DBMS NORMALIZATION ASSIGNMENT

MATHEW SEBASTIAN E

ILP BATCH -1

Q1

**Employee Information**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EmployeeID** | **EmployeeName** | **Department** | **ManagerID** | **Salary** | **HireDate** |
| 1 | John Smith | HR | 101 | 50000 | 2022-01-15 |
| 2 | Alice Brown | IT | 102 | 60000 | 2022-02-20 |
| 3 | Mark Johnson | Sales | 101 | 55000 | 2022-03-10 |

In this table EmployeeName, Salary, and HireDate are dependent on EmployeeID

**Employee Table**

|  |  |  |  |
| --- | --- | --- | --- |
| **EmployeeID** | **EmployeeName** | **Salary** | **HireDate** |
| 1 | John Smith | 50000 | 2022-01-15 |
| 2 | Alice Brown | 60000 | 2022-02-20 |
| 3 | Mark Johnson | 55000 | 2022-03-10 |

Next we need to make a table for department, since the tables will be deleted if it is kept in in one table

**Department Table**

|  |  |
| --- | --- |
| **DepartmentID** | **Department** |
| D1 | IT |
| D2 | HR |
| D3 | Sales |

Now we need a table to map these both tables

Employee – Department Mapping Table

|  |  |  |
| --- | --- | --- |
| **EmployeeID** | **DepartmentID** | **ManagerID** |
| 1 | D1 | 101 |
| 2 | D2 | 102 |
| 3 | D3 | 101 |

**2. Trainee Programs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ProgramID** | **ProgramName** | **Trainer** | **Department** | **EmployeeID** | **EmployeeName** | **Date** |
| 1 | Java Fundamentals | John Smith | IT | 101 | Alice Brown | 2022-03-01 |
| 2 | Project Management | Sarah White | HR | 102 | Bob Green | 2022-03-10 |
| 3 | Sales Techniques | Mark Johnson | Sales | 103 | Charlie Black | 2022-03-20 |

Removing Partial Dependencies

|  |  |  |
| --- | --- | --- |
| **ProgramID** | **ProgramName** | **Trainer** |
| 1 | Java Fundamentals | John Smith |
| 2 | Project Management | Sarah White |
| 3 | Sales Techniques | Mark Johnson |

Removing Transitive Dependency

|  |  |
| --- | --- |
| **EmployeeID** | **EmployeeName** |
| E101 | Alice Brown |
| E102 | Bob Green |
| E103 | Charlie Black |

|  |  |
| --- | --- |
| **DepartmentID** | **DepartmentName** |
| D101 | IT |
| D102 | HR |
| D103 | Sales |

Now we must create a table to map all these tables

|  |  |  |  |
| --- | --- | --- | --- |
| **ProgramID** | **DepartmentID** | **EmployeeID** | **Date** |
| 1 | D101 | 101 | 2022-03-01 |
| 2 | D102 | 102 | 2022-03-10 |
| 3 | D103 | 103 | 2022-03-20 |

3. Customer Orders

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **OrderID** | **CustomerName** | **ProductID** | **ProductName** | **Qty** | **UnitPrice** | **TotalAmount** | **OrderDate** |
| 1 | John Doe | 101 | Laptop | 2 | 800 | 1600 | 2022-01-15 |
| 2 | Jane Smith | 102 | Smartphone | 1 | 500 | 500 | 2022-02-20 |
| 3 | John Doe | 103 | Printer | 1 | 200 | 200 | 2022-03-10 |

Removing Partial Dependency

|  |  |  |
| --- | --- | --- |
| **ProductID** | **ProductName** | **UnitPrice** |
| 101 | Laptop | 800 |
| 102 | Smartphone | 500 |
| 103 | Printer | 200 |

The remaining fields are OrderID, CustomerName, Qty, TotalAmount, and OrderDate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **OrderID** | **CustomerName** | **Qty** | **TotalAmount** | **OrderDate** |
| 1 | John Doe | 2 | 1600 | 2022-01-15 |
| 2 | Jane Smith | 1 | 500 | 2022-02-20 |
| 3 | John Doe | 1 | 200 | 2022-03-10 |

Both these tables needs to be mapped

|  |  |
| --- | --- |
| **OrderID** | **ProductID** |
| 1 | 101 |
| 2 | 102 |
| 3 | 103 |

4. Stress Management

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **EmployeeID** | **FirstName** | **LastName** | **StressLevel** | **HoursOfWork** | **BreaksTaken** | **PhysicalActivity** | **CounselingSessions** |
| 101 | Sarah | White | Moderate | 45 | 3 | Yoga | 2 |
| 102 | Bob | Green | High | 50 | 2 | Jogging | 1 |
| 103 | Charlie | Black | Low | 40 | 4 | Meditation | 3 |
| 104 | David | Miller | High | 48 | 1 | Gym | 2 |
| 105 | Jane | Doe | Moderate | 42 | 3 | Walking | 1 |

Merging Unchanged parts of the table

|  |  |  |
| --- | --- | --- |
| **EmployeeID** | **FirstName** | **LastName** |
| 101 | Sarah | White |
| 102 | Bob | Green |
| 103 | Charlie | Black |
| 104 | David | Miller |
| 105 | Jane | Doe |

Merging details to time worked

|  |  |  |
| --- | --- | --- |
| **EmployeeID** | **HoursOfWork** | **BreaksTaken** |
| 101 | 45 | 3 |
| 102 | 50 | 2 |
| 103 | 40 | 4 |
| 104 | 48 | 1 |
| 105 | 42 | 3 |

