**SOLUTIONS**

**Databases MSSQL Server Exam - 20 Oct 2019**

Problem 1: DDL - Table creation

CREATE TABLE Users

(

Id INT PRIMARY KEY IDENTITY, -- ??

Username VARCHAR(30) UNIQUE NOT NULL,

[Password] VARCHAR(50) NOT NULL,

[Name] VARCHAR(50) ,

Birthdate DATETIME ,

Age INT CHECK (Age BETWEEN 14 AND 110),

Email VARCHAR(50) NOT NULL

)

CREATE TABLE Departments

(

Id INT PRIMARY KEY IDENTITY,

[Name] VARCHAR(50) NOT NULL

)

CREATE TABLE Employees

(

Id INT PRIMARY KEY IDENTITY,

FirstName VARCHAR(25),

LastName VARCHAR(25),

Birthdate DATETIME ,

Age INT CHECK (Age BETWEEN 18 AND 110),

DepartmentId INT FOREIGN KEY REFERENCES Departments(Id)

)

CREATE TABLE Categories

(

Id INT PRIMARY KEY IDENTITY,

[Name] VARCHAR(50) NOT NULL,

DepartmentId INT FOREIGN KEY REFERENCES Departments(Id) NOT NULL

)

CREATE TABLE [Status]

(

Id INT PRIMARY KEY IDENTITY,

Label VARCHAR(30) NOT NULL,

)

CREATE TABLE Reports

(

Id INT PRIMARY KEY IDENTITY,

CategoryId INT FOREIGN KEY REFERENCES Categories(Id) NOT NULL,

StatusId INT FOREIGN KEY REFERENCES [Status](Id) NOT NULL,

OpenDate DATETIME NOT NULL,

CloseDate DATETIME,

[Description] VARCHAR(200) NOT NULL,

UserId INT FOREIGN KEY REFERENCES Users(Id) NOT NULL,

EmployeeId INT FOREIGN KEY REFERENCES Employees(Id)

)

Problem 2: Insert

INSERT INTO Employees(FirstName, LastName, Birthdate, DepartmentId)

VALUES

('Marlo', 'O''Malley', '1958-9-21', 1),

('Niki', 'Stanaghan', '1969-11-26', 4),

('Ayrton', 'Senna', '1960-03-21', 9),

('Ronnie', 'Peterson', '1944-02-14', 9),

('Giovanna', 'Amati', '1959-07-20', 5)

INSERT INTO Reports(CategoryId, StatusId, OpenDate, CloseDate, [Description], UserId, EmployeeId)

VALUES

(1, 1, '2017-04-13', NULL, 'Stuck Road on Str.133', 6, 2),

(6, 3, '2015-09-05', '2015-12-06', 'Charity trail running', 3, 5),

(14, 2, '2015-09-07', NULL, 'Falling bricks on Str.58' , 5, 2),

(4, 3, '2017-07-03', '2017-07-06', 'Cut off streetlight on Str.11', 1, 1)

Problem 3: Update

UPDATE Reports

SET CloseDate = GETDATE()

WHERE CloseDate IS NULL

Problem 4: Delete

DELETE FROM Reports

WHERE Id = 4

Problem 5: Unassigned Reports

SELECT [Description],

CONVERT(VARCHAR, OpenDate, 105)

FROM Reports

WHERE EmployeeId IS NULL

ORDER BY OpenDate, [Description]

Problem 6: Reports & Categories

SELECT r.[Description], c.[Name] FROM Reports AS r

JOIN Categories AS c ON r.CategoryId = c.Id

ORDER BY r.[Description], c.[Name]

Problem 7: Most Reported Category

SELECT TOP(5) c.[Name], COUNT(c.DepartmentId) FROM Categories AS c

JOIN Reports AS r ON r.CategoryId = c.Id

GROUP BY c.[Name]

ORDER BY COUNT(c.DepartmentId) DESC, c.[Name]

Problem 8: Birthday Report

SELECT u.Username, c.[Name] FROM Users AS u

JOIN Reports AS r ON u.Id = r.UserId

JOIN Categories AS c ON r.CategoryId = c.Id

WHERE DATEPART(MONTH, u.Birthdate) = DATEPART(MONTH, r.OpenDate)

AND DATEPART(DAY, u.Birthdate) = DATEPART(DAY, r.OpenDate)

ORDER BY u.Username, c.[Name]

Problem 9: User per Employee

SELECT CONCAT(e.FirstName, ' ', e.LastName) AS FullName ,

COUNT(DISTINCT u.Email) FROM Employees AS e

LEFT JOIN Reports AS r ON e.Id = r.EmployeeId

LEFT JOIN Users AS u ON u.Id = r.UserId

GROUP BY CONCAT(e.FirstName, ' ', e.LastName)

ORDER BY COUNT(u.Email) DESC, CONCAT(e.FirstName, ' ', e.LastName)

Problem 10: Full Info

SELECT

CONCAT(ISNULL(e.FirstName, 'None') , ' ', e.LastName) AS Employee,

ISNULL(d.[Name], 'None') AS Department,

c.[Name] AS Category,

r.[Description],

ISNULL(CONVERT(VARCHAR, r.OpenDate, 104), 'None') AS OpenDate,

s.Label AS [Status],

ISNULL(u.[Name], 'None') AS [User]

FROM Reports AS r

LEFT JOIN Employees AS e ON r.EmployeeId = e.Id

LEFT JOIN Departments AS d ON e.DepartmentId = d.Id

LEFT JOIN Categories AS c ON c.Id = r.CategoryId

LEFT JOIN [Status] AS s ON r.StatusId = s.Id

LEFT JOIN Users AS u ON r.UserId = u.Id

ORDER BY e.FirstName DESC,

e.LastName DESC,

d.[Name],

c.[Name],

r.[Description],

r.OpenDate,

s.Label,

u.Username

Problem 11: Hours to Complete

CREATE FUNCTION udf\_HoursToComplete(@StartDate DATETIME, @EndDate DATETIME)

RETURNS INT

AS

BEGIN

DECLARE @result INT

IF(@StartDate IS NULL OR @EndDate IS NULL)

BEGIN

SET @result = 0

END

SET @result = DATEDIFF(HOUR, @StartDate , @EndDate)

RETURN @result

END

Problem 12: Assign Employee

CREATE PROCEDURE usp\_AssignEmployeeToReport(@EmployeeId INT, @ReportId INT)

AS

BEGIN

DECLARE @employeeDept INT

DECLARE @reportDept INT

SET @employeeDept = (SELECT TOP(1) DepartmentId FROM Employees

WHERE Id = @EmployeeId )

SET @reportDept = (SELECT TOP(1) d.Id FROM Reports AS r

JOIN Categories AS c ON r.CategoryId = c.Id

JOIN Departments AS d ON d.Id = c.DepartmentId

WHERE r.Id = @ReportId)

IF(@employeeDept = @reportDept)

BEGIN

UPDATE Reports

SET EmployeeId = @EmployeeId

WHERE Id = @ReportId

END

IF(@employeeDept <> @reportDept)

BEGIN

SELECT 'Employee doesn''t belong to the appropriate department!'

END

END