and settings that you utilized as you followed the steps to complete the project. Place your responses in your lab submittal document.

**(1)** What should happen to a proximity card belonging to a terminated employee?

**(2)** What must IT do when an employee loses a proximity card? What are the database consequences of such an event?

**(3)** A company has expanded its physical facilities from one building to two buildings on the same property. The new building has now included a storage room that will contain sensitive information. Only the company’s attorney(s) may enter the room. What should be modified in your database for this lab to accommodate such a change?

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**(4)** Would / should login ids and passwords also be incorporated as part of the database table or should that be placed in a separate table? Support your answer.

**(5)** Find and cite at least two vendors for proximity cards ( you may list the Web sites ) .