

## **Entities, Attributes, and Keys for the Angel Warehouse Scenario**

### **1. Entity: Bay**

- **Attributes:**

- **BayNumber** (Primary Key): Unique identifier for each bay.
- **Location**: The location of the bay in the warehouse.
- **Height**: The height of the bay.

- **Relationships:**

- Contains multiple bins.
- Can have one fork lift assigned.

### **2. Entity: Bin**

- **Attributes:**

- **BinNumber** (Composite Key with BayNumber): Unique identifier within a bay. Starts at 1 in each bay.
- **BayNumber** (Foreign Key): Identifies the bay the bin belongs to.
- **Size**: The physical size of the bin.
- **MaxLoadedWeight**: Maximum weight the bin can hold.

- **Relationships:**

- Belongs to one bay.
- Contains multiple items.

### **3. Entity: Fork Lift**

- **Attributes:**

- **EquipmentNumber** (Primary Key): Unique identifier for each fork lift.
- **MaxCarryingWeight**: The maximum weight the fork lift can carry.
- **FuelType**: Specifies whether the fork lift is petrol-driven or electric.
- **BayNumber** (Foreign Key): Identifies the bay the fork lift is allocated to.

- **Relationships:**

- Assigned to one bay (optional).

### **4. Entity: Item**

- **Attributes:**

- **ItemNumber** (Primary Key): Unique identifier for each item.
- **DateReceived**: The date the item was taken into the warehouse.
- **Weight**: The weight of the item.
- **Relationships:**
  - Can be placed in a bin. Multiple items can be stored in a bin.
  - Can move between bays and bins.

## 5. Entity: Bin Item Assignment

- **Attributes:**
  - **BinNumber** (Composite Key with BayNumber): The bin where the item is stored.
  - **BayNumber** (Foreign Key): Identifies the bay the bin belongs to.
  - **ItemNumber** (Foreign Key): Identifies the item stored in the bin.
  - **DatePlaced**: The date the item was placed in the bin.
- **Relationships:**
  - Links bins and items.
  - Allows multiple items to be stored in one bin.

## Keys

- **Primary Keys:**
  - **BayNumber** for Bay.
  - **(BayNumber, BinNumber)** for Bin (composite key).
  - **EquipmentNumber** for Fork Lift.
  - **ItemNumber** for Item.
  - **(BayNumber, BinNumber, ItemNumber)** for Bin Item Assignment (composite key).
- **Foreign Keys:**
  - **BayNumber** in Bin (references Bay).
  - **BayNumber** in Fork Lift (references Bay).
  - **BayNumber** and **BinNumber** in Bin Item Assignment (references Bin).
  - **ItemNumber** in Bin Item Assignment (references Item).

This schema captures the warehouse's layout, bin structure, and storage of items, including item movement and forklift allocation.