# Application Support and Data

Duration: 3 hours

## Programming Task / Pseudocode / Block Code / .NET and C#

### Create Simple In-Memory CRUD Employee Application (simple console / command apps)

#### Data:

1. EmployeeId, string
2. FullName, string
3. BIrthDate, Date

#### Output:

1. Output list of employees

|  |  |  |
| --- | --- | --- |
| **EmployeeId** | **FullName** | **BirthDate** |
| 1001 | Adit | 17-Aug-54 |
| 1002 | Anton | 18-Aug-54 |
| 1003 | Amir | 19-Aug-54 |

#### Requirement,

1. Key functionality,
   1. Adding new data (can *be hardcoded to save development time*)
   2. Display list of data
   3. Remove / Delete data, for example delete employee 1003 – Amir from list of employees
2. Program must have
   1. Comment (short description to describe method)
   2. Variable
   3. Validation (null handling, date handling, duplicate data handling)
   4. Error handling (exception)

## Data and Query Task (Basic)

1. Create script to create table for each object
   1. Employee
   2. PositionHistory
2. Create insert script to inserting data into each table (*Employee and PositionHistory*)
3. Create query to display all employee (*EmployeeId, FullName, BirthDate, Address*) data with their **current** position information (*PosId, PosTitle, EmployeeId, StartDate, EndDate*).

### Tables and Samples Data

1. Employee Table

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Employee Table** | | | | | | | |
| **No** | **Name** | | **Type** | **Length** | **Mandatory** | **Identity** | **Key** | **Sample Data** |
| 1 | Id | | Integer |  | Y | Y | Primary Key | 1 |
| 2 | EmployeeId | | String | 10 | Y | N | Unique Key | 10105001 |
| 3 | FullName | | String | 100 | Y | N |  | Ali Anton |
| 4 | BirthDate | | Date |  | Y | N |  | 19-Aug-82 |
| 5 | Address | | String | 500 | N | N |  | Jakarta Utara |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Employee Sample Data** | | | | |
| **Id** | **EmployeeId** | **FullName** | **BirthDate** | **Address** |
| 1 | 10105001 | Ali Anton | 19-Aug-82 | Jakarta Utara |
| 2 | 10105002 | Rara Siva | 1-Jan-82 | Mandalika |
| 3 | 10105003 | Rini Aini | 20-Feb-82 | Sumbawa Besar |
| 3 | 10105004 | Budi | 22-Feb-82 | Mataram Kota |

1. Position Table

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Position History Table** | | | | | | |
| **No** | **Name** | | **Type** | **Length** | **Mandatory** | **Identity** | **Key** | **Sample Data** |
| 1 | Id | | Integer |  | Y | Y | Primary Key | 1 |
| 2 | PosId | | String | 10 | Y | N |  | 50001 |
| 3 | PosTitle | | String | 100 | Y | N |  | IT Sr. Manager |
| 4 | EmployeeId | | String | 10 | Y | N |  | 10105001 |
| 5 | StartDate | | Date |  | Y | N |  | 1-Mar-2022 |
| 6 | EndDate | | Date |  | Y | N |  | 31-Dec-2022 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Position History Sample Data** | | | | | |
| **Id** | **PosId** | **PosTitle** | **EmployeeID** | **StartDate** | **EndDate** |
| 1 | 50000 | IT Manager | 10105001 | 1-Jan-2022 | 28-Feb-2022 |
| 2 | 50001 | IT Sr. Manager | 10105001 | 1-Mar-2022 | 31-Dec-2022 |
| 3 | 50002 | Programmer Analyst | 10105002 | 1-Jan-2022 | 28-Feb-2022 |
| 4 | 50003 | Sr. Programmer Analyst | 10105002 | 1-Mar-2022 | 31-Dec-2022 |
| 5 | 50004 | IT Admin | 10105003 | 1-Jan-2022 | 28-Feb-2022 |
| 6 | 50005 | IT Secretary | 10105003 | 1-Mar-2022 | 31-Dec-2022 |

## ETL, Datawarehouse and Analytics Task

Build and design simple Datawarehouse and analytics data, data source came from 2 different source

1. Employee data, source from Azure
2. Training history, source from GCP (Google Cloud Platform)

### Requirement and Details:

1. Azure Employee data is using SQL Server as Database Server. This is database for saving employment data like their employee number, name, birthdate, position/job etc. Each employee has one record for their employment data.
2. Training History data is using Google Worksheet as data platform. The worksheet contains historical data about training that completed by employee. Each employee may have more than one records for their training history data.
3. Design simple ETL Flow that compile these two data sources into Datawarehouse
4. Design simple report that displays historical training data
5. Design simple dashboard that displays
   1. Total employee completed training each month
   2. Total training each month