Hierarchy and Design:

1. **Relation 1:**

**Composition**

**Floor**

**Hotel**

The hotel(Data type Hotel) has 5 floors(data type Floor).

1. **Relation 2:**

**Composition**

**Room**

**Floor**

Each floor has a polymorphic array of 50 rooms with standard rooms at 0 to 9, moderate at 10 to 19, superior at 20 to 29, junior suite at 30 to 39 and suite at 40 to 49 indexes.

**Relation 3:**

In the above hierarchy the parent class is Room. The child classes derived from Room are:

1. Room\_Standard
2. Room\_Moderate
3. Room\_Superior
4. Room\_Junior\_Suite
5. Room\_Suite

**Relation 4:**