DATABASE MANAGEMENT SYSTEMS ASSIGNMENT

WORKPLACE SAFETY AND ERGONOMICS IMPROVEMENT

Workplace Safety and Ergonomics Improvement refers to the process of identifying, assessing, and implementing measures to enhance the safety of the work environment and optimize the ergonomic conditions for employees. The intention is to create a work environment that fosters comfort, productivity, and general well-being while preventing mishaps, injuries, and health problems.

Workplace Safety and Ergonomics Improvement is essential in a software development firm for many reasons, including the direct effects it has on employee health and organizational effectiveness. The following are some primary reasons demonstrating the importance of these factors:

- Employee Health and Well-being:
    - Prioritizing workplace safety and ergonomics helps prevent work-related injuries, musculoskeletal disorders, and other health issues.
    - Employees who are comfortable and in good health are more likely to be engaged, productive, and happy in their jobs.
- Productivity and Performance:
    - A safe and ergonomic work environment contributes to increased productivity.
    - Developers can concentrate on their job without interruptions or physical strain when their workspaces are designed with comfort and fatigue reduction in mind.
- Quality of Work:
    - A comfortable and safe work environment promotes better focus and attention to detail.
    - Employees are more likely to produce high-quality work when they are not distracted by discomfort or safety concerns.
- Team Collaboration:
    - Ergonomic workspaces are designed to facilitate collaboration and communication among team members.

- - A well-organized and safe workspace contributes to a positive team culture.
- Risk Mitigation:
  - - Early detection and resolution of possible safety issues lowers the likelihood of mishaps and the resulting legal obligations.
  - - Ergonomic upgrades lessen the possibility of long-term health problems brought on by unsuitable workplace layout.

NORMALISATION

Database normalization is the process of structuring a relational database in accordance with a series of so-called normal forms to reduce data redundancy and improve data integrity.

TYPES OF NORMALISATIONS

- First Normal Form (1NF)
- Second Normal Form (2NF)
- Third Normal Form (3NF)

Tables that will be used for performing Normalisation are as given below: -

- Employees
- SafetyEquipments
- EquipmentInfo
- SafetyTraining
- TrainingSessions
- AwarenessPrograms
- ProgramParticipation
- SessionAttendees
- Incidents

TABLES

Table 1: Employees

EmployeeID (Primary Key) - INT

FirstName - VARCHAR(100)

LastName - VARCHAR(100)

Position - VARCHAR(100)

Department - VARCHAR(100)

Table 2: SafetyEquipments

EquipmentID (Primary Key) - INT

EquipmentName - VARCHAR(100)

EquipmentDescription - VARCHAR(100)

ResponsiblePersonID (Foreign Key referencing Employees) - INT

PurchaseDate DATE

Manufacturer VARCHAR(100)

ExpiryDate DATE

Table 3: SafetyTraining

TrainingID (Primary Key) - INT

TrainingName - VARCHAR(100)

Description - VARCHAR(100)

ResponsiblePersonID (Foreign Key referencing Employees) - INT

Table 4: TrainingSessions

SessionID (Primary Key) - INT

TrainingID (Foreign Key referencing SafetyTraining) - INT

SessionDate - DATE

Location - VARCHAR(100)

Table 5: AwarenessPrograms

ProgramID (Primary Key) - INT

ProgramName - VARCHAR(100)

Description - VARCHAR(100)

ResponsiblePersonID (Foreign Key referencing Employees) - INT

Table 6: ProgramParticipation

ParticipationID (Primary Key) - INT

ProgramID (Foreign Key referencing AwarenessPrograms) - INT

EmployeeID (Foreign Key referencing Employees) - INT

ParticipationDate – DATE

Table 7: SessionAttendees

SessionID (Foreign Key referencing TrainingSessions) - INT

EmployeeID (Foreign Key referencing Employees) - INT

  EnrollmentDate DATE

  AvailabilityStatus VARCHAR (50),

Table 8: Incidents

IncidentID (Primary Key) - INT

IncidentDate - DATE

IncidentDescription - VARCHAR(100)

EquipmentInvolvedID (Foreign Key referencing SafetyEquipments) - INT

FIRST NORMAL FORM (1NF)

Statement – A relation is in first normal form if every attribute in that relation is single-valued attribute.

A table is in 1NF if:

- There are only Single Valued Attributes.
- Attribute Domain does not change.
- There is a unique name for every Attribute/Column.
- The order in which data is stored does not matter.

Here all the attributes are atomic (contains only single values). Hence, we can say that these tables satisfy First Normal Form.

SECOND NORMAL FORM (2NF)

Statement - A relation that is in First Normal Form and every non-primary-key attribute is fully functionally dependent on the primary key, then the relation is in Second Normal Form.

Here, all the tables are in 2NF because there are no partial dependencies on the primary key. Each non-key attribute is fully dependent on the entire primary key.

THIRD NORMAL FORM (3NF)

Statement: A relation is in the third normal form if there is no transitive dependency for non-prime attributes and in the second normal form.

Here, all the tables are in 3NF because there are no transitive dependencies, as each non-prime attribute is directly dependent on the primary key.

ER DIAGRAM

sessionattendees
- SessionID INT
- EmployeeID INT
- EnrollmentDate DATE
- AvailabilityStatus VARCHAR(50)

Indexes

safetytraining
- TrainingID INT
- TrainingName VARCHAR(100)
- Description VARCHAR(100)
- ResponsiblePersonID INT

Indexes

incidents
- IncidentID INT
- IncidentDate DATE
- IncidentDescription VARCHAR(100)
- EquipmentInvolvedID INT

Indexes

awarenessprograms
- ProgramID INT
- ProgramName VARCHAR(100)
- Description VARCHAR(100)
- ResponsiblePersonID INT

Indexes

programparticipation
- ParticipationID INT
- ProgramID INT
- EmployeeID INT
- ParticipationDate DATE

Indexes

trainingsessions
- SessionID INT
- TrainingID INT
- SessionDate DATE
- Location VARCHAR(100)

Indexes

employees
- EmployeeID INT
- FirstName VARCHAR(100)
- LastName VARCHAR(100)
- Position VARCHAR(100)
- Department VARCHAR(100)

Indexes

safetyequipments
- EquipmentID INT
- EquipmentName VARCHAR(100)
- EquipmentDescription VARCHAR(100)
- ResponsiblePersonID INT
- PurchaseDate DATE
- Manufacturer VARCHAR(100)
- ExpiryDate DATE

Indexes