Merging data related to mental health and activity done

|  |  |  |  |
| --- | --- | --- | --- |
| **EmployeeID** | **StressLevel** | **PhysicalActivity** | **CounselingSessions** |
| 101 | Moderate | Yoga | 2 |
| 102 | High | Jogging | 1 |
| 103 | Low | Meditation | 3 |
| 104 | High | Gym | 2 |
| 105 | Moderate | Walking | 1 |

5. Flee Market

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ItemID** | **SellerName** | **ItemName** | **Category** | **Price** | **Quantity** | **Description** | **Condition** | **Location** | **DateListed** |
| 101 | John's Treasures | Vintage Chair | Furniture | 50.00 | 2 | Beautiful vintage chair, excellent condition | Like New | Booth 15, Section A | 2022-01-15 |
| 102 | Alice's Finds | Antique Clock | Home Decor | 80.00 | 1 | Authentic antique clock with Roman numerals | Good | Stall 8, Section B | 2022-02-20 |
| 103 | Mark's Collectibles | Vinyl Records | Music | 15.00 | 10 | Various artists and genres, in good condition | Used | Booth 20, Section C | 2022-03-10 |
| 104 | Emma's Treasures | Vintage Jewelry | Accessories | 35.00 | 5 | Assorted vintage jewelry pieces, unique designs | Excellent | Stall 12, Section D | 2022-04-05 |
| 105 | Robert's Finds | Retro Camera | Electronics | 60.00 | 1 | Vintage Polaroid camera with original case | Good | Booth 5, Section A | 2022-05-15 |

Removing Partial Dependency

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ItemID** | **ItemName** | **Category** | **Price** | **Description** | **Condition** |
| 101 | Vintage Chair | Furniture | 50.00 | Beautiful vintage chair, excellent condition | Like New |
| 102 | Antique Clock | Home Decor | 80.00 | Authentic antique clock with Roman numerals | Good |
| 103 | Vinyl Records | Music | 15.00 | Various artists and genres, in good condition | Used |
| 104 | Vintage Jewelry | Accessories | 35.00 | Assorted vintage jewelry pieces, unique designs | Excellent |
| 105 | Retro Camera | Electronics | 60.00 | Vintage Polaroid camera with original case | Good |

Removing Transitive Dependency

|  |  |  |
| --- | --- | --- |
| **SellerID** | **SellerName** | **Location** |
| S101 | John's Treasures | Booth 15, Section A |
| S102 | Alice's Finds | Stall 8, Section B |
| S103 | Mark's Collectibles | Booth 20, Section C |
| S104 | Emma's Treasures | Stall 12, Section D |
| S105 | Robert's Finds | Booth 5, Section A |

Now Mapping both the tables

|  |  |  |  |
| --- | --- | --- | --- |
| **SellerID** | **ItemID** | **Quantity** | **DateListed** |
| S101 | 101 | 2 | 2022-01-15 |
| S102 | 102 | 1 | 2022-02-20 |
| S103 | 103 | 10 | 2022-03-10 |
| S104 | 104 | 5 | 2022-04-05 |
| S105 | 105 | 1 | 2022-05-15 |

6. Learning Management System

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **CourseName** | **Instructor** | **Department** | **Credits** | **Enrolled**  **Students** | **StartDate** | **EndDate** | **Location** | **Availability** |
| 101 | Introduction to Biology | Prof. Smith | Science | 3 | 25 | 2022-01-15 | 2022-05-10 | Room 101 | Open |
| 102 | Programming in Python | Prof. Brown | Computer Science | 4 | 30 | 2022-02-20 | 2022-06-15 | Lab 3, Building B | Closed |
| 103 | Financial Accounting | Prof. Green | Finance | 3 | 20 | 2022-03-10 | 2022-07-05 | Room 201 | Open |
| 104 | English Literature | Prof. White | Humanities | 3 | 22 | 2022-04-05 | 2022-08-20 | Room 301 | Open |
| 105 | Web Development Fundamentals | Prof. Black | IT | 4 | 28 | 2022-05-15 | 2022-09-25 | Lab 2, Building A | Closed |

Removing Partial Dependency

|  |  |  |
| --- | --- | --- |
| CID | courseName | credits |
| 101 | Introduction to biology | 3 |
| 102 | Programming in python | 4 |
| 103 | Financial accounting | 3 |
| 104 | English literature | 3 |
| 105 | Web development fundamentals | 4 |

Removing Transitive Dependency

|  |  |
| --- | --- |
| InstructorID | instructor |
| c1 | Prof. smith |
| c2 | Prof. brown |
| c3 | Prof. green |
| c4 | Prof. white |
| c5 | Prof. Black |

Removing Transitive Dependency

|  |  |
| --- | --- |
| departmentID | department |
| d1 | science |
| d2 | Computer science |
| d3 | finance |
| d4 | humanities |
| d5 | IT |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CID | instructorID | departmentID | Enrolled students | Start date | End date | location | availability |
| 101 | c1 | d1 | 25 | 2022-01-15 | 2022-05-10 | Room 101 | open |
| 102 | c2 | d2 | 30 | 2022-02-20 | 2022-06-15 | Lab 3, building B | closed |
| 103 | c3 | d3 | 20 | 2022-03-10 | 2022-07-05 | Room 201 | open |
| 104 | c4 | d4 | 22 | 2022-04-05 | 2022-08-20 | Room 301 | open |
| 105 | c5 | d5 | 28 | 2022-05-15 | 2022-09-25 | Lab 2, building A | closed |