Design Assignment

- **Class Design of the Problem Statement:**

- **Equipment Class:**

```csharp
public class Equipment
{
    1 reference
    public int EquipmentID { get; set; }
    1 reference
    public string EquipmentType { get; set; }
    1 reference
    public int NumberofBins { get; set; }

    0 references
    public Equipment(int equipmentID, string equipmentType)
    {
        EquipmentID = equipmentID;
        EquipmentType = equipmentType;
        NumberofBins = equipmentType == "A" ? 2 : 4;
    }

    0 references
    public void FetchEquipmentData()
    {
        // Function to fetch equipment data from the database
    }

    0 references
    public void SaveEquipmentData()
    {
        // Function to Save the equipment data to the database
    }
}
```

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- **Event Class:**

```csharp
public class EventData
{
    1 reference
    public int EventID { get; set; }
    1 reference
    public int EquipmentID { get; set; }
    1 reference
    public int LotId { get; set; }
    1 reference
    public int BoardId { get; set; }
    1 reference
    public string EventType { get; set; }
    1 reference
    public DateTime EventTimestamp { get; set; }

    0 references
    public EventData (int eventId, int equipmentId, int lotId, int boardId, string eventType, DateTime eventTimestamp)
    {
        EventID = eventId;
        EquipmentID = equipmentId;
        LotId = lotId;
        BoardId = boardId;
        EventType = eventType;
        EventTimestamp = eventTimestamp;
    }

    0 references
    public void FetchEventData()
    {
        // Function to fetch event data from the database
    }

    0 references
    public void SaveEventData()
    {
        // Function to save event data to the database
    }
}
```

- **Database Design:**

1. **Equipment Table:**

equipment_id (PK - Primary Key)	equipment_type
1	Type A
2	Type B

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2. Bins Table:

bin_id (PK - Primary Key)	equipment_id (FK - Foreign Key reference of Equipment Table)	bin_number
1	2	1
2	1	1
3	1	2
4	2	3
5	1	3

3. Boards Table:

board_id (PK - Primary Key)
1111
1112
1113
1114

4. Lot Table:

lot_id (PK - Primary Key)
001
002
003
004

5. Events Table:

event_id (PK - Primary Key)	equipment_id (FK - Foreign Key reference of Equipment Table)	lot_id (FK - Foreign Key reference of Lot Table)	board_id (FK - Foreign Key reference of Boards table)	event_type	event_Timestamp
1	1	001	1111	event_001	2024-09-01 02:00:00
2	2	003	1112	event_002	2024-08-15 15:00:00
3	2	002	1113	event_003	2024-08-28 16:00:00
4	1	001	1114	event_004	2024-09-25 20:00:00

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- **Points to be noted:**

  - ✓ The tables represent a basic demonstration and not a complete set of data.
  - ✓ The above created classes Equipment and Event class will utilize this tables for fetching and saving the data.
  - ✓ Relationship between the tables is established using the Primary key and foreign key constraints.
  - ✓ According to the type of data the relevant tables are designed to store the values.
  - ✓ All tables are designed keeping in mind the concept of normalization